MASTER PLAN

SUDBURY

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SUDBURY MASS.

MAY 1962

SUDBURY PLANNING BOARD

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Jac Smit - Project Planner

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Neil Lang, Assistant Planner	Eleanor Hancock, Research
Carleton Smith, Assistant Planner	Lucy Jordan, Reproduction

Preparation of this report for the Massachusetts Department of Commerce and the Town of Sudbury was financed by monies voted by the Sudbury Town Meeting and an Urban Planning Grant from the United States Housing and Home Finance Agency under the provisions of Title VII, Section 701, of the Housing Act of 1954 as amended.

M A S T E R P L A N S T U D Y

Economic Base
Generalized Housing Conditions
Areas of Influence

Community Facilities
Circulation and Parking
Public Utilities
Future Land Use

Review of Zoning By-Law and Map
Review of Subdivision Regulations
Capital Budget
Economic Development

"Projected Area Map"

Planning Board

S U D B U R Y, M A S S A C H U S E T T S

May 1962

Charles E. Downe, Planning Consultant

CHARLES E. DOWNE

community and regional planning consultant

950 Watertown Street, West Newton 65, Mass.
Bigelow 4-9615

Massachusetts Department of Commerce
and the
Sudbury Planning Board

Gentlemen:

I am pleased to submit herewith this Master Plan Report in fulfillment of a Title VII Planning Contract providing for this study and report. It is impossible, of course, to write "finis" to a study of this type, because of the nature of planning as a continuing function of local government. Certain parts of this report are already beginning to be updated to cope with Sudbury's rapid rate of development and growth.

This report - in combination with the Land Use, Population, and Base Map studies previously submitted - represents a framework upon which the Town can decide its course of development in the future. It is not designed to provide specific answers to all specific problems. Rather, it is a tool, designed to assist in making the best possible decisions at the best possible time, with emphasis upon seeing each decision as inter-locking with all other decisions, both in time and space. The fact that some of the studies herein have already been used in making important decisions - i.e. the Schools and Circulation Studies - is an encouraging indication that Sudbury is ready and able to use the "planning process" in resolving its development problems.

It is impossible to give proper recognition to all the contributors to such a study, since their name is 'legion'. It has been a uniquely rewarding experience to work with a community as enthusiastic and dedicated as Sudbury. Each and every person, that has contributed of his or her time and effort, has done so with characteristically greater generosity and selflessness than has been the experience in many other communities. However, the dynamic and painstaking effort of the Planning Board, acting as the coordinating agency in digesting and evaluating the data and ideas of the resident and professional contributors, is principally responsible for the ultimate usefulness of the present study, though the responsibility for any statistical, narrative or graphic errors in the document is that of the consultant.

Again, may I express appreciation to the citizens of the Town of Sudbury for their interest, help and concern for the future.

Sincerely yours,

Charles E. Downe

Charles E. Downe

GENERAL INTRODUCTION

This report is the result of over two years work by the Sudbury Planning Board, coupled with the assistance of many resident groups and individuals and the planning consultants.

An initial report has already been released on the first three phases of the study; Base Map Preparation, Existing Land Use Survey and Population Analysis. Although the report on these three phases is not contained within this report, some of their pertinent data and conclusions is repeated in the present study where appropriate. The maps included in each of these earlier studies - completed in 1960 - have been up-dated to make them as viable as possible.

This report is lengthy, about 200 pages of text in addition to illustrations and indices. It was not intended to be so, but the amount of pertinent material and thought justifies the document. Each of the eleven sub-reports is designed, both as a unit in itself and as an integral part of the study, since each sub-report is strongly related to each of the others. Therefore, it would be advisable to review the introductory and concluding comments of related sub-reports at the time of perusing any one sub-report.

The Master Plan Report can be divided into three major parts:

(1) Inventory Studies: (Economic Base; Generalized Housing Conditions; Areas of Influence), principally a recitation of present fact and recent history with appropriate evaluation.

(2) Planning Studies: (Community Facilities; Circulation and Parking; Public Utilities; Future Land Use), include more specialized inventory, suggest a plan of development and present an outline of or an approach to the carrying out of such plan.

(3) Effectuation Studies: (Review of Zoning; Review of Subdivision; Capital Budget; Economic Development), spell out in some detail practical means for achieving particular objectives of the Master Plan.

There is a temptation, in the preparation of an introduction of this type, to summarize the most significant findings and conclusions. This temptation has been resisted as it is impossible to say ahead of time which of the many findings and conclusions will, in the light of the future, be more significant than others.

This report is neither the first nor will it be the last to be prepared by the Sudbury Planning Board. At this point in the Town's growth it is a comprehensive statement of the problems, potentials and intentions of the Town. Hopefully, the comprehensiveness of this study and report will provide a sound background for community decision and for the more specialized and detailed studies of both the near and distant future.

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Planning Board

S U D B U R Y, M A S S A C H U S E T T S

October 1961

Charles E. Downe, Planning Consultant

ECONOMIC BASE ANALYSIS

I. INTRODUCTION

A. PURPOSE

The intention of this report is to provide the Town with a statement of the present social-economic composition of the community which can serve as a basis for correcting any deficiencies, developing potentials and adding desirable elements to the existing structure.

The future economic development of Sudbury will be based on a few fundamental decisions which its citizens will make in the conduct of their private and public affairs. This report is intended to serve as an instrument which will guide the residents of the Town in reaching better and more qualified decisions.

B. METHOD

In the study leading to this report, three major areas have been examined separately and a synthesis drawn from each of the following categories:

1. People and Jobs: occupational skills, work habits, employment opportunities

2. Capital and Wages: investment, payroll, taxes

3. Physical Factors: land, machinery, plant

The synthesis and conclusion will draw the report together, focus on particular problems and explore potentials consistent with other features of the Master Plan proposed for the Town.

1. People and Jobs

One measure of the economic base of a community is the sum of all the employment opportunities available to the residents of that community and to commuters from nearby communities. However, it is extremely difficult to find detailed statistics for a small community largely due to the fact that a "small town" no longer functions as a separate, well-defined economic unit. Therefore, two subregions of nearby towns have been selected as economic units. The following towns comprise the two economic subregions affecting Sudbury:

(a.) Concord subregion, consisting of: Acton, Bedford, Boxboro, Carlisle, Concord, Lincoln, Littleton and Westford;

(b.) Framingham subregion, consisting of: Ashland, Framingham, Holliston, Hopkinton, Hudson, Marlboro, Maynard, Natick, Sherborn, Southboro, Stow, Sudbury and Wayland. *

Although the economic base of a community consists partly of employment opportunities, the future pattern of economic development is more likely to be affected by the occupations of its citizens, wherever their present employment may be. People are attracted by employment opportunities. Employment opportunities are attracted by occupational skills. Commercial activity and services are attracted by industry and their employees. Sudbury is too small a unit to analyze for the "push and pull" of these complementary forces, consequently these two subregions have been used for projection purposes.

2. Capital and Wages

Perhaps more than any other discernible aspect of a community, capital investment determines its future physical form. The amount of money which is presently invested in various types of commercial and industrial endeavors within a community will largely identify the economic base upon which that community must build towards the future. Capital investment is less mobile than employment; that is, although a factory or plant may have no employees for a period of months or even years, the intrinsic value of the plant remains and may provide the basis for new job opportunities. Because of this greater stability, capital investment trends in both private and public enterprises for Sudbury and the subregion can serve as an indication of the rate and direction of growth. They can also point out new economic potentials.

Since the main source of income to sustain local government is the property tax, a reasonably accurate knowledge of past trends in capital investment, combined with future projections or plans for investment, is essential to determine the total resources which a town will have to provide services to its industrial, commercial and residential areas.

This matter of investment is largely dependent upon the wage earning capacity of the citizenry and, therefore, is related to the payrolls of local and regional employers.

* Courtesty Greater Boston Economic Study Committee.

3. Physical Factors

The previously mentioned aspects of the economic inventory have some physical manifestations; they either occupy land or require facilities that do; they require certain buildings for housing, industrial, commercial and public or community facilities; and they must be linked by a means of transportation for both persons and goods.

Because the end-use of this planning study will be to guide the physical development of Sudbury, these physical aspects will be emphasized in an inventory summary which follows. Once the implications of these physical aspects have been made, the allocation of land has been determined, and the program for development arranged, implementation will focus on controlling and achieving the desired development. Actual development will be correlated with the capital budget program of the community, based on anticipated needs and the financial capacity to provide for them.

The most visible part of the physical aspect of Sudbury's economic base today is the dynamics of home building in all sections of the Town. This phenomenon, although a temporary economic activity, will have a permanent imprint upon the Town and is, therefore, examined here and elsewhere in the Master Plan study.

C. SYNTHESIS AND CONCLUSION

Sudbury's growth with its accompanying impact on the Town's economy has been particularly marked since the close of World War II and has coincided with the construction of new highways in the Greater Boston Metropolitan area - particularly Route 128, the so-called "Circumferential Highway", and the Mass. Turnpike.

By 1960, the composition of the Town's population indicated a higher-than-average percentage of white collar workers, particularly in the upper-middle salary category. Job opportunities within the Town have not increased at the same rate as the gain in population. Many of the recently arrived wage earners of the Town are classified as professional employees - for the most part engineers, generally identified with a segment of the electronics industry which has demonstrated a phenomenal post-war growth in the Route 128 area within easy commuting distance to Sudbury. These new arrivals

have demanded improved and increased local municipal services. this demand has become particularly obvious in the area of public education. Indications point to Sudbury's continued development as an above average residential suburb with an increasing per capita annual expenditure for the functioning of its local government including its participation in the Lincoln-Sudbury Regional School District.

Assessed valuation of the Town has increased by over 350% during the past decade, reflecting a spectacular increase in residential construction during this period. In spite of this rapid increase in the number of new homes which have been built post-war, Sudbury is currently only about 30% developed, considering land still used for agriculture to be undeveloped. The Town's greatest economic resource is its open land.

Wages paid by Sudbury employers are approximately ten percent above the state average. While employees commuting to Sudbury benefit from the above-average rates, the favorable employment climate is reflected in expanding commercial and personal services within the Town.

Over sixty percent of the vacant privately owned land in the Town, including acreage currently devoted to agriculture, is developable. A small part of this developable land is attractive for industrial development, particularly land with access to Route 20. This location will become increasingly attractive upon the completion of Route 495, the so-called "Outer Belt" and a contemplated by-pass around South Sudbury. A potential exists for attracting additional industrial construction with this type of development assuming a larger percentage of the cost of operating local government.

The per capita cost of local government, including Sudbury's share of operating the Lincoln-Sudbury Regional School District, has increased over 150% since 1950 while assessed valuation per capita in the Town has advanced approximately 60%.

As approximately 75% of annual appropriated funds for providing essential services is paid by property taxes levied on home owners and as the demand for services and facilities indicate a continued increase in the budgetary requirements of town departments and agencies, a broader industrial and commercial base appears desirable as a source of local taxes if the rate of increase in per capit expenditures for these services is to be decelerated.

II. HISTORY OF SUDBURY: ECONOMIC GROWTH AND DEVELOPMENT

In the early 17th century, settlers from Watertown were granted permission to settle a new plantation, "upon the river which runs to Concord". On September 11, 1639, the General Court of Massachusetts ordered that the "new plantation by Concord shall be called Sudbury".

The name Sudbury came from the home town of the Reverend Edmond Brown, the town's minister - Sudbury, England.

This settlement was the nineteenth settlement in the Massachusetts Bay Colony, but only the second situated above the flow of tidewaters. The original plantation and town included not only the present town of Sudbury, but also what is now Wayland, Framingham, Maynard, Stow and several other small pieces of land. Framingham, however, broke off from Sudbury in 1640.

The early economy of Sudbury was based essentially on agriculture. By the time of the Revolutionary War, the population had grown to 2,000 persons, making Sudbury the largest town in Middlesex County.

Following the Revolutionary War in 1781, Wayland became a separate township. By 1850, there were three distinct sections in the Town, each with its own mill, general store, blacksmith, and wheelwright's shop. Old Mill Village was in South Sudbury; Sudbury Centre was the middle of the Town; and Assabet Village was the northern settlement. By this time there was a growing shoe industry, utilizing local leathers and other agriculturally-based industries.

Following the Civil War, Assabet Village with a total of 1900 acres, became part of the new town of Maynard. In the same year, 1871, the railroad came through Sudbury. By 1875 most of the local industry had left Sudbury, and agriculture was once again the principal "economic base" of the Town. The loss of industry was no doubt due to the lower cost of transporting manufactured goods by rail and the more favorable rail connections enjoyed by competing communities. While the coming of the iron horse was the economic christening of many cities and towns, so was it the death knell of many others.

In 1939 there was still no large scale industry in Sudbury. There were, however, new sources of income from horticultural products, especially carnations. Also, the Commonwealth had established a tree nursery there to develop stock for roadside plantings.

III. PEOPLE AND JOBS

A. TERMINOLOGY

Occupation, as generally used in this report, is assumed to mean what a person says he or she does. These occupations have been grouped in eight categories according to the general U. S. census breakdowns. These categories are, for example: professional, technical and kindred workers; farmers and farm managers; managers, officials and proprietors; clerical; sales.

Employment, on the other hand, is assumed to mean the general type of industry in which an employee works. Thus a person working as a technician, laborer, or clerk in a chemical plant is a manufacturing employee, regardless of his status in the firm. Manufacturing is further broken down into various fields, such as chemical, munitions, steel fabricating, electrical machinery. Employment breakdowns are those of the Standard Industrial Classification System, as used by the U. S. Department of Commerce.

Occupational groupings have been compiled from the 1960 Annual Persons Listing for Sudbury, of persons 20 years old and over. Some interpretation has been necessary, since persons were not given the same list used by the census in listing their occupation. Thus, a nurse would simply list herself "nurse" whereas the census lists only "medical technicians".

B. EMPLOYMENT

1. Recent Changes in the State Employment

As throughout the United States, the productivity of Massachusetts workers has increased due to new technology, heavier capital investment and improved production methods. In the last 14 years, there has been a net loss of 55,600 manufacturing jobs in the Commonwealth. Eight-eight thousand jobs have been lost in the textile and leather industry alone. Thirty-three thousand jobs have been gained in other industries, however, such as electronics, missiles, chemicals and machine tool manufacturing. There has been an increase of 127,000 jobs in the non-manufacturing or tertiary industries. Although the growth of the non-manufacturing or service industries cannot be

explained wholly by the growth of the manufacturing industries, or the changes in these manufacturing industries, much of the growth in the service industries is in fact related to the growth in the manufacturing industries, such as electronics, missiles, chemical and machine tools. Other factors that affect the growth of the service industries are the general rise in annual incomes in the State; more discretionary income for spending on non-essential purchases; changes in state and local corporation and land tax policies; the purchase price of land; the availability and market orientation of the highway system; the availability of certain types of skilled labor, and such non-economic factors, as the weather and recreational facilities, such as skiing slopes, beaches and State parks.

2. Jobs and Employment Trends in Sudbury 1947 - 1960

The following table summarizes the classification of existing jobs in Sudbury and the post-war trends in local employment.

TABLE NO. 1. EMPLOYMENT* IN SUDBURY

Category		1947	1950	1954	1957	1959	1960
Agriculture	firms	4	3	4	3	-**	4
	employees	6	17	26	12	14	13
Construction	firms	5	8	13	24	-	18
	employees	18	34	49	92	67	62
Manufacturing	firms	3	4	5	7	-	9
	employees	18	40	73	175	453	1,473
Transportation	firms	-	-	1	4	-	3
	employees	-	-	3	21	8	16
Wholesale-Retail	firms	12	15	16	27	-	37
	employees	61	85	123	206	270	267
Finance, Insur., Real Estate	firms	-	-	-	3	-	4
	employees	-	-	-	6	5	10
Services	firms	4	3	8	11	-	13
	employees	6	10	19	26	30	28
Unclassified	firms	-	-	-	1	-	-
	employees	-	-	-	1	-	-
Totals	firms	28	33	47	80	(85)***	88
	employees	109	186	293	539	847	1,869
Percentage Increases		72%	57%	84%	58%	121%	

* Includes jobs covered by Employment Security only. Other local jobs include those of self-employed persons and local government employees amounting to about 300.

** Not available

*** Town monograph figure - Mass. Department of Commerce

Source: Greater Boston Economic Study Committee, 1961

Total covered employment in Sudbury increased by 900 percent from 1950 to 1960 while the population increased by about 250 percent. Despite the greater percentage increase in employment, Sudbury has not added as many jobs in the Town as it has added jobholders. From 1950 to 1960 about 1,680 new jobs appeared, but about 1,750 new jobholders took up residence in Sudbury.

The number of employers has increased at a lesser rate than the rate of increase of employees, indicating a trend towards larger plants. This trend may be expected to continue during the next few years with the recent addition of two large corporations to the list of Sudbury employers. The largest increases have been in manufacturing which has approximately doubled in each of the three or four year time periods. In the last three years, manufacturing employment increased by 250%. Agriculture and construction have been fluctuating over this 14-year period, though the final figures do indicate a gain of more than double in agriculture and more than three and one-half times in construction. The increases in jobs in other categories are, however, all much smaller than in manufacturing. Wholesale and retail employment has increased by significant amounts over the last fourteen years, though the increase has slowed down since 1954. Services have shown a steady increase, though the number of new employees has been rather small. Among new classifications, transportation has fluctuated over the last eight years, reaching a peak of 21 employees in 1957. Finance, real estate and the insurance business have also added new employees, though the total is now only about ten.

The general trend, therefore, is a very heavy increase in the manufacturing fields, and a general expansion of employment into all fields something new in Sudbury in the last five years. Previous to that period, employment was indicated in only slightly more than one-half the categories listed by the Department of Commerce.

The foregoing discussion deals only with "covered" employment on local jobs "covered" by Employment Security insurance. Many job holders are not included in this program, such as school teachers, proprietors, partners, officers, employees of firms employing less than two persons, and so forth. The Sudbury School system and the Lincoln Sudbury Regional School District employ about 190 persons. It would be reasonable to assume that there are sufficient non-"covered" jobs to bring the total of such positions to about 300.

3. Employment Trends in the Surrounding Towns

Between 1947 and 1957, the most recent data available, jobs in the Greater Boston Area as identified by the Greater Boston Economic Study Committee increased by less than one percent a year from 800,000 to 876,000. The western suburban sector of the Greater Boston Area during that same time period was, however, adding jobs at a considerably more rapid rate as illustrated in Table No. 2.

TABLE NO. 2. TRENDS IN COVERED EMPLOYMENT* IN AND AROUND SUDBURY, MASSACHUSETTS

	Sudbury		Route 2**		Route 9***	
	1947	1957	1947	1957	1947	1957
Agriculture, Mining	6	12	116	159	154	311
Contract Construction	18	102	279	480	1,331	2,604
Manufacturing	18	175	2,420	5,034	15,912	18,526
Trans., Comm., Util.	0	21	76	293	879	931
Wholesale Trade	3	41	58	114	450	1,057
Retail Trade	58	165	759	1,212	3,252	5,929
Finance, Insur., R. Estate	0	6	176	256	570	844
Service & Non-Profit	6	27	155	396	1,532	2,684
Other	-	-	-	-	9	6
Totals	109	549	4,039	7,944	24,089	32,892
Increase '47-'57 (absolute no.)		440		3,905		8,803
(percentage)		400%		97%		37%

* Covered by Employment Security Insurance

** Route 2 subregion: Acton, Bedford, Boxboro, Carlisle, Concord, Lincoln, Littleton and Westford

*** Route 9 subregion: Ashland, Framingham, Holliston, Hopkinton, Hudson, Marlboro, Maynard, Natick, Sherborn, Southboro, Sudbury, Stow, Wayland.

Source: Greater Boston Economic Study Committee

Sudbury's increase in jobs represents about five percent of the gain for the Framingham subregion for the 1947-1957 period. This increase should have represented between seven and eight percent of the subregion's gain based on the Town's population increase during this period and the acreage of the Town.

In summary, although Sudbury has been adding new jobs at a much greater rate than its metropolitan area and the average of its suburban neighbors, it has not been adding jobs as rapidly as job holders nor has it added jobs in relationship to its numerical or area position in its economic subregion.

C. OCCUPATIONS

The occupations of the residents of a community are significant to the Master Plan as the plan is in large part prepared to serve the ends of the people residing in the community - present and future. A person's occupation indicates to a large extent the type of community he will select or demand. The following table indicates the occupational composition of Sudbury in comparison with the United States:

TABLE NO. 3. OCCUPATIONAL COMPOSITION AND TRENDS: SUDBURY AND U.S.A.

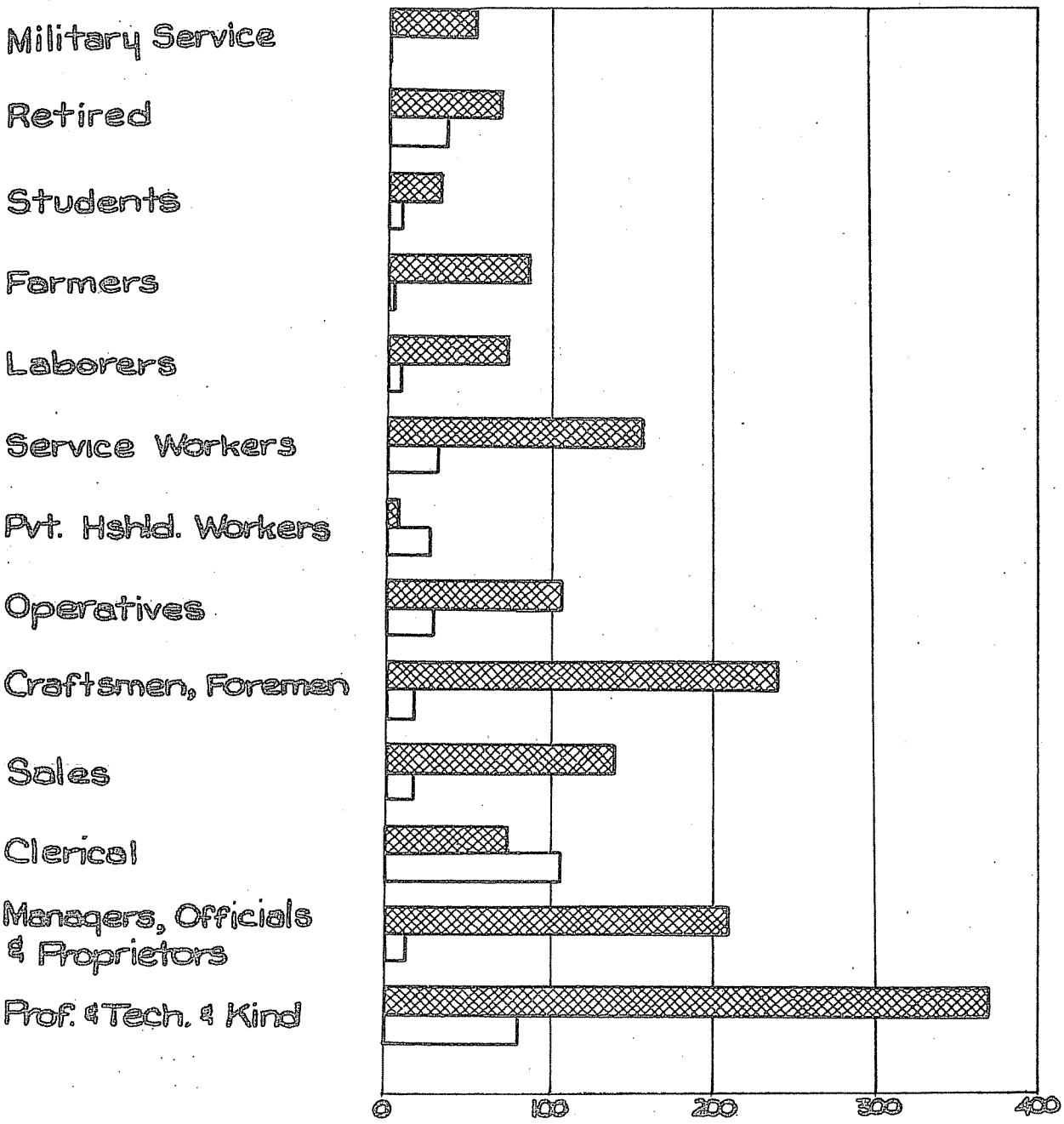
General Classification	1950		1958		1960
	Sudbury	U.S.A.	Sudbury	U.S.A.	Sudbur
White Collar	48%	37%	54%	41%	65%
Blue Collar	30%	41%	29%	38%	26%
Service	9%	10%	11%	13%	5%
Farm	13%	12%	6%	8%	4%

Sources: Sudbury Data - List of Persons
U.S.A. Data - U.S. Census

This is a grouping of what the individual persons who live in Sudbury say they do, regardless of what kind of plant they work in or where that plant is located. The table shows Sudbury to be far above the national average in the number of white collar employees which includes

ECONOMIC BASE

OCCUPATIONAL DISTRIBUTION BY NUMBERS



Source: Sudbury List of Persons, 1960

the professionals, related professional workers, non-farm managers, clerical persons and salesmen. The table also shows Sudbury to be lower in all other categories. Blue collar workers as defined here are skilled and semi-skilled craftsmen or operatives. Service workers are those non-professionals in the tertiary industries, such as barbars, cleaners, taxi drivers, etc.

Proceeding from this generalized picture of what the occupational personality of Sudbury is today and where it seems to be going, the following table and graph show in absolute numbers and percentages the occupations of all jobholders, 20 years or over, residing in Sudbury in 1960.

TABLE NO. 4. OCCUPATIONS OF SUDBURY RESIDENTS, AGED 20 YEARS AND OVER IN 1960 (Housewives excluded)

Detail Classification	Numbers		Percentage	
	Males	Females	Males	Females
Military	52	0	3.2	0.0
Retired	66	33	4.0	9.2
Students	31	7	2.0	2.0
Farmers	86	1	5.3	0.3
Laborers	71	7	4.4	2.0
Service Workers	154	30	10.0	8.5
Household Workers	6	23	0.4	6.5
Operators	105	28	6.6	7.9
Crafts, Foreman	239	16	15.0	4.5
Sales	137	14	8.5	3.9
Clerical	72	106	4.5	29.9
Managerial	210	10	13.1	2.8
Professional	368	80	23.0	22.5
Totals	1,597	355	100.0%	100.0%

Source: Sudbury List of Persons, 1960

Approximately one-half of the males listed in the professional category are engineers and about one-half of these engineers are in some way associated with the electronics industry. The most significant occupational growth rates in recent years have been in the professional category. The next most significant growth category has been sales while the service and labor groups have shown considerable percentage and absolute decreases.

D. SUMMARY

Sudbury has a higher proportion of white collar residents than the nation and a lower proportion of residents holding all other kinds of jobs. The trends of the past decade point to this difference as becoming more and more exaggerated. By implication Sudbury is rapidly becoming an "upper class residential suburb" as identified by its occupational structure.

Recent increases in employment opportunities within the Town have been in the same categories that have shown increases in the Commonwealth with the Sudbury increases indicating a much more rapid rate. Sudbury conversely has not shared in the loss of employment opportunities experienced by the Commonwealth in other categories due to the fact that it has had no jobs in these categories in recent years.

Sudbury's gains in employment opportunities have been increasing at a far greater rate than the average of the surrounding towns, as illustrated by a comparison to twenty-two towns oriented towards Routes 2 and 9, but in absolute number local job increases have not been in proportion to Sudbury's share of the total territory and population of the groups of towns studied.

In terms of its own population growth from 1945 to 1960 Sudbury added about one new job opportunity for each one and one-half new job holder. Sudbury is growing more rapidly as a "bedroom community" than as an employment center. This is characteristic of those communities about equidistant from Boston on Routes 2, 9, and 20.

IV. CAPITAL AND WAGES

A. ASSESSMENTS

The following table shows the Town's total assessments by type of property for the past ten years. Although these figures do not represent market value, they do indicate the trend of capital investment in Sudbury during the past decade and the spectacular increase in capital wealth of the community within this limited period.

TABLE NO. 5. VALUATION TRENDS, SUDBURY, MASSACHUSETTS

(in thousands of $'s)

Year	Land		Buildings		Personal		Total	
1951	662		2,349		359		3,371	
1952	681		2,551		347		3,578	
1953	723		2,775		354		3,851	
1954	769		3,103		429		4,301	
1955	902		3,599		506		5,007	
Increase '51-'55	240	% 36%	1,250	% 53%	147	% 42%	1,636	% 49%
1956	1,069		4,622		553		6,244	
1957	1,314		6,292		590		7,606	
1958	1,471		7,546		906		9,923	
1959	1,603		8,828		1,213		11,643	
1960	3,032 *		11,200		1,283		15,515	
Increase '56-'60	Actual 1,963	% 183%	Actual 6,578	% 143%	Actual 730	% 133%	Actual 9,271	% 150%
Total Increase	2,370	359%	8,851	376%	924	257%	12,144	360%

* This increase due to a change in assessment policy; see 1959 Annual Town Report.

Source: Sudbury Annual Town Reports 1951-1960

In 1959 the Sudbury League of Women Voters conducted an analysis of property assessments and taxes by type and land use. The resulting field data has been collated in the following table.

TABLE No. 6. PHYSICAL EVALUATION OF INCOME PRODUCING PROPERTY IN SUDBURY, MASSACHUSETTS 1959

Use	No. of Firms	Real Property		Personal Property		Total	
		Assessment	Percent	Assessment	Percent	Assessment	Percent
Agriculture & Mining (1)	21	275,665	2.6%	17,000	1.3	292,665	2.5
Manufacturing (2)	8	281,840	2.7	800	0.1	282,640	2.4
Business	63	403,550	3.9	72,200	6.0	475,750	4.0
Utilities	8	51,350	0.5	1,097,000	90.5	1,148,350	9.9
Residence and Vacant (3)		9,418,160	90.3	25,815	2.1	9,443,975	81.2
Totals		10,430,565	100.0	1,212,815	100.0	11,643,380	100.0

(1) Includes gravel operations, greenhouses and livestock.

(2) Real property assessments were increased by more than one million dollars in 1960 and are due for another large increase in 1961 or 1962.

(3) Including 1,852 residences and unenumerated other buildings; also includes truck gardening facilities and certain other farming operations not otherwise classified.

Source: Sudbury League of Women Voters and 1959 Sudbury Annual Town Report.

The portion of the Town's capital wealth represented by the foregoing figures is, although not all inclusive, the most significant from the point of view of the future form of the Town as more than 90 percent of the total represents land and buildings. The ten-year increase of

360 percent can be accepted as modest since the contributing 450 percent increase in land values quite probably represents less than half the market land price increase during this period.

It is certain that the structure indicated in Table No. 6 will have changed considerably by 1961 with the completion of the Raytheon and Sperry Rand plants. An avaluation of the impact of these new constructions was not available at the time this report was completed and will be included in the later Economic Development Report.

B. WAGES

In 1950 family income of Sudbury residents was already considerably (9 percent) above the average for the metropolitan area. When data from the 1960 Census becomes available this spread will be considerably greater based upon our knowledge of the changing character of the average Sudbury family.

The U. S. Census in 1950 presented the following figures relating to Sudbury and the Boston Standard Metropolitan Area.

TABLE NO. 7. INCOMES*OF RESIDENT FAMILIES AND UNRELATED INDIVIDUALS - 1950

	Sudbury	Boston S. M. A.
Incomes under $1,500	20.1	23.8
$1,500 - $2,999	25.3	25.3
$3,000 - $4,499	27.3	25.9
$4,500 - over	27.3	25.0
Median Income	$3,219	$3,042

Source: U. S. Census
*principal wage earner only

In terms of wages paid to a person working in but not necessarily residing in Sudbury and covered by unemployment insurance, the average salary paid during 1958 was $4,157.80 per year to 507 employees in 85 firms having a total payroll of $2,108,000.00. This average annual salary or wage was 390 dollars (over 10 percent) above the state average of $3,768 for similar employees as listed by the Massachusetts Department of Labor and Industries. By 1960 the average annual wage paid to local workers had increased to $4,363.00 paid to 1,867 workers in 88 firms with a total payroll of $8,155,000.00 or a 100 percent increase in only two years in total payroll. The average wages paid in Sudbury were only partially paid to Sudbury residents since so many workers commute to Sudbury for employment and so many Sudbury workers go outside the Town for employment.

Not only is there a trend in the occupations of Sudbury residents to higher salaries, but even the relatively low paying local job opportunities pay considerably higher salaries than the average for the state. High wages have several implications for Sudbury and can provide many potentials. High wages in an area can be the primary reason for the development of commercial and personal services in the community. High wages have implications for community services, such as education and recreation, both public and private. Because of expendable income beyond needs for food, clothing and shelter, high wage families seek good schools, recreation areas, and private services. They also spend more travelling, to work, play or shopping, which has implications for highway requirements.

V. PHYSICAL FACTORS

A. LAND USE CHARACTERISTICS

The following tables, 8 and 9, indicate that the Town is only about 30% developed considering agricultural land to be undeveloped, and that therefore, Sudbury's greatest economic resource is its open land. This raw land on the open market is worth roughly $1,000 an acre for residential development and $2,000 an acre for commercial purposes. Improved land may well be worth two or more times that amount if it has required frontage on an improved road.

TABLE NO. 8. LAND USE BY PERCENTAGE, SUDBURY - AUGUST 1960

Residential	11.0%
Semi-Public	6.2%
Public	10.0%
Streets and Roads	3.1%
Business and Industry	2.0%
Agricultural	21.1%
Vacant	46.6%
	100.0%

Source: Field Survey

It is of interest to note that the tax exempt acreage consisting of public and semi-public lands and roadways compose 19.3 percent of the total land use of the Town whereas the residentially developed lands which appear to dominate the landscape make up only 11 percent of the 1960 acreage.

The area characteristics of the Town, evident on the maps of land use, are:

1. Clusters of development
2. Separated by geographic-topographic features, such as streams and ridges
3. Very irregular flow patterns: streets
4. Scattered public services, mainly schools
5. Large open spaces, permeated by streams, ponds and swamps.

The foregoing figures would seem to indicate that somewhat over two-thirds of the land in Sudbury is available for development. Due to the physical configurations of the landscape, such is not actually the case.

TABLE NO. 9. DEVELOPED, UNDEVELOPABLE AND DEVELOPABLE LANDS, SUDBURY - AUGUST 1960

Developed land	16.0%
Public & Semi-public lands	16.0%
Steep slopes, open water, swamps and flood plain *	20.0%
Developable land	48.0%
	100.0%

* Slopes over 15 percent, permanent swamps over 10 acres and all land below 125 feet above mean sea level.

Sources: Field Survey
U.S.G.S. Quadrangle Sheets
State Land Coverage Survey

It is clear that land is Sudbury's greatest economic asset and potentia The land itself has little absolute value, except for extractive gravel operations. The major land values are those due to site relationships to the metropolitan area, the transportation system, social values, population pressures and the many other economic and political aspec of the metropolis. Thus it is clear that a slight improvement in land has multiplier effects. An improved site is immediately more valuable insofar as the contemplated use has related uses.

This relationship can probably best be understood by considering the recent construction of a Raytheon plant in Sudbury. Not only is that particular site location greatly enhanced but so are all of the retail locations and to a lesser degree other land uses in the Town.

Sudbury in 1960 was about one-half built up. Development is scattere and therefore somewhat expensive to service as compared to compact development but significantly more pleasant and attractive. Prelimin ary concepts as to the best development of the remaining 48 percent

of the development potential is the major challenge of the Master Plan Study and, from a dollars and cents point of view, the Economic Base and Economic Development reports.

B. RECENT BUILDING CONSTRUCTION

The most apparent and significant fact of Sudbury's changing economic base and appearance in recent years has been the erection of many new buildings. Due to their number and dispersement new homes predominate. However, from a dollars and cents analysis each new dollar invested in new residential buildings has been matched by about 40 cents in other buildings, public and private, during the years 1956 to 1959. There is no reason to believe that the pattern has changed in the subsequent years; in fact, the relationship may well have shifted in favor of non-residential building.

If it were assumed that the 1951 building assessment was approximately one-third of market value, the total value of all buildings in the Town at that time would have been $7,050,000. New building construction in the three years, 1957-1959 had an estimated value of $7,557,600 or considerably more than the total value of all buildings in Sudbury in 1951. The need for planning ahead becomes increasingly self-evident.

TABLE NO. 10. ESTIMATED COST OF BUILDING CONSTRUCTION,* SUDBURY - 1956-1959

Year	New Residential	Total
1956	$2,570,270	$2,936,950
1957	1,794,000	2,446,706
1958	1,776,100	2,344,375
1959	3,987,500	6,583,723
Total	$10,127,870	$14,311,754

* Includes all new building construction and major repairs or alterations.

Source: Mass. Dept. of Labor and Industries.

VI. TRANSPORTATION

A. INDUSTRY

Because of mass production, mass markets are necessary. Roads are a measure of the market. Industry must have direct connections with roads, railroads, or air travel facilities in many cases, leading to as wide a market as possible. Industries must be located with convenient access to two systems of transportation: 1) for goods and products, carried by trucks and rail to regional locations mainly; 2) for labor supply and personal or mechanical services, generally moved by car within a localized area.

Sudbury's regional "situs" as shown on an accompanying sketch, Plate 2, is quite advantageous for certain industries as regards the highway network. Sudbury is also quartered by two rail lines and is within twenty minutes of Bedford Airport and forty-five minutes of Logal International Airport. There is one local airstrip in Sudbury and others in adjacent towns for executive planes.

Further industrial advantages are implicit in the location and presenc of an MDC aqueduct, which could supply water-using industrial plants a natural gas line, which could provide cheap fuel to certain types of plants and stable electric power from the Boston Edison sub-station on Route 20.

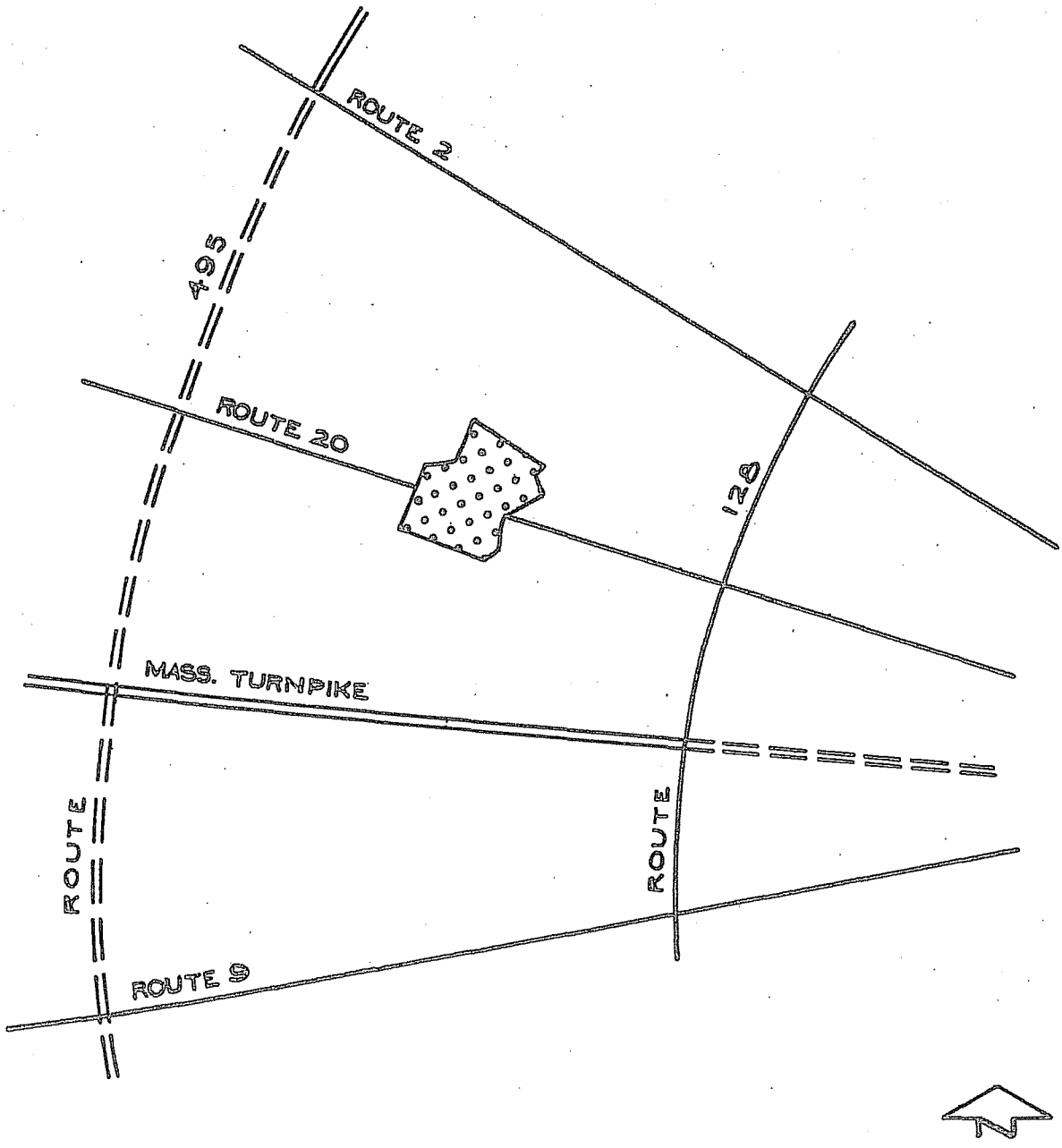
With minor exception, industry in Sudbury is located on or near Route 20 and the B. & M. R. R. in the southern portion of Town. With the completion of Route 495 and the Route 20 by-pass of South Sudbury, the advantage of a Route 20 Industrial Location will be increased.

B. SHOPPING AND COMMUTING

As pointed out earlier, there are more jobholders living in Sudbury than there are jobs available in the Town. In terms of dollars and cents, Sudbury's present greatest source of income might well be the "export" of high salaried labor. In terms of transportation, the bulk of these wage earners who have invested their capital in Sudbury move over a very few highways in their own cars. The better the

ECONOMIC BASE

LOCATION OF SUDBURY IN RELATION TO ARTERIAL HIGHWAYS



condition and location of these highways, the more flexibility will these providers have in searching out the best job opportunities.

The major part of suburban retail shopping is now auto oriented; good highway access is essential to the location of important retailing centers. As Sudbury's highway network improves so will her potential for increasing retail sales. An analysis of the needs and possible improvements will be examined in a separate sub-report entitled Circulation.

VII. RETAILING

Two important types of economic activities are directly linked to the local community and in a sense would continue if Sudbury suddenly became an isolated outpost. These are jobs related to local government and education and retailing jobs involved with local shopping.

Retailing in Sudbury can be visualized as an expansion of the "Country General Store". This is particularly true since Sudbury is surrounded by retailing centers that serve more than local community needs, namely Framingham, Marlboro, Maynard and Concord. This relationship of retailing facilities to local demand is illustrated in Table No. 11.

TABLE NO. 11. RETAIL EMPLOYEES * PER 1,000 POPULATION FOR SELECTED COMMUNITIES IN MASS. - 1957

Town	Employees per 1,000 population
Boston	108
Framingham	81
Maynard	53
Concord	46
Marlboro	30
SUDBURY	27
Northboro	23
Acton	21

* covered by unemployment insurance

Source: Massachusetts Department of Commerce

This table reinforces common knowledge that the top four of the eight municipalities listed serve a population greater than their own and that the other four either serve only local needs or less than local needs.

Selecting at random from the top and the bottom, this is what has happened since World War II in Sudbury and two other towns in terms of population and "covered" retail employees.

TABLE NO. 12. POPULATION GROWTH AND INCREASE IN RETAIL EMPLOYEES FOR SELECTED COMMUNITIES 1945 TO 1960

Year	Acton			Framingham			Sudbury		
	Population	Retail Employees No.*	per 1,000**	Population	Retail Employees No.*	per 1,000**	Population	Retail Employees No.*	per 1,000**
1945	2,870			25,500			2,050		
1947		58	20		1,680	66		58	28
1955	4,680			31,590			3,650		
1957		128	21		3,357	81		165	27
1960	7,150			44,525			7,450		
1959		144	20		3,571	80		198	27

* Covered by unemployment insurance.
** Based on nearest Census figures.

Sources: U.S. Census 1960
State Census 1945 and 1955
Mass. Dept. of Labor and Industries, 1947-'57 and 1959

In the above Table No. 12 all 1947 and 1957 ratios are slightly high due to the population base of an earlier year and all 1959 figures are somewhat low because they are based on a later year's population.

The significant element of this analysis is that while Framingham has been improving its standing as a retailing center, Sudbury has by choice or by accident stood still.

VIII. MUNICIPAL ECONOMICS

From 1945 to 1960, on a country-wide basis, local and state per capita debt has increased by about four times. Particularly in New England, local government expenditures for operation and for financing capital improvements are assuming an increasingly greater share of the economic base.

A. EMPLOYMENT

Local government in Sudbury provides more jobs than any other single category excepting manufacturing. The two school systems employ nearly 200 persons and there are some 25 to 30 other local government jobs bringing the total to about 225 employees. Retailing, the third category, employs only about 200.

B. CAPITAL IMPROVEMENTS

In 1960 the funded debt of Sudbury was over two million dollars. All of this was for long range capital improvements in land and buildings. In addition to this local indebtedness, the Town shares about a million dollar debt on the Lincoln-Sudbury Regional High School.

These are long range additions to Sudbury's total wealth and are appropriately mortgaged over a long period of time. The total investment of over three million dollars in school plant during the past six years makes up about one-eighth of the total capital improvements made in the Town during these years, public and private.

C. ADMINISTRATION

In 1960, two out of every three dollars on the tax rate was allocated to the public schools; of the remaining one-third the majority, excepting payments to finance a new police station and a new highway garage, were expended for general government; public safety, health and welfare; maintenance of public property except schools, and other normal "housekeeping" costs.

Obviously these expenditures for local government services contribute to the economic base of the Town. Included in the value of each and every piece of property in Sudbury is an increment representing services furnished by the Town. Without them Sudbury would not be such a desirable place to live and work and to that extent would be a less significant economic unit.

D. INCOME AND EXPENDITURES

1. Income

In Massachusetts local government services including many which are provided at the state level in other sections of the country are financed principally through property taxes. In recent years, population, property values and taxes have increased rapidly. The following table illustrates this point:

TABLE NO. 13. TRENDS IN POPULATION, ASSESSMENTS AND PROPERTY TAXES, SUDBURY, MASSACHUSETTS

Year	Population	Total Assessments	Per Capita Assessed Value	Total Dollars to be Raised by Local Taxes (in thousands)	Per Capita Annual Tax (in dollars)
1950	2,600	3,190	1,230	187	72
1955	3,650	5,007	1,370	353	97
1960	7,450	15,515	2,080	1,400	188

Source: Annual Town Reports

During the past decade while population increased by 280%, the assessed value of the Town increased by close to five times. The average Sudbury resident of 1960 was worth 850 dollars or 60% more than the average 1950 resident in terms of assessed value per capita. While this hypothetical average resident was increasing his value by 60% his required tax payment increased by 160%. In terms of municipal expenditures one and one-half times as much was spent in 1960 for each resident as was the case in 1950.

Local taxes are closely related to the use of land. In 1959 the various land uses in Sudbury paid the following taxes:

TABLE NO. 14. TAXES BY GENERALIZED LAND USE, SUDBURY - 1959

Generalized Use	No. of Users	Assessed Value	Local Taxes	Percent of Total
Agriculture and Mining(a)	21	$ 292,665	$ 24,707	2.5
Manufacturing(b)	8	282,640	24,024	2.4
Business	63	475,750	39,790	4.0
Utilities	8	1,148,350	97,610	9.9
Residence (c) & Vacant (d)		9,443,975	803,556	81.2
Tax Exempt				
Totals		$11,643,380	$989,687	100.0

(a) Includes gravel pits, greenhouses and livestock.
(b) Does not include Raytheon or Sperry Rand.
(c) Includes 1852 residences.
(d) Includes truck gardening.

Source: Sudbury League of Women Voters and Annual Town Reports

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There are a couple of surprises in this analysis - one is the fact that in terms of taxes paid agricultural and mining was more important than manufacturing in 1959 (note that some agriculture is hidden within "vacant" land) and the second that utilities, primarily Boston Edison, pay more taxes than agriculture, mining, manufacturing and business combined. Public and semi-public investment amounting to almost one-third of the total is unusually high but not inhibiting upon the economic health of the Town considering the amount of vacant developable land.

Since about three quarters of the total 1959 taxes of the Town were paid by residential users, it is relatively clear that Sudbury should expend its greatest effort upon maintaining and improving the quality of its housing and related facilities.

In 1950 fifty seven percent of total public funds expended through the municipal government was raised by local taxation. By 1960 the digits had been reversed and local taxation was required to raise seventy-five percent of appropriated funds. More and more of the costs of government have been falling on the property owner and proportionately less on the wage earner and consumer as economic entities.

TABLE NO. 15. LOCAL TAXATION AS A PROPORTION OF TOTAL PUBLIC EXPENDITURES, SUDBURY - 1950-1960

Year	Gross Amount* to be Raised (in thousands of $'s)	Net Amount to be Raised Locally (in thousands of $'s)	Net as Percent of Gross	
1950	328	187	57	
1951	355	221	62	
1952	379	206	54	average 57
1953	421	248	59	
1954	502	277	55	
1955	536	353	66	
1956	719	452	63	
1957	944	671	71	average 68
1958	1,112	787	71	
1959	1,452	993	68	
1960	1,868	1,400	75	

Source: Annual Town Reports

* Includes: State, County and Federal Grants in Aid, State Collected Taxes, Motor Vehicle and Poll Taxes, Local Taxes.

As the preceding Table No. 15 indicates, gross revenue from all resources increased by 5.7 times during the decade; revenue raised by local taxation increased 7.5 times. The former figure is about double the rate of population increase and the latter almost three times the population increase.

2. Expenditures

As indicated earlier, the greater part of the increase in local municipal expenditures has been due to increasing public education costs. This pattern has been particularly pronounced during the seven-year period 1954-1960 as indicated in the following table:

TABLE NO. 16. PROPORTION OF TAX RATE EXPENDED FOR PUBLIC EDUCATION, SUDBURY - 1954-1960

Year	Tax Rate		Total	Amount of Annual Expenditure Represented by Each Dollar on the Tax Rate
	Municipal Services	Education		
1954	39	31	70	$4,300
1955	33	28	61	5,000
1956	40	40	80	6,250
1957	24	40	64	8,200
1958	27	49	76	9,925
1959	29	56	85	11,640
1960	30	60	90	15,515

Source: Annual Town Reports

Whereas in 1954, four follars were spent for general municipal services for each three dollars spent for education, in 1960 two dollars were spent on education for each one dollar for other municipal services. This change is due to the trend to larger families, higher standards of education, general population growth and the failure in Massachusetts to expand state school aid to municipalities proportionately to the rate of increase in the cost of public school education.

TABLE NO. 17. PROPERTY TAXES PER CAPITA IN SELECTED COMMUNITIES WITHIN THE GREATER BOSTON AREA - 1949-1970

Community	1949 - 1950 in dollars	1958 - 1960 in dollars	1970 projected
SUDBURY	72	188	214
Ashland	59	89	129
Bedford	35	91	152
Braintree	63	127	171
Concord	76	154	215
Dedham	68	116	172
Dover	76	121	172
Framingham	68	112	173
Lexington	76	157	219
Lincoln	79	117	213
Medfield	37	81	139
Natick	57	135	174
Needham	86	158	204
Wayland	79	120	194
Weston	107	156	212
Wilmington	53	112	165
Average: 64 Cities and Towns	70	127	189

Source: Greater Boston Economic Study Committee and Annual Town Reports

The increase in the tax rate from $70 on a thousand dollars of assessed valuation to $90 in a period of seven years is closely correlated to the decrease of other than local taxes from 43 percent of gross local expenditures to 25 percent during this time period.

3. Comparison to Other Massachusetts Communities

Sudbury as a community striving to better itself both in terms of broadening its economic base and in providing better municipal services, should be aware that excessive expenditures for the latter will tend to reduce the probability of the former and without a good economic base the long range possibility of providing the best municipal services becomes increasingly unlikely.

Despite the legal requirement that property be assessed annually at its market value, as a practical matter each Massachusetts town is free to select its own criteria for determining assessed valuation and considerable variation exists throughout the Commonwealth as to the relationship of assessed valuation to market values. Therefore, a comparison of per capita property taxes is a more accurate method of determining fiscal relationships among communities than is the average valuation per capita.

In 1960 the Greater Boston Economic Study Committee prepared such a study for 64 cities and towns near Boston. The total property taxes were ascertained for the years 1949 and 1958 and their various populations were interpolated from the 1950 and 1960 U. S. Census figures. By dividing the population into the total property taxes the per capita property tax was determined. At the same time the researchers requested the responsible department heads in the various towns to estimate expenditures from 1960 to 1970. These figures as presented were tabulated by the Committee's projected 1970 populations for these towns, giving a projected per capita property tax for 1970 assuming similar state and federal aid ten years hence. In the following table the Sudbury figures are based upon the same procedure, using actual 1950 and 1960 population figures.

TABLE NO. 18 - TAX RATE ANALYSIS FOR SELECTED MASSACHUSETTS TOWNS 1960

Town	Actual Tax Rate*	Equalized Tax Rate*	Per Cap. Tax*
Concord	$ 98.60	$ 32.70	$ 205.00
Wayland	86.00	32.50	208.00
SUDBURY	85.00	36.90	220.00
Stoneham	79.00	27.70	137.00
Danvers	69.60	23.80	109.00
Winchester	68.40	26.70	188.00
Walpole	67.00	27.60	153.00
Reading	65.00	27.10	132.00
Weston	63.00	22.80	224.00
Needham	61.70	24.80	190.00
Wellesley	60.00	20.20	175.00
Bedford	57.00	25.60	124.00
Wakefield	49.00	24.20	126.00
Average (13 Towns)	67.56	26.66	165.50
Sudbury Rank	3	1	2

*Mass. Fed. of Taxpayers Assoc. (based on U.S. 1960 Census)

Note: Adapted from data research by Charles M. Evans & Associates

In 1950 seven of the fifteen other towns included in Table No. 17 paid higher per capita property taxes. Sudbury then was about in the middle of these fifteen. In 1960 Sudbury was well ahead of any of the other towns listed.

Table 18 presents related data for 1961 as prepared by the Massachusetts Federation of Taxpayers Associations. The per capita tax in this table is based on 1960 population figures and 1961 tax figures. Any discrepancy due to this one year differential is generally similar for all towns in the table. The significant fact, however, is that the equalized tax rate, the property tax, and the per capita tax in Sudbury is higher than any of several similar towns with the possible exception of Weston where the valuation per person is apparently much higher. In fact for resort communities Sudbury's 1961 per capita tax was second only to Weston with Boston a close third at $212 per capita.

E. SUMMARY

This report briefly considers local municipal economics, scanning the highlights rather than probing in detail which is more properly the exercise of a special study. This general topic will be touched upon frequently in other sections of the Master Plan Report, particularly those dealing with Community Facilities and the Capital Budget.

This section points out that local government including public education, is the second largest economic activity of the Town in terms of employment. In terms of construction, public buildings and other improvements have raised the total activity in this area by over twenty percent during the past five years.

Whereas in the past decade the assessed value of each man, woman and child living in Sudbury has increased by 60%, local taxes per capita have increased by 260 percent.

In 1954 forty-four percent of total town taxes were allocated to schools, six years later in 1960, sixty-six percent was so allocated, the proportion will probably go still higher in the next few years.

Expenditures for some other essential Town services, such as road maintenance, have meanwhile lagged dangerously far behind. Since expenditures must go on, a broader tax base should be sought out and a greater effort expended in the preparation of the Municipal Budget. These factors will be dealt with in part in the Capital Budget and Economic Development portions of the Master Plan Study.

GENERALIZED HOUSING CONDITIONS

I. INTRODUCTION

The "housing problem", one of the greatest domestic problems America faces today, seems far removed from Sudbury. Here there are no 'ghettos', or 'slum lords'.

Almost three quarters of the housing in Sudbury is "post-war" or less than fifteen years old. Ninety-eight percent of its housing consists of single family detached dwellings and ninety-three percent is owner-occupied. The average dwelling unit in Sudbury has six rooms for three and eight tenths persons, providing approximately one and one-half rooms per person.

The town of Lincoln is generally accepted as one of the most desirable residential towns in the Boston area. Table No. 1 compares housing characteristics of Sudbury and Lincoln in March of 1960. In terms of the housing stock, Sudbury has a higher percentage of: single family units, and units built since 1950. The average house in Sudbury is also larger. In terms of occupancy, Sudbury has, 30 percent more owner occupied units, and a better persons to rooms ratio. Only in the factor of overcrowding, 1.01 or more persons per room, does Lincoln's housing rate higher than Sudbury.

The overcrowding factor found by the census in 128 homes in Sudbury is a full 35 percent higher than the average room occupancy as indicated in Table No. 2. If it is assumed that normally two adults will use the same bedroom, the average child in Sudbury has a bedroom to itself, regardless of age. It would appear very difficult to establish a higher housing standard than this.

TABLE NO. 1 - CHARACTERISTICS OF HOUSING AND OCCUPANCY IN SUDBURY AND LINCOLN, MASSACHUSETTS - March 1960

	Number		Percent	
A. Housing	Sudbury	Lincoln	Sudbury	Lincoln
Total Dwelling Units	2,054	1,466	100	100
Single Family Units	2,014	1,429	98	97
Two or more Family Units	40	37	2	3
Units built 3/50 to 3/60	1,286	844	63	58
Median Number of Rooms	6.1	6.0	-	-
B. Occupancy				
Occupied Dwelling Units	1,915	1,427	100	100
Owner Occupied Units	1,775	907	93	64
Rentor Occupied Units	136	504	7	36
1.01 or more Persons per Room	128	92	6.7	6.5
Median Persons per Unit	3.8	3.9	-	-

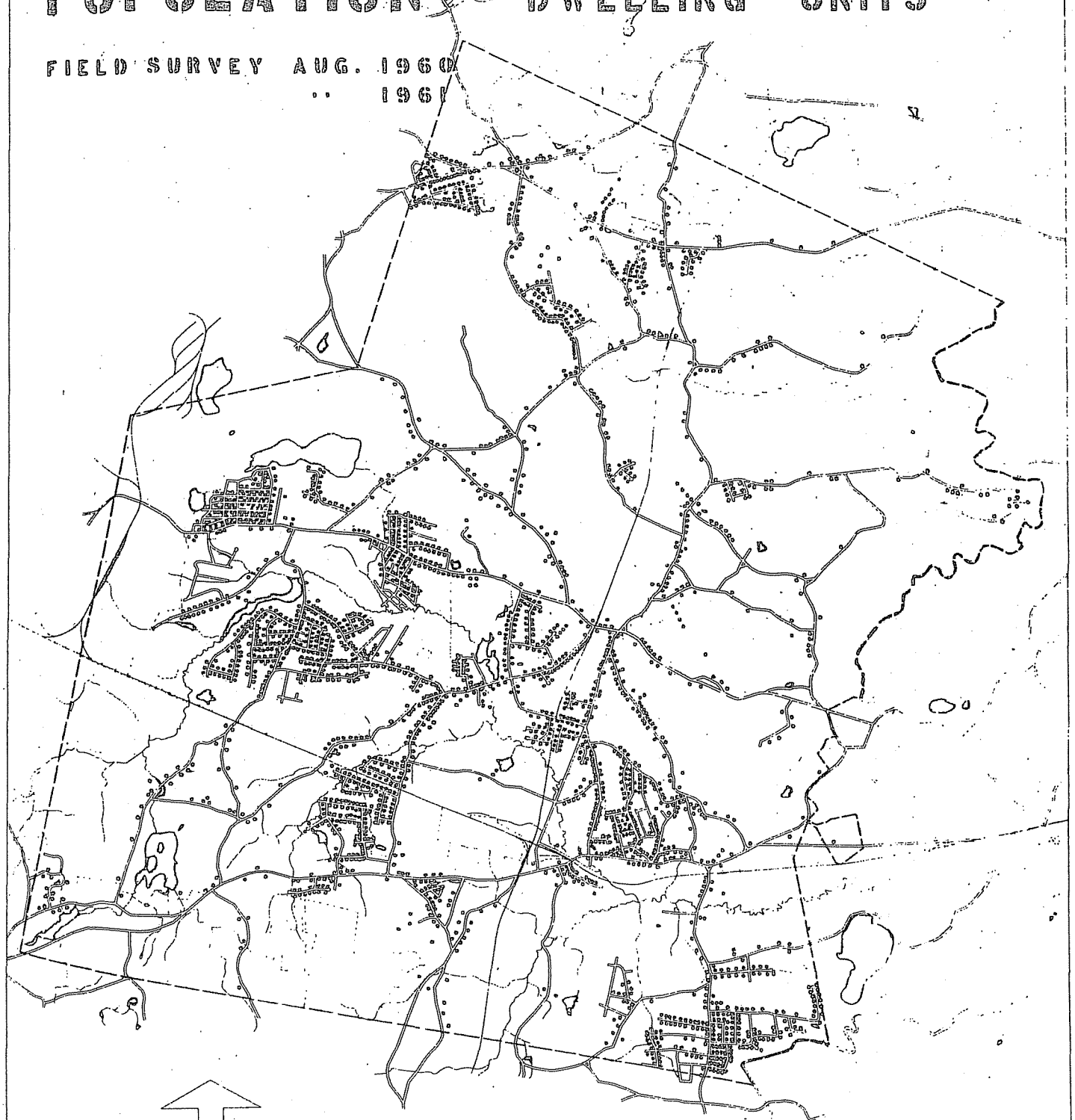
Source: Unpublished* U.S. Census Data 1960

*Data to be released May 1962

PLATE I

POPULATION — DWELLING UNITS

FIELD SURVEY AUG. 1960
" 1961



BASED ON U.S.G.S. SHEETS
AND TOWN SUBDIVISION PLANS

CHARLES E. DOWNE
PLANNING CONSULTANT

PLANNING BOARD SUDBURY, MASSACHUSETTS

PLATE 2

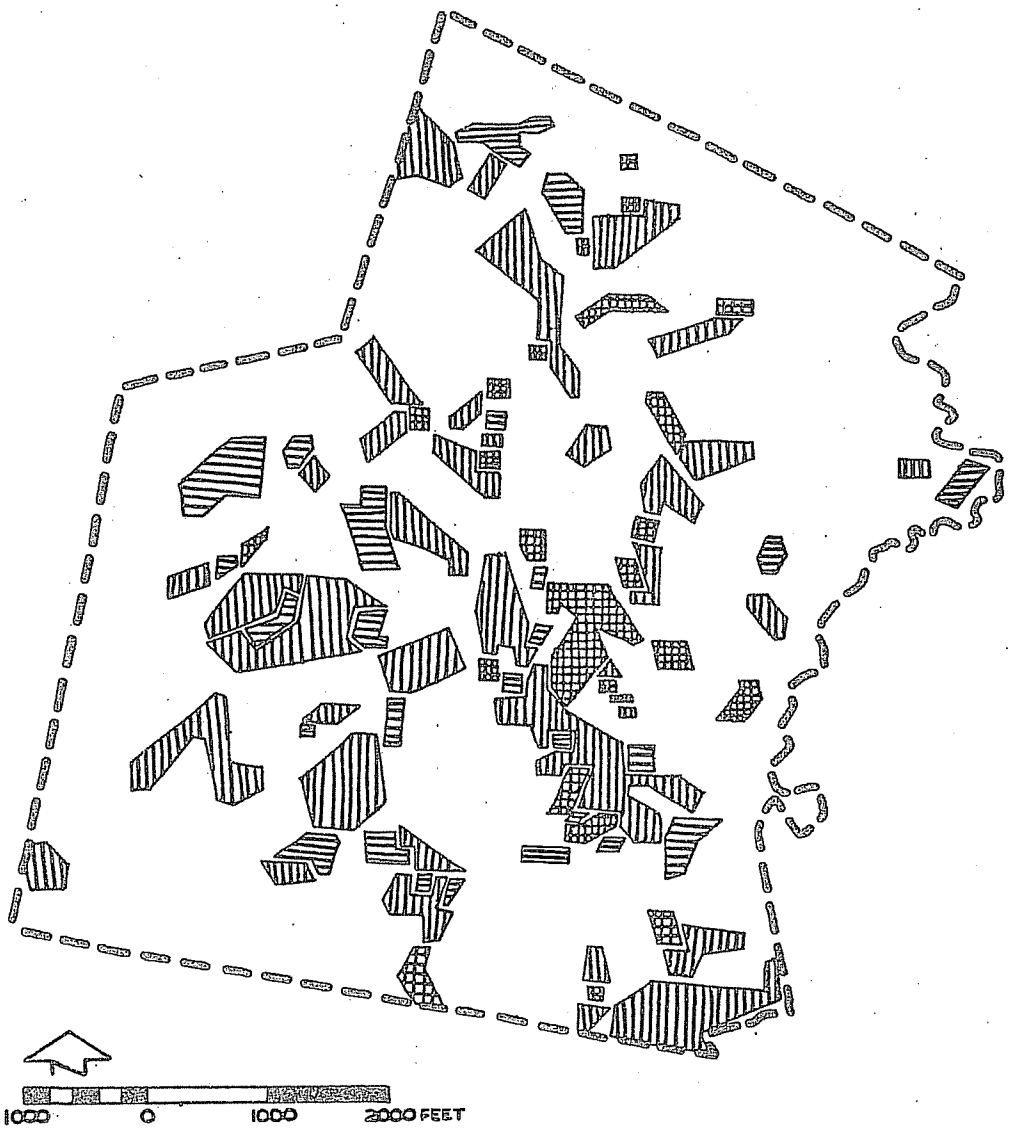
AGE OF RESIDENTIAL STRUCTURES

Before 1900

1900 - 1940

1940 - 1960

(from field observation - Summer, 1960)



SUDBURY PLANNING BOARD

CHARLES E. DOWNE, PLANNING CONSULTANT

TABLE NO. 2 - OCCUPANCY OF DWELLING UNITS BY SIZE - 1961

No. of Rooms*	No. of Bedrooms	Percent of Sample	Average Family Size	Average No. of Adults	Average No. of Children	Persons per Room
9	6	0.7	5.7	2.0	3.7	0.63
8	5	3.1	5.2	2.1	3.1	0.65
7	4	22.6	4.9	1.8	2.1	0.70
6	3	58.7	3.8	2.0	1.6	0.63
5	2	14.9	2.9	1.9	1.0	0.58
Average 7	4	100.0	3.8	2.0	1.8	0.65

*Estimate based upon number of bedrooms

Source: Sudbury League of Women Voters Survey
(Sample 448 Dwelling Units)

In view of the above, an appraisal of the condition of housing in Sudbury must be based on a higher standard than that which might apply to a less fortunate community from the housing point of view. Housing standards are always comparative; what is considered poor housing in our southern states might be considered quite good in Indonesia, - what might be considered "pretty good" in East Boston would be considered "pretty bad" in Wellesley.

The analysis expressed by this report is not an analysis of the individual home as to the building and its equipment. It is a generalized overall review, intended to point out objectively where poor housing conditions exist, and to indicate the magnitude of any housing problem.

II. ANALYSIS

In this appraisal, evolved during several days of field survey work, a number of criteria was established upon which observations were made:

(1). Age of structure
(2). Condition of structure
(3). Quality of maintenance
(4). General condition of neighborhood

In this survey Sudbury was divided arbitrarily into a grid of 498 units about half of which contained some housing. Each square or analysis unit with housing contained between 5 and 20 residential structures depending on density.

Plate No. 1 indicates the location of each dwelling unit in Sudbury which was examined in the survey and this gives an accurate picture of Sudbury's residential development. Plate No. 2 indicates the location of dwelling units by age providing a dynamic picture of Sudbury's pattern of development. Table No. 3 summarizes the results of this part of the survey. From this and the 1960 census data it is clear that Sudbury is unusually well equipped with relatively new housing.

TABLE NO. 3 - AGE OF RESIDENTIAL STRUCTURES BY PERCENT, SUDBURY, MASS., 1960

Year Built	Percent of Total
Before 1900	9
From 1900 to 1940	19
From 1940 to 1960	72
Total	100*

*Approx. 2100 Dwelling Units

Source: Field Survey

PLATE 3

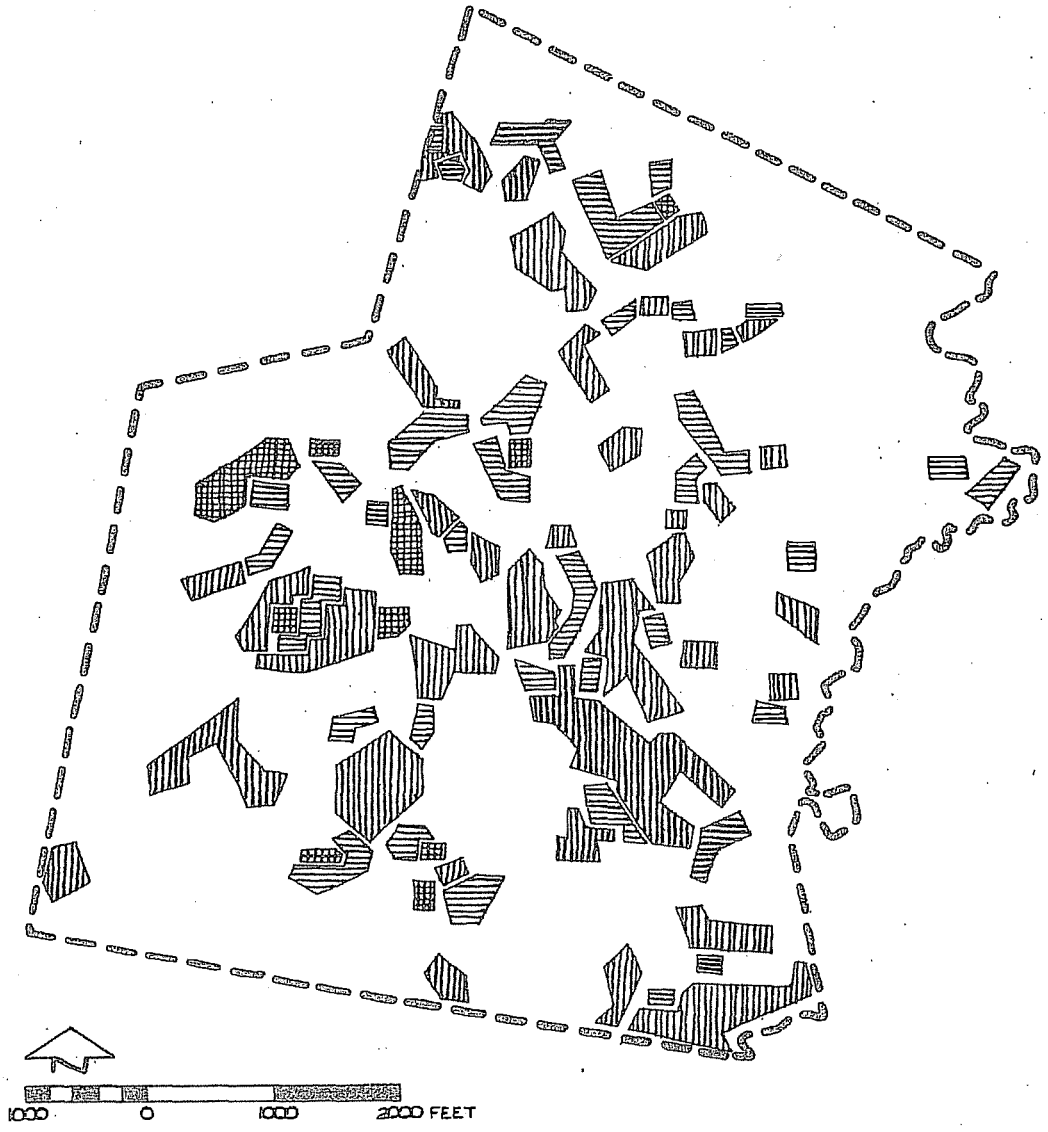
GENERALIZED HOUSING CONDITIONS

Excellent

Fair

Poor

(from field observation - Summer, 1960)



SUDBURY PLANNING BOARD

CHARLES E. DOWNE, PLANNING CONSULTANT

The analysis of the condition of housing as presented here is a combination of criteria 2, 3 and 4 above. The homes in each analysis unit were rated as a group, each group receiving a rating in accordance with the prevailing conditions of a majority of the houses in the group. A group of houses to be rated poor had to be rated poor in at least two criteria. A group of houses to be rated fair had at least two criteria with evuations less than excellent but not more than one rated poor. A group of houses to be rated excellent were so evaluated because they were excellent in at least two criteria.

Table No. 4 summarizes the results of this phase of the survey. There is also a summary on Plate No. 3 indicating generally those areas in the three selected categories. The individual house is not pin-pointed nor are the structural or maintenance deficiencies expressed by individual or separate structures. However, the areas in the poor category do stand out and could be considered sub-standard or blighted, although they may be either deteriorating or improving these conditions over a period of time.

TABLE NO. 4 - GENERALIZED HOUSING CONDITIONS BY PERCENT, SUDBURY, MASS., 1960

Condition	Percent of Total
Excellent	77
Fair	15
Poor	8
Total	100*

*Approx. 2100 Dwelling Units

Source: Field Survey

The following facts were brought out by this survey:

(1). The bulk of Sudbury's housing, over seventy-five (75) percent, is well-built and properly cared for, both building and grounds, in adequately-maintained neighborhoods.

(2). One out of twelve of the residential structures is classified in a poor category meaning that at least two of the above criteria are present.

(3). The remaining fifteen (15) percent of the housing in Sudbury, being neither excellent or poor, can be identified as either in a process of deterioration or rehabiliation.

Comparing the accompanying Plates 2 and 3 of age of structures and condition of structures, it is evident that the majority of poor housing conditions exists in that portion of the housing stock built between 1900 and 1940. It would seem from appearances that much of this poor housing was built during the 1920's as 'seasonal or holiday homes' that have since been converted to year-round use.

The portion of the housing stock built before 1900 appears to be in unusually fine condition particularly as applies to maintenance of buildings, grounds and neighborhood.

It is discouraging to note that considerable areas of housing built since World War II have already declined to a 'fair' rating. This was generally due to lack of adequate maintenance by the home owners and the community rather than to observable structural deficiencies.

III. SUMMARY AND CONCLUSIONS

Contrary to popular belief and general knowledge, Sudbury does have a housing problem. About one-twelfth of the total housing stock is in a 'blighted' condition (far below the high average housing condition in Sudbury), which calls for prompt remedial action. Although some spontaneous rehabilitation is taking place, the rate and type of such activity does not appear to be sufficient to remedy the problem within the foreseeable future. It would be desirable for the town to initiate action towards the improvement of the poor housing conditions existent not only for the health and well being of the individual families involved but also to imporve the general socio-economic character of the community at large.

Several courses of action are open to the town in this regard, some are listed below, no one of which will be sufficient nor will all be necessary. Other courses of action not listed may well be equally appropriate.

(1) Carry out a detailed analysis of housing conditions as an extension of this generalized analysis.

(2) Institute and enforce a Housing Code to establish standards for the existing housing stock much as the present Building Code influences new construction.

(3) Establish a Renewal Authority to assume responsibility for the rehabilitation of the worst areas in town.

(4) The preparation and adoption of a town-wide housing maintenance and rehabilitation program, to coordinate private and public efforts towards community residential improvement, with particular emphasis to be placed on upgrading poor housing areas through private home improvements and through provision of adequate public facilities such as playgrounds, proper drainage, sidewalks, street paving and other town services.

(5) The establishment and publishing of a list of all home improvements which would be allowed by the assessor's without increasing home valuation.

AREAS OF INFLUENCE

I. INTRODUCTION

Today, the boundaries of New England cities and towns in urban areas often define little more than a political, and in some senses, a social subsection of a larger urban community. This situation has arisen because at the time of incorporation, some one or three hundred years ago, they were almost completely self-sufficient. Changes in industrial production methods, and particularly changes in methods of transportation, have vastly altered this independent town character. While most towns continue, in varying degrees, to exhibit a few characteristics of a self-sufficient community, urbanization has produced a specialization of town activities. Some towns have become commercial or industrial centers while others, like Sudbury, have become primarily residential suburbs.

Several sections of this Master Plan Report contain references to geographical areas outside the Town of Sudbury. These attest to the fact that Sudbury is not an independent unit. The Economic Base Report, for instance, indicates that economic life of Sudbury is largely dependent on an area far wider than that encompassed by the Town. In the same way transportation routes, utility lines and drainage areas - all important to Sudbury's development - affect and are influenced by an area beyond the limits of the Town.

II. AREAS OF INFLUENCE

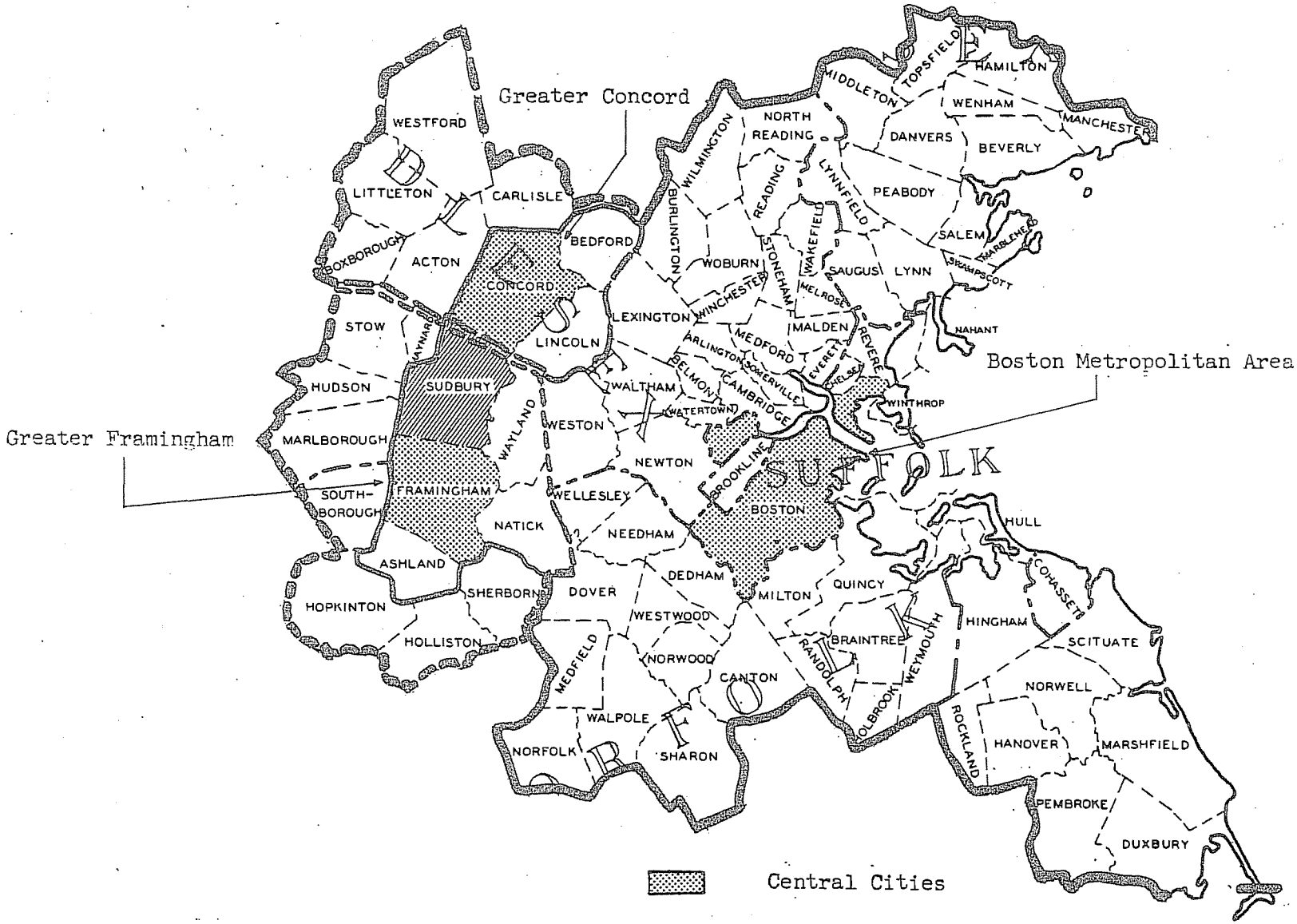
In our modern civilization areas of influence can be region-wide, nation-wide, world-wide. The scope of this report, however, has been narrowed to those areas easily identifiable with Sudbury. Before discussing these areas, it should be mentioned that Sudbury is in the New England part of the Atlantic Urban Region which is now an urban complex stretching from Newport News, Virginia, to Portsmouth, New Hampshire, and that Sudbury's well-being is largely dependent upon the economic well-being of this region as well as that of New England and the Commonwealth of Massachusetts.

The major geographic areas of influence for Sudbury are:

Boston Standard Metropolitan Area (U. S. Census)
Concord Sub-Region (Greater Boston Economic Study Committee)
Framingham Sub-Region (Greater Boston Economic Study Committee and Division of Planning, Massachusetts Department of Commerce)
The immediately surrounding towns.

PLATE 1

AREAS OF INFLUENCE



1. Boston Standard Metropolitan Area

Sudbury is located at the western boundary of the Boston S.M.A. and as a part of the Greater Boston area is significantly oriented toward Boston. This is because the city is the financial, cultural and governmental center of the Metropolitan Area and Massachusetts. It is also the major sea and air port in the area. Only Boston, as the core city, can draw on a population wide enough to provide the specialized services unavailable elsewhere. Thus, some Sudbury residents work in Boston and most seek goods, services or entertainment there from time to time.

2. Concord Sub-Region

The Town of Concord, the core of this Sub-Region, is directly adjacent to Sudbury. Industrial and commercial growth in this area has been extremely rapid and has undoubtedly stimulated population growth in Sudbury. Concord, itself, has regional shopping facilities used by the residents of Sudbury.

3. Framingham Sub-Region

Both the Division of Planning of the Massachusetts Department of Commerce and the Greater Boston Economic Study Committee have included Sudbury in the Framingham Sub-Region. Sudbury is adjacent to Framingham as well as Concord and appears to be more closely oriented toward Framingham which is a major urban sub-center within the Greater Boston Area. The Framingham Sub-Region is the fastest growing part of Greater Boston, with Sudbury doing its share to produce this result. Framingham has developed as an important industrial and commercial focal point which draws its employees and consumers from most of the surrounding communities including Sudbury.

4. The Immediately Surrounding Towns

The towns included in this category are Maynard, Stow, Hudson, Marlborough, Framingham, Wayland, Lincoln, Concord and Acton. The relationship of these towns to Sudbury varies considerably. Zoning regulations and land use, in those towns with a large amount of land on Sudbury's boundaries, have important influences on the Town. In addition, Sudbury shares drainage areas with some, uses recreational facilities of others and operates a regional high school with Lincoln among other activities. These items emphasize the day-to-day relationships that exist between Sudbury and abutting towns.

III. FACTORS OF AREA-WIDE IMPORTANCE

The following discussion provides, in part, a picture of the number and kind of forces that influence Sudbury. They stand as excellent examples the way in which a Town is influenced by, and can influence, other areas. Many local problems and facilities are, in reality, area-wide problems and facilities, and must be considered as such in spite of political boundaries.

1. Open Space

Concern with the Sudbury River and its adjacent marshes and uplands provides an example of the importance of Town policies as related to a whole region. This land is of interest to many conservation-oriented regional groups.

The marshes and adjacent upland form part of the Bay Circuit which, if retained, will be an arc-like green-belt around Greater Boston. This land is part of the Sudbury- Assabet - Concord Watershed and as such has been included in the studies made by the Sudbury Valley Commission, a State-sponsored organization. Part of this land is owned by a private conservation group, the Sudbury Valley Trustees, Inc., of Wayland. Furthermore, part of it may be bought or leased by the Federal Government to be preserved as a National Wildlife Refuge.

Sudbury Residents, in turn, are interested in recreation and conservation in other towns. The "Great Ponds" in Hudson, Stow, Wayland and Concord, for example, are available to Sudbury residents, as are the golf courses in Wayland, Concord and Maynard.

2. Transportation

Sudbury is an auto-oriented community, making streets and highways of particular importance to the Town. Two railroad lines run through Sudbury, but they carry a minimum amount of traffic. Two major highways go through Sudbury. Route 20 connects Sudbury to Boston and the western part of Massachusetts; Route 27 comes from northern Massachusetts through Maynard and Sudbury to Wayland. Sudbury is about equidistant from Routes 9, 128, 2, the Massachusetts Turnpike, and proposed Route 495. This suggests that the town might be considered a rather poor location since most towns in the area are closer to at least one of these major highways.

Easy access to surrounding areas is important because most working residents commute to jobs in other communities. Residents also go elsewhere for shopping and entertainment needs.

3. Zoning and Land Use

At present few problems have arisen because of incompatible zoning or land uses in adjacent towns. Sudbury is protected with a buffer provided by the large amount of public and semi-public land in the Town. On the unprotected east and north boundaries current zoning in abutting areas is mostly for large lots which produce no problems for Sudbury. The adjacent industrial zones in Wayland, Maynard, Acton, and Concord integrate well with Sudbury's industrial zones, existing and proposed.

IV. SUMMARY

Sudbury is located between the centers of the two fastest growing sub-regions of Greater Boston. The Framingham Sub-Region has experienced the fastest rate of population growth in Greater Boston and the Concord Sub-Region has experienced the fastest rate of commercial and industrial growth. Being sandwiched between two very volatile areas has had its affect on Sudbury and the Town has grown rapidly in recent years.

In spite of its proximity to the above areas, Sudbury may see its future growth slow down. Much of the best flat developable land in the Town has been used up. Furthermore, a good percentage of the Town's land is reserved for public and semi-public open uses. In terms of convenient access to other areas, Sudbury's location is less desirable than other Towns because of its distance from all major rubber transportation routes, although this factor may also be considered an asset in keeping the Town just "off the beaten track" and thereby preserving certain rural amenities. All these factors may protect the Town from the rapid development which has already been extremely costly.

Sudbury may be able to escape some of the expected influences of surrounding areas. Nonetheless, it is clear that in making its plans and programs for the future, the Town must always be aware of the wider community of which it is a part.

M A S T E R P L A N S T U D Y

COMMUNITY FACILITIES

Planning Board

S U D B U R Y, M A S S A C H U S E T T S

January 1962

Charles E. Downe, Planning Consultant

I. INTRODUCTION

The core of the Town or Master Plan is the plan for its Community Facilities. In providing such facilities a community takes positive action to determine its future character. The portions of a Master Plan that deal with development through private funds and actions, such as recommended zoning requirements and subdivision regulations are in essence directive actions in that they tell others what they may or may not do. In the area of Community Facilities the town takes positive action in deciding actual locations of facilities, the type of facilities, their architectural style, their quality and quantity and their integration one with another. It is true that the Town also takes positive action in the area of utilities - it builds water and sewer lines - but these conduits are not as character-giving as the construction of buildings and the improving of sites dealt with in this sub-report.

For the purposes of this report, "Community Facilities" has been interpreted to include only municipal facilities, and the resultant Plan, therefore, is a plan for official Town Action. Other agencies, public, semi-public, and private provide community facilities, such as churches, hospitals, post offices and educational institutions.

Such facilities are touched upon frequently during the report but are not specifically analyzed nor are recommendations made concerning them.

The report has been divided into three major sections; Schools, recreation-Conservation, and Miscellaneous Community Facilities. It is intended that each of these sections should be given generally equal weight. Due to the tremendous pressure caused by burgeoning school enrollments, the School section has been carried out in somewhat more detail than the others. This should in no way be interpreted as indicative that the subjects of the other sections are not as important.

The recommendations of this sub-report are closely linked to the Future Land Use Plan as submitted in another sub-report. As such, it would serve most efficiently an ultimate population of between twenty-five and thirty thousand persons. Any major modifications in the land use pattern would affect the size of the proposed facilities rather than their locations, with the exception of facilities such as "neighborhood play-parks". The proposals are based upon a concensus of opinion that Sudbury will continue to be primarily an "above-average" residential community.

The Community Facilities Plan will be carried out to a substantial degree through projects in the Capital Budget wherein the fiscal programming of the first phases of the Plan will be outlined.

II. SUMMARY AND CONCLUSIONS

The general impression of Community Facilities in Sudbury is one of considerable activity, expenditure, and citizen interest on several fronts. A new school is in construction and another is in an advanced planning stage; several playground areas are being acquired and others are being improved; a new fire station is in construction and a police station has just been completed; a comprehensive expansion of the library system is under study and progress is being made towards a town museum; even new cemetery land has been recently acquired and improved.

It would not be far from the truth to say that this activity is a "race" to catch up with the exploding population. A comprehensive analysis, plan and program could not have been commissioned at a more appropriate time.

No criticism is made of the existing plans and programs as formulated and carried out by the several non-salaried Boards, Commissions and Committees of the Town concerned with Community Facilities. Certainly accolades are due their tremendous gratuitous efforts.

The general distribution and execution of Sudbury's Community Facilities establish a high standard both in scope and in maintenance. Where shortcomings exist, they are recognized by the responsible agencies. The continuation of the presently established high standards will continue to contribute to a better community.

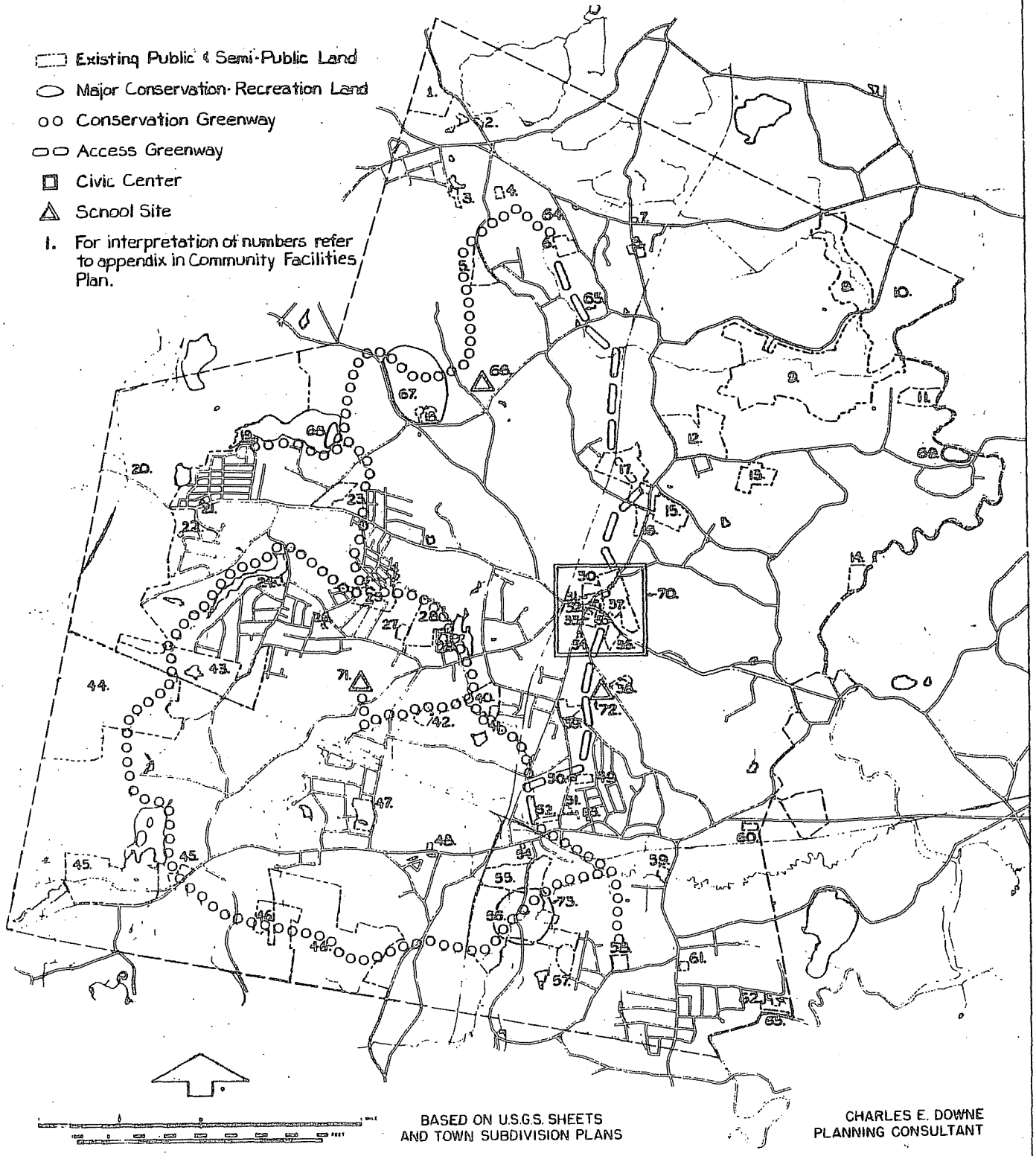
The scope of the planning process has made it possible to recommend the Community Facilities Plan presented here. Existing facilities and the plans and programs of various Town agencies form the basis of the plan. These have been added to and modified to produce an integrated proposal.

The main function of this report should be one of bringing the plans and programs of various agencies into focus and to "mosaic" them into one Comprehensive Plan. The challenge of the Plan is the metamorphosis of Sudbury from a rural to an urban community. The goal is to attain the best of both worlds.

PLATE I

COMMUNITY FACILITIES

COMPREHENSIVE COMMUNITY FACILITIES PLAN



PLANNING BOARD SUDBURY, MASSACHUSETTS

APPENDIX NO. 1 - KEY TO COMPREHENSIVE COMMUNITY FACILITIES PLAN

Existing

1. Maynard Rod & Gun Club
2. Town Dump (leased)
3. Town & Country Park
4. Tim Jones' Lot -
5. Maria S. S. Indulgence
6. Josaih Haynes Elementary School
7. North Fire Station
8. Old North Cemetery
9. State Wildlife Preserve
10. Nashawtuc Country Club
11. Camp Site
12. Lincoln-Sudbury Regional High School
13. Sudbury Valley Trustees
14. Sudbury Valley Trustees
15. Gen. John Nixon Elementary School
16. St. Elizabeth's Church
17. Featherland Park
18. Water Tower
19. Town Beach
20. U. S. Military Reservation
21. Pine Lakes Triangle
22. Neelon Playground
23. Fairbank Elementary School
24. Barton Pool
25. Water District
26. Halper Playground
27. Boy Scouts - Algonquin Council
28. Sudbury Junior High School
29. Sherman Tax Title
30. Mt. Pleasant Cemetery
31. First Parish Church
32. Town Common
33. Hosmer House
34. Town Park
35. Town Hall
36. Methodist Church
37. Centre School
38. Water Tower
39. Our Lady of Fatima Church
40. Highway Department
41. Water District
42. Vassalotti Pools
43. Sudbury Rod & Gun Club
44. Fed. Women's Clubs Memorial Forest
45. Wayside Inn Corporation
46. Boy Scouts - Norumbega Council
47. Horse Pond Road Elementary School
48. South Fire Station

APPENDIX NO. 1 - (Continued)

49. Mt. Wadsworth Cemetery
50. Town Land
51. Memorial Congregational Church
52. Gordon Memorial Library & Park
53. South School
54. Police Department
55. Water District
56. Town Land - Formerly Raymond Property
57. Water District
58. Israel Loring School
59. Sudbury Valley Trustees
60. State Department of Public Works
61. Church (in construction)
62. Sudbury Valley Trustees
63. Town Land

Proposed

64. Conservation Greenway - 64
65. Access Greenway - 65
66. Elementary School Site "C" - 66
67. Willis Hill Community Conservation Park - 67
68. Willis Pond Boating Area - 68
69. Sudbury River Boating Area - 69
70. Civic Center (including) - 70

    a. Town Hall
    b. Town Museum
    c. Centre Fire Station
    d. Town Office Building
    e. Centre School
    f. Churches
    g. Medical & Dental Clinic
    h. Cemeteries
    i. Central Library
    j. Playground
    k. Park
    l. Grange

71. Elementary School Site "B"
72. Elementary School Site "A"
73. Raymond Community Conservation Park

III. SCHOOLS

A. HISTORY

In 1948 the Sudbury educational facilities included the White building at the Center, functioning as a High School, and several small two or four room precinct schools. At that time, the 1970 school building program called for a three wing central school to house Elementary, Junior High, and High school programs, each within its own wing. Under this program one wing was completed in 1950. This was intended as the elementary wing.

In 1953, five years after the first 1970 program was prepared and when the second wing called for by that program was to be built, it was recognized that the 1948 program was impractical and a new plan was needed. The plan and program that was developed in 1953 called for five elementary schools, one central junior high school, and one regional high school.

The need for five elementary (1-6) schools was determined by the following calculation:

Ultimate Town population	30,000
Enrollment Grades 1 thru 6 (10%) *	3,000
Pupils per classroom	30
Total classrooms needed	100
Classrooms per school	20
Number of schools needed	5

A program was initiated to secure five sites and to build five 14-room schools that could be later expanded to 20 rooms apiece. No program was established for future junior high facilities although the center site was considered adequate.

In 1953, the Town of Lincoln was told by both Weston and Concord that its high school pupils could no longer be absorbed in their schools. With the realization that the 1948 three wing plan for Sudbury was unworkable and that Lincoln students needed high school facilities, Lincoln-Sudbury Regional High School was born.

In our democratic society the effectuation of a plan is usually slow. The 1953 Sudbury School plan was no exception. The Regional High, with impetus generated by Lincoln, was opened in 1956, but the first elementary school, which was needed that same year, did not open its doors until 1958 when it was immediately overcrowded. Since that time, a new elementary school has been opened each year with the fifth due in October of 1962, at which time there will be a surplus of elementary classroom space of between 250 and 300 pupil stations.

*Ten percent of Town population.

The first wing of the 1948 three-wing plan has meanwhile been converted to Junior High use with the addition of a gym-atorium and a cafeteria and minor improvements in the old high school. The space in the two buildings, although not ideally suited to junior high use, is adequate.

The Lincoln-Sudbury Regional High was opened in 1956 with a design capacity of 650 pupil stations, and will have been expanded to house 1,100 pupils in 1961 with adequate core facilities for 1,500 pupils.

B. APPRAISAL OF EXISTING FACILITIES

As an orientation procedure, each of the educational facilitied in Town was inspected during the summer months and interviews were carried out with administrative and maintenance personnel. Each building was compared to the 'Educational Specifications' as adopted by the School Committee and these specifications were compared to parallel criteria in similar communities. The above procedure produced ample evidence that in conception, administration and application, the 1948 and 1953 school building programs were well above the average for suburban communities in Massachusetts.

1. Junior High School - (Concord and Old Sudbury Roads)

This facility consists of two buildings, one built in 1948 and one of undetermined age. Neither building was designed for Junior High use, but through intelligent adaptations, and with some tolerable ineffieiencies, an above average program is being carried out. At present the brick building built in 1948 is used primarily as a classroom building with a library, gym-atorium and cafeteria. The much older wooden building houses most of the special purpose rooms including music, art, sewing, cooking, shop and drafting.

At the time of inspection the 1948 building was in excellent physical condition throughout and from the original specifications, appeared to be expandable with some alteration of the cafeteria. The old wooden building appeared structurally sound, but was obviously obsolete and inefficient. The floors were warped beyond repair, stirways worn by excessive use, interior walls deteriorated and poorly designed for efficient maintenance, rooms poorly laid out and of odd sizes.

The location of this facility, adjacent to the Town Hall, is a good one for a Junior High, in terms of pupils walking from as far away as $1\frac{1}{2}$ miles and particularly, in terms of vehicular access from all parts of town.

The site conditions are complicated and will require an engineering analysis to arrive at firm conclusions. The present analysis indicates that although this site of about 25 acres is adequate in terms of area for a moderate expansion in pupils served, attaining an optimum development of the site will be expensive due to topographic features and present location of structures, both laterally and vertically.

PLATE 2

COMMUNITY FACILITIES: Schools

PUBLIC SCHOOLS 1961

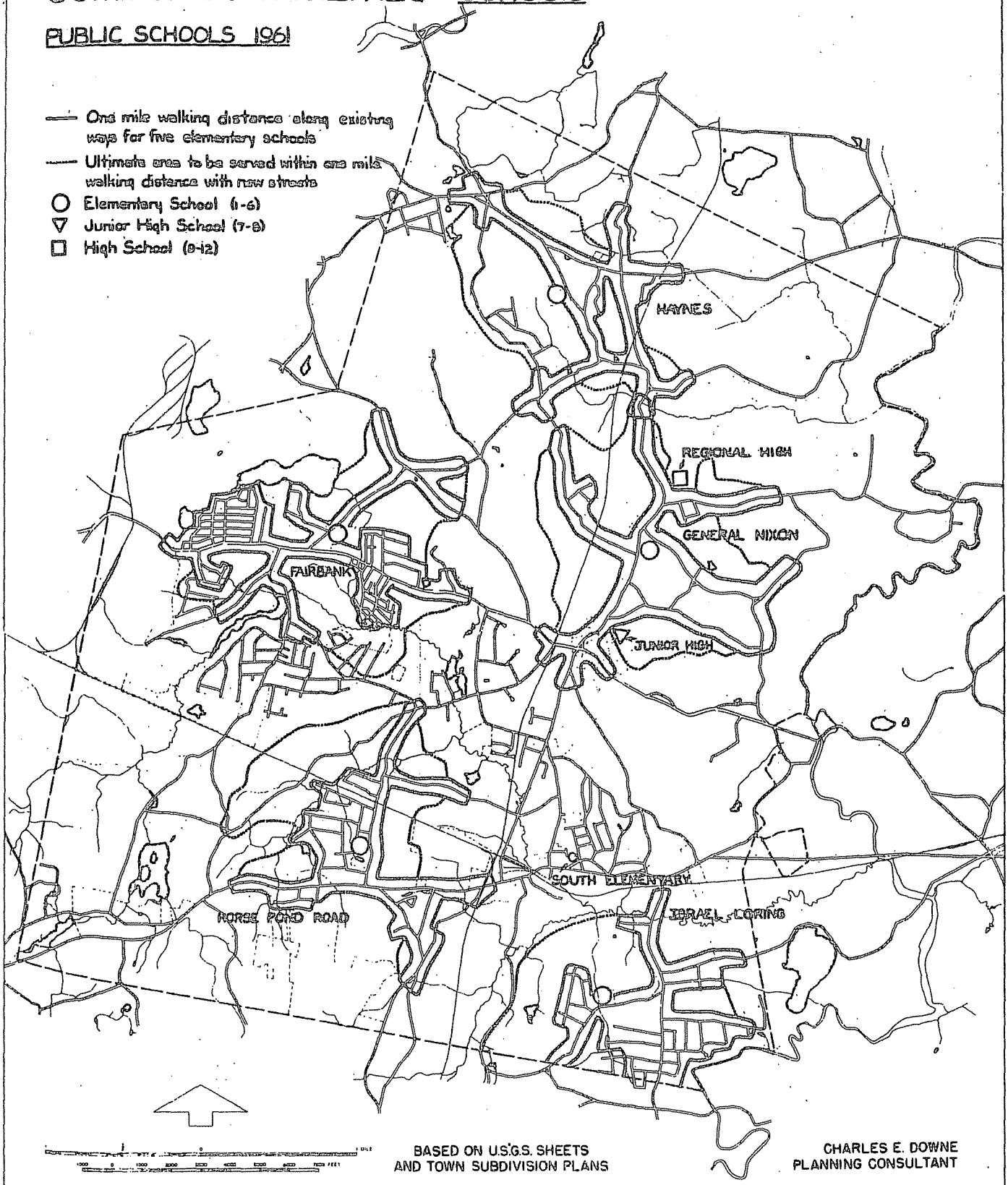
— One mile walking distance along existing ways for five elementary schools

— Ultimate area to be served within one mile walking distance with new streets

○ Elementary School (1-6)

▽ Junior High School (7-8)

□ High School (9-12)



BASED ON U.S.G.S. SHEETS AND TOWN SUBDIVISION PLANS

CHARLES E. DOWNE
PLANNING CONSULTANT

PLANNING BOARD SUDBURY, MASSACHUSETTS

During the preparation of this report an engineering study was made, the results of which have not yet been made available to the Planning Board. A verbal report by the Permanent Building Committee indicates that to bring this site up to a buildable land status, with no improvements, will cost between $125,000 and $175,000 or between $5,000 and $7,000 per acre.

2. Lincoln-Sudbury Regional High School - (Concord and Lincoln Roads)

This facility was built in 1956 and saw its first major expansion in 1961. It has every appearance of being one of the better high school facilities in the State, in terms of basic design with a minimum of frills. The location in terms of serving the two towns is good and probably could not be improved. The site of the above 72 acres is adequate and pleasant and has considerable vacant abutting acreage for future expansion.

3. Horse Pond Road School - (Horse Pond Road)

This facility was completed in 1958, had the highest enrollment of any elementary facility in 1960, and received the most intensive use of any school in Town by other than school groups. These activities include a summer library, vacation play program, and evening meetings by many Town organizations.

The Horse Pond School is particularly well adapted to this extra use, as its site is more intensively developed than some of the other sites and the interior detailing is of a slightly higher grade.

Despite the 1953 program, which called for it, this school was not equipped to be expanded beyond its present 14 classroom size. However, the site of 13 acres is adequate for an expanded facility and the school can be expanded, although an addition will be more expensive and complicated than at the other elementary sites.

4. Fairbank School - (Fairbank and Hudson Roads)

This school was completed in 1959 on a 14-acre site. Its neighborhood in the western part of Town will eventually have more homes within a one-mile walking distance than any of the other present five elementary sites under present zoning. On this basis and on a basis of vehicular access it is the best selected site of the 1953 plan.

The building and grounds are well-designed, particularly the design of the multi-purpose room and other core facilities. A minor but most unfortunate feature of the building is the operating sash, of the crank-out type, which was installed at such a level to be a hazard to any person walking close to the building. The site development at the rear of the building makes walking close to the building unavoidable, particularly on wet days. Children and maintenance men have been injured by these windows.

5. General John Nixon School - (Concord and Newbridge Roads)

This school, completed in 1960, has a site of over 21 acres. Because a great deal of the area within a one-mile walking distance of the school is either in the flood plain or zoned for 60,000 square feet lots, the school has one of the smaller ultimate enrollment potentials of the present five elementary school sites. Being a new school, the grounds and structure are in excellent condition. The floor plan, similar to the Fairbank School, is basically two connected buildings, one with core facilities and one with classrooms, affording good expansion flexibility and interior and exterior circulation.

6. Israel Loring School - (Woodside Road)

At the time this school was examined, it had not yet been in operation a full year, consequently the condition of the structure was excellent. The location of this school, in terms of serving pupils within a one-mile walking distance in the area below Wash Brook is about 1/4 mile too far west. The 11½ acre site, although attractive, seems to have offered some difficulty to a good placement of the building and it will be expensive to complete the landscape development and any expansion of the building.

7. Haynes School - (Haynes Road)

This school is now under construction. The building contract calls for 20 classrooms to be constructed on an 8½ acre site. Although the site is level and can be easily developed for maximum playground use, it will be inadequate in terms of overall area according to standards established by the State. The site location is the least advantageous of the five elementary sites selected under the 1953 plan. In fact, the 20 classrooms scheduled for completion in 1962 will not be filled at saturation population by pupils within a one-mile walking distance which is not true of any of the other present schools at their original size.

8. South School - (Massasoit Avenue)

The age of this school was not determined. The facility consists of two classrooms and a cafeteria in a wooden building on about a half acre of land. It is obsolete and inadequate by any standards.

9. Summary

This brief overview indicates that Sudbury is generally well equipped with educational facilities. The excellence of this physical plant is due not only to the fact that 80 of 110 rooms in use for the first eight grades were built during the past four years, but particularly to the high quality of the standards established by the School Committee and executed by the Permanent Building Committee.

As itemized in Table No. 1, the following inadequacies and inefficiencies do now exist. Some will be corrected in the normal course of events. These are:

(1). the obsolete structures at the Junior High and the South Schools

Some can be ameliorated through corrective action:

(2). the inadequacy and inefficience of the Haynes and Loring sites

Some unfortunately will have to be endured although they can be slightly improved:

(3). the major and minor inefficiency of the locations of all of the schools except Fairbank and the Regional High

This analysis, and the foregoing history, is the foundation upon which a future educational facilities plan and program must be built. Any future development, in addition to being good in itself, should expand the strengths and diminish the weaknesses of the present system.

TABLE No. 1A - APPRAISAL OF EXISTING FACILITIES, OCTOBER 1, 1962

Facility	Building		Site		Locatio	
	Appearance	Condition	Acreage	Adequacy	Present	F
Junior High (7-8) (Wooden Building) (1948 Building)	Poor Fair	Poor) Good)	25 +/-	Fair	Good	
Horse Pond Road (1-6)	Good	Good	13 1/4 +/-	Good	Good	
Fairbank (1-6)	Good	Good	13 3/4 +/-	Good	Good	
General John Nixon (1-6)	Good	Good	21 1/5 +/-	Good	Fair	
Israel Loring (1-6)	Good	Good	11 1/2 +/-	Fair	Fair	
Haynes (1-6)	Good	Good	8 1/3 +/-	Poor	Poor	
South (miscellaneous)	Poor	Poor	1/2 +/-	Poor	Fair	
Totals			93 1/2 +/-			

TABLE No. 1B - APPRAISAL OF EXISTING FACILITIES, OCTOBER 1, 1962

Facility	Classrooms	Cafeteria Gymnasium Auditorium	Remedial Reading	Guidance	Library	Shop	Music	Art	Home Economics	Health	Other	Administration & Maintenance	Total
Junior High (Wooden Building)	9			2		1	1*	1*	1*	1		2	15
(1948 Building)	9	2			1						1*	2	15
Horse Pond Road	14	1	1							1		3	20
Fairbank	14	1	1							1		3	20
General John Nixon	14	1	1							1		3	20
Israel Loring	14	1	1							1		3	20
Haynes	20	2	1		1		1			1	1	4	31
South (misc.)	2	1											3
Totals	96	9	5	2	2	1	2	1	1	6	2	20	144

*Also rated as a classroom

C. APPRAISAL OF FUTURE SCHOOL NEEDS

This report analyzes future needs for educational facilities at two particular points in time:

(1) saturation population under present Town land use policies and

(2) October 1, 1970.

The intent in so doing is to prepare an ultimate school plan upon which a detailed building program can be carried out to 1970. In view of the present dynamic population growth, it is felt that the preparation of a detailed building schedule beyond 1970 at this time would not be feasible.

1. Ultimate School Needs

The ultimate need for classroom space in the public schools, in the terms of this report, will be determined by the number of families residing in town, the average number of children they may have and the proportion of children in various grade groups. In the Report on Population, it was found that present land use policies would allow ultimately 7,400 families or dwelling units in Town.

For the purposes of ultimate educational facilities, an average family size of 4.0 persons has been assumed. This is somewhat higher than the average for the State which is 3.65 and Sudbury's present average household of 3.58.* However, the trend is upwards in all suburban communities and larger homes are being built today than in the recent past. This assumption seems reasonable and conservative for design purposes.

In the year 1960, the percentage of the population 18 years of age and under was as follows for various areas in the Commonwealth.

TABLE NO. 2 - PERCENTAGE OF POPULATION UNDER 18 FOR VARIOUS MASS. STATISTICAL AREAS, 1960

State of Mass.	33.9
Middlesex County	33.2
Urban Fringe	33.6
Urban Settlements (2,500 to 10,000)	34.2
Sudbury	44.4

Source: U. S. Census

*3.8 for occupied dwelling units.

It would be reasonable to assume that the ratio of the under 18 year old age group will decrease before Sudbury reaches its ultimate population.

Based on the foregoing, it has been assumed, as an ultimate statistical figure, that an average of 37 percent of the town population will be 18 years of age or less.

From year to year, the relationship between pupil enrollments and preschool children will vary, as has been determined by an analysis of past data. However, for statistical purposes, it has been accepted that the arithmetic average will prevail and can be used for the determination of needs. Thus, two-thirds of all persons 18 years of age or less are presumed to be enrolled in the public schools.

TABLE NO. 3 - ULTIMATE SCHOOL ENROLLMENTS - GRADES 1-12

Ultimate dwelling units	7,400
Average persons per dwelling unit	4.0
Statistical ultimate population	29,600
Percent 18 years of age or less	37
Population 18 years of age or less	10,950
Percent enrolled in public schools	66.7
Statistical ultimate enrollment	7,300

Presently, a certain number of children in Sudbury attend private and parochial schools particularly during the high school years. This situation will undoubtedly continue in the future. Which way this trend will go is unpredictable on a long-range basis. In part, it depends upon the extend to which private or parochial schools are built in or around the Town.

For statistical purposes, the ultimate enrollment has been divided percentagewise for the three class groupings as follows:

TABLE NO. 4 - PERCENTAGE OF ULTIMATE ENROLLMENT BY VARIOUS GRADE GROUPS

Grades 1 - 6	52.5%
Grades 7 - 8	17.5%
Grades 9 -12	30.0%
	100.0

The statistical ultimate pupil enrollments for each grade group then become:

TABLE NO. 5 - ULTIMATE ENROLLMENT BY GRADE GROUPS

Grades 1 - 6	3,835
Grades 7 - 8	1,275
Grades 9 -12	2,190
	7,300

In order to determine ultimate building needs, these figures are converted to numbers of classrooms or pupil stations, by using the following standards of pupils per classroom. These are based on Sudbury School Committee policies which appear reasonable for the future for the design of school sizes.

TABLE NO. 6 - PRESENT AND PROPOSED CLASSROOM DESIGN STANDARDS

Grade Groups	Desirable	Design	Maximum
1 - 2	25		28
3 - 6	28		32
1 - 6	27	29	30
7 - 8	18	21	24
9 - 12	not available		

Therefore, the ultimate school plant for elementary pupils can be safely projected at 29 pupils per classroom and the plant for junior high pupils at 21 pupils per classroom. Accordingly, for the entire Town the ultimate number of elementary classrooms required would be 132 and the ultimate number of junior high classrooms required would be 60.

The desirable school size in numbers of pupils has been established by the School Committee as follows:

TABLE NO. 7 - PRESENT AND PROPOSED SCHOOL CAPACITY STANDARDS

	School Size in Numbers of Pupils	
Grade Groups	Range	Desirable
1 - 6 (elementary)	350-600	500
7 - 8 (junior high)	400-800	650

This gives a statistical range in size of elementary schools of 13 to 21 classrooms and junior high schools, from 19 to 38 classrooms. Based on the ultimate enrollments projected in Table No. 5 and the range in school size above, 7 to 10 elementary schools would be required and either 2 or 3 junior high schools.

The selection within these predetermined ranges will be based on economy, neighborhood solidarity, the overall benefits to the community, and the availability and accessibility of sites.

In order to determine the best locus of each school site, the primary criterion of walking distance service areas has been selected. The standards are as follows:

TABLE NO. 8 - PROPOSED WALKING DISTANCE STANDARDS

Grade Groups	Desirable	Design	Maximum
1-6 (elementary)	1/2 mile	1 mile	1½ mile
7-8 (junior high)	3/4 mile	1½ mile	2 miles

This means that a new school or the expansion of an existing school must be located on the basis of its location in relationship to existing or potential future dwelling units or homes. In order to accomplish this analysis, it becomes necessary to establish a relationship between population, dwelling units and enrollments. This is done in the following table for both 1960 data and ultimate projections using the information compiled above.

TABLE NO. 9 - ENROLLMENTS RELATED TO DWELLING UNITS FOR 1960 AND ULTIMATE PROJECTION

Population Data per 100 Dwelling Units	1960	Ultimate
Persons	358	400
Persons 18 years of age and under	N.A.	148
Enrollments		
Grades 1-12	102	98.5
Grades 1-6	65	51
Grades 7-8	17	17.5
Grades 9-12	20	30

Source: Annual School Report 1960

On this basis each 57 homes will fill one elementary (1-6) classroom of 29 pupils and 117 homes will fill one junior high (7-8) classroom of 21 pupils.

In summary, the Ultimate School Plan that follows is designed for an average enrollment of 7300 pupils from Sudbury for all grades and 700 from Lincoln for grades 9 to 12. It is significant to note that the 1953 school plan of 5 elementary schools envisioned 10 percent of the ultimate population to be enrolled in grades 1 to 6. The present projection, based upon a broader examination of population characteristics, indicates an ultimate ratio of about 13 percent of the total population so enrolled. It should be noted that both of these figures, 10 and 13 percent, were used for planning purposes and do not necessarily apply exactly for any one year. Rather they are envisioned as averages for a period of years.

2. 1970 Enrollment Projections

Future enrollments in the Sudbury school system will be derived from three sources:

(1) class survival: pupils presently enrolled progressing from year to year, through the 12 grades

(2) in-migration: new, school age or pre-school age children moving into town

(3) births: children born to residents of Sudbury during the past six years and to be born in the future.

Taking these three elements in reverse order, in 1950, 47 children were born from a population of 2600 or 18.1 births per thousand; in 1955, 87 children were born from a population of 3,650 or 23.8 births per thousand; and in 1960, 240 births were recorded from a population of 7,450 or 32.2 births per thousand. This is a 78 percent increase in the Sudbury birth rate in only 10 years.

Between 1950 and 1960, the population tripled, whereas annual births quintrupled. Even if the population had remained the same, school enrollments would have gone up between 40 and 50%.

For any year, if the number of Sudbury residents who died is subtracted from the number of Sudbury births, the resulting figure is commonly called the natural increase. If the natural increase is then subtracted from the total population increase, the resultant figure will be the net in-migration.

TABLE NO. 10 - NATURAL INCREASE AND NET IN-MIGRATION 1950-1960

Year	Population	Total Increase Over Prior Year	Births	Deaths	Natural Increase	Net In-migration	
						Increase	As % of Total Increase
1950	2660						
		1050	372	204	168	882	84%
1955	3650						
		3800	937	247	690	3110	80%
1960	7450						

Sources: Town Clerk's Annual Reports
U.S. Census 1950-1960
State Census 1955

In-migration was diminishing as a portion of the total population increase during the 1950's and, on a basis of the increasing birth rate, will diminish more rapidly during the 1960's.

One of the most visible and easily-analyzed aspects of population growth in suburbia is new home construction. Pertinent data are shown in the following table.

TABLE NO. 11 - POPULATION GROWTH AND NEW HOME CONSTRUCTION 1950-1960

Year	Houses (Homes) Assessed	New Homes	Population Increase	Persons Per New Home
1950	845			
		310	1050	3.4
1955	1155			
		917	3800	4.1
1960	2072			

Sources: Assessors' Annual Report
Previous Tables

Table No. 11 points out that the number of persons added to the population each time a new home is built has been rapidly increasing, and on the basis of the trend in birth rates will probably continue to rise.

In terms of projecting pupil enrollments for the year 1970, children born as long ago as 1952 will still be pupils in the public schools and so forth for all intermediate years including 1964. The progress of pupils from class to class is usually referred to as class survival. In recent years class survival has been very constant with only a few drop outs found in the high school years. We have assumed statistically that this trend will continue altho the opening of a major non-public school in or near Sudbury might alter this trend.

It is now possible to carry forward previous known births and class year enrollments, and to add to these figures a relatively predictable birth rate and enrollment on the basis of various probable home building rates. In order to do this the following assumptions are made:

(1). The death rate (deaths per thousand population) will continue at the 1960 figure.

(2). The birth rate (births per thousand population) for both local residents and in-migrants, during the years 1961 through 1965 will increase from the 1960 figure of 32.2 to an average of 33.5.

(3). The number of persons added per new home to the total population will increase from the 1955-1960 average of 4.1 to an average 1960-1970 of 4.3.

(4). The age distribution of the children of in-migrants will remain relatively the same as it was during the 1956 to 1960 period.

(5). The percentage of pupils attending private and parochial schools will remain about the same.

(6). The projected enrollments for Lincoln as prepared by the School Committee for the Regional School have been accepted.

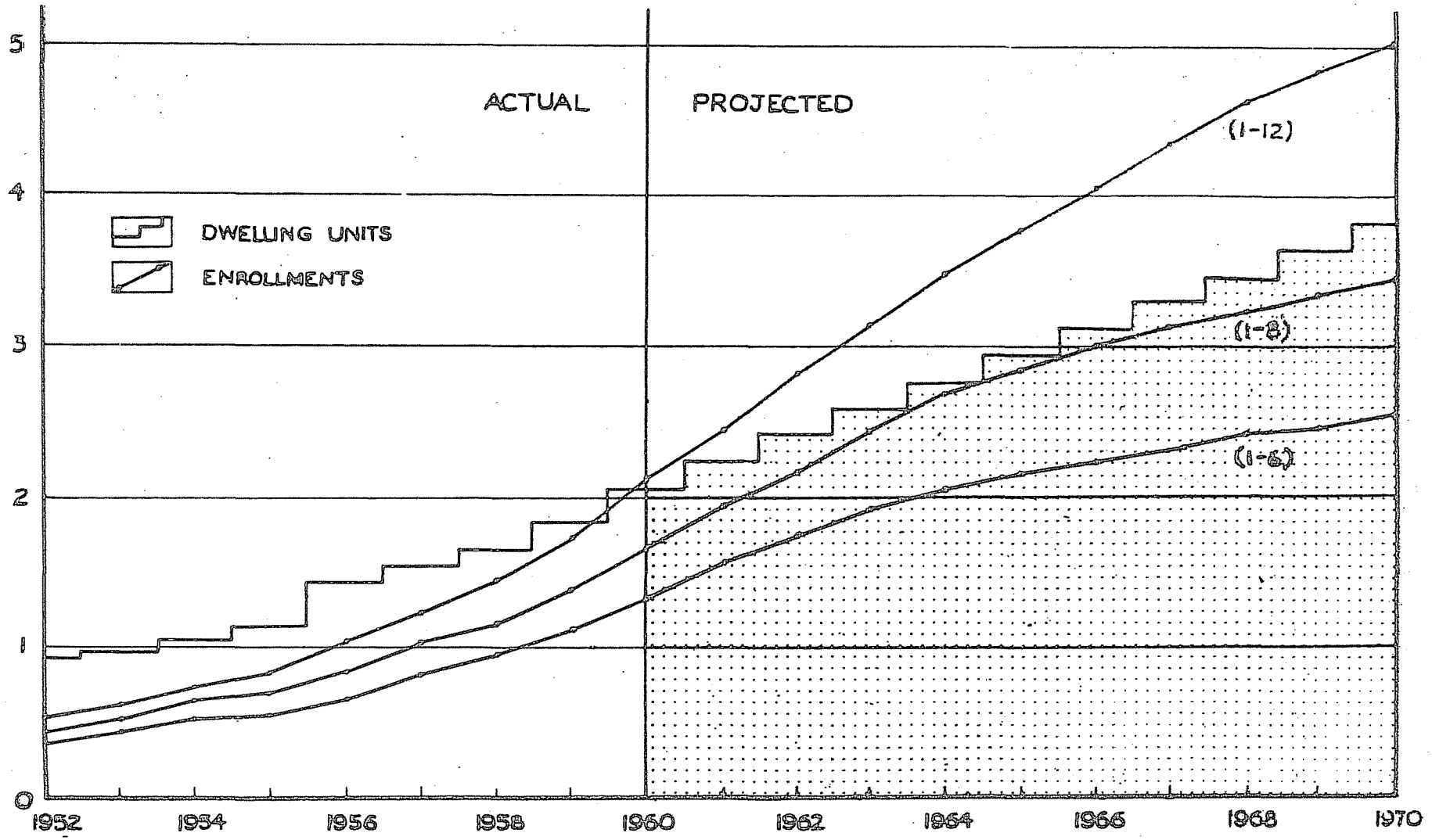
Using the foregoing techniques three 1970 enrollment projections were prepared, one for a building rate of 125 new homes per year, one for 175 new homes per year, and one for 225 new homes per year. (Each of these projections required 38 columns or a total of 114 columns for the three projections and are on file at the Planning Board's offices). They comprise enrollment projections for each class in grades 1 to 12 for each year 1961 - 1970 inclusive. Table No. 12 summarizes these projections.

Within these figures it can be assumed that the projections for the upper grades, particularly grades 9 to 12, are quite firm through 1965 due to the precise knowledge of present elementary enrollments and the past trends of very few high school students in in-migrant families settling in both Sudbury and Lincoln.

COMMUNITY FACILITIES

ENROLLMENTS AND DWELLING UNITS · 1952-1970

for Sudbury Resident Pupils (at 175 new homes per year)



SUDBURY PLANNING BOARD

CHARLES E. DOWNE, PLANNING CONSULTANT

PLATE 3

TABLE NO. 12 - SUMMARY ENROLLMENT PROJECTION BY CLASS GROUPS 1960 - 1970

Year	A. 125 New Homes Per Year				B. 175 New Homes Per Year				C. 225 New Homes Per Year			
	1-6	7-8	9-12*	1-12*	1-6	7-8	9-12*	1-12*	1-6	7-8	9-12*	1-12*
1960 (Actual)	1356	354	631	2341	1356	354	631	2341	1356	354	631	2341
1961	1540	352	756	2648	1583	364	757	2704	1641	375	759	2775
1962	1696	383	875	2954	1785	409	888	3082	1896	436	896	3228
1963	1803	488	959	3250	1937	532	985	3454	2100	576	1005	3681
1964	1892	577	1076	3536	2069	637	1114	3820	2278	697	1151	4126
1965	1959	622	1189	3770	2188	685	1265	4138	2432	772	1326	4530
1966	1983	665	1326	3974	2252	745	1427	4424	2540	848	1520	4908
1967	2033	686	1493	4212	2334	794	1611	4739	2660	882	1750	5292
1968	2079	696	1642	4417	2416	818	1776	5010	2782	919	1959	5660
1969	2122	726	1730	4578	2488	857	1897	5242	2890	991	2081	5962
1970	2170	750	1800	4720	2576	886	1998	5460	3008	1036	2212	6256

*Includes Lincoln

The projections indicate that an enrollment increase in grades 1 to 12 can be expected during the 1960's and that it will be considerably greater than the increase experienced during the 1950's even if the average annual building rate were similar for both decades. This is due, in part, to the fact that; more pre-school youngsters have been moving to Town than those of school age, while the birth rate was rising.

Perhaps, the most salient feature of the enrollment trends of the 1960's, besides the overall rise, is the much more rapid increase of the grade 7-12 pupils than the grade 1-6 pupils. In absolute numbers, a median of 1900 for grades 7-12 compared to a median of 1220 for grades 1-6 during the ten-year period.

The structure of enrollment in 1960 included 58% of all enrollments in grades 1-6 and 42% in grades 7-12. This will have changed by 1970 to about 47% in grades 1-6 and 53% in grades 7-12. When one considers the Lincoln pupils in grades 9-12, the latter is a more reasonable pattern.

All of these projections are firmly linked to the concept that pupils come from the dwelling units (families)in town. Although the relationship between these two factors is constantly changing, it provides an excellent point of reference for the planner whose concern is primarily with the provision of physical facilities for the people for and with whom the planning is being done.

Table No. 13 illustrates the past and projected pupil to dwelling unit ratios from 1950 to 1970 and similar ratios as represented by the saturation enrollment projection.

The overall ten-year projection for grades 1-12 indicates a 28.6 percent higher pupil to dwelling unit ratio in 1970 than in 1960 which is a considerably moderated rate of change after the 76.5 percent increase from 1950 to 1960. it is particularly notable that there is a projected drop in this ratio from 1968 to 1970. This drop may continue after 1970 if relatively stable building rates and birth rates are maintained.

It can be anticipated then the total school building needs will be greater in the sixties than it was in the fifties. With a much greater emphasis on the needs of the upper grades. However, since there will be excess capacity available in 1962 at all grade levels, and the system will be operating from a much broader base, and there is more state aid available for high school building, the dollar impact for capital improvements on the individual taxpayer will be less.

TABLE NO. 13- PUPILS ENROLLED PER 100 LOCAL ASSESSED DWELLING UNITS

1950 - 1970 BY CLASS GROUPS (AT 175 NEW HOMES PER YEAR)

	1 - 6		7 - 8		9 - 12*		1 - 12*	
1950	36.6		8.6		12.5		57.7	
1952	42.2		7.0		11.8		61.0	
1954	49.8		10.8		11.9		72.5	
1956	48.0		12.0		12.8		72.8	
1958	58.0		13.2		17.0		88.2	
1960	64.5		17.2		20.2		101.9	
1950-60 Percentage Increase		43.5		100.0		38.0		76.5
1962	73.7		16.9		25.7		116.3	
1964	74.8		23.0		28.4		126.2	
1966	72.2		23.9		34.0		130.1	
1968	69.6		23.5		39.8		132.9	
1970	67.4		23.1		40.6		131.1	
1960-70 Percentage Increase		04.6		40.0		100.0		28.6
Ultimate (Saturation-Population)	52.0		17.2		29.6		98.8	

*Includes Sudbury Resident Enrollments only in Regional High School

Source: Annual School Reports

3. Classroom Needs for 1970

The foregoing analysis, in terms of the Master Plan, is primarily intended to indicate classroom needs. The following analysis of classroom needs deals with the period from 1962 to 1970, because the 1953 program (5 schools) will not be completed until that time. The median projection tied to a building rate of 175 new homes a year has been used throughout. Any substantial variations from this rate would alter the timing of classroom needs but not necessarily the sequence of demands.

Table No. 14 which summarizes classroom and pupil station needs for 1965 and 1970 indicates that:

(1). eleven new elementary classrooms will be needed by 1970, or thirteen if the South School is retired,

(2). twenty-four new junior high school classrooms will be needed by 1970, or thirty-three if the old wooden building is retired during the decade,

(3). about 900 new pupil stations will be required in the Lincoln-Sudbury Regional High School, almost doubling the present size of that facility.

TABLE NO. 14 - CLASSROOM AND PUPIL STATION NEEDS (1-12) 1962 - 1970

(at 175 New Homes Per Year)

	1962			1965			1970		
	1-6	7-8	9-12*	1-6	7-8	9-12*	1-6	7-8	9-12*
Enrollment	1785	409	888	2188	685	1265	2576	886	1998
1962 Classrooms	78	18		78	18		78	18	
Design Class Size	29	21		29	21		29	21	
1962 Pupil Stations	2260	378	1100	2260	378	1100	2260	378	1100
Excess or Deficiency									
Pupil Stations	475	-31	212	72	-307	-165	-316	-508	-898
Classrooms	16	- 2		2	- 15		- 11	- 24	

*Includes Lincoln pupils

D. ULTIMATE SCHOOL PLAN

1. Introduction

The foregoing appraisal, integrated with previous studies of land use and land capabilities and an analysis of other community facility needs and overall Town development potential, provides the basic material needed to construct an educational facilities plan and program.

The suggestions that follow are delimited by policies established by the Sudbury School Committee, the Massachusetts School Building Assistance Commission and the Sudbury Zoning By-law. Any major change in the policies of these authorities or the emergence of major new policies from other sources will require appropriate reevaluation of the suggested plans and programs that follow.

It is urgent that the responsible agencies and the Town adopt an official school plan at the earliest possible moment. With the imminent completion of the plan and program initiated in 1953, each decision becomes more crucial and sets up a more closely linked series of reactions restricting later decisions. As rapid growth continues to crystalize the form of the future Sudbury, the flexibility in selecting adequate sites is lessened and any prolonged delay will reduce the likelihood of the most desirable ultimate school system.

2. Analysis of 1953 Five Elementary School Plan

Before a new plan can be established, the existing plan must be subjected to careful scrutiny. This has been done and is summarized in Table No. 15 on the following page.

In terms of the School Committee's policy of a desirable elementary school size of 500 pupils, the five school plan is not workable, nor are the sites of the Haynes and Fairbank Schools large enough to accommodate the projected pupil load. If the district lines were adjusted, as they easily and logically could, the average school size would be 26 rooms or over 700 pupils at each site, which is well above the maximum range acceptable to the local School Committee.

Each of the five existing school sites was analyzed as to the number of pupils who might be served within a one-mile walking distance if sidewalks were made available. This analysis indicated that only one-half of the total pupils enrolled in grades 1-6 would be served at this time. In terms of 1960 dwellings, there were 1,026 within a one-mile walking distance and 1,102 outside of such service areas. At saturation-population, there would be 4,227 dwellings within a one-mile walking distance of the existing five elementary schools and 3,173 dwellings outside of these areas. This means 57 per cent of the ultimate dwelling units would be within the mile distance.

TABLE NO.15 ULTIMATE ENROLLMENTS AND REQUIRED CLASSROOMS ASSUMING RETENTION OF THE FIVE 1953 ELEMENTARY SCHOOL DISTRICTS

(based on present land use policies & 27 pupils per classroom)

	Enrollments			Classrooms	
Districts	Existing 1961	Potential Increase	Ultimate	Existing	Needed
Haynes	258	780	1,038	20	38
Horse Pond	434	225	659	14	24
Fairbank	251	590	841	14	31
Israel Loring	342	270	612	14	23
General Nixon (includes South)	235	415	650	14	24
Totals	1,520	2,280	3,800	76	140

For planning purposes, over a long period of time, it can be assumed that pupils will be somewhat equally distributed and therefore only about half of all ultimate pupils would be within a one-mile walking distance of the five existing elementary schools. This analysis indicates that, in these terms, each of the five schools would serve very well as a 15-classroom unit or an enrollment of 430 (assuming 27 pupils per classroom).

In summary, the 1953 five school district plan would:

(1). have district enrollments varying from 612 to 1,038 and an average of 700, well over the standards accepted by the school committee

(2). serve only 56 percent of all ultimate pupils within a one-mile walking distance

(3). and be very effective if each existing school were 15 rooms to serve pupils within one-mile and if additional schools were built to serve the other 43 percent of the ultimate enrollment.

TABLE NO. 16 - EXISTING AND POTENTIAL NEW DWELLING UNITS AND ENROLLMENTS WITHIN WALKING DISTANCE OF EXISTING FIVE ELEMENTARY SCHOOLS

	Israel Loring	General Nixon	Fair-bank	Haynes	Horse Pond	Totals
Dwelling Units						
Existing - 1960						
within 1/2 mile	29	51	102	47	169	398
within 1/2-1 mile	171	72	218	72	95	629
within one mile	200	123	320	119	264	1027
Potential increase within 1 mile	556	698	550	667	730	3201
Ultimate	756	821	870	787	994	4228
Existing - 1960 outside 1 mile						1102
Potential increase outside 1 mile						2071
Ultimate outside 1 mile						3173
Total (within and outside)						7401
* * * * * * * * * * *						
Enrollments (pupils)						
Estimate - based on 64.5 pupils per 100 dwelling units within 1 mile	129	79	230	77	170	685
Ultimate - based on 51.0 pupils per 100 dwelling units within 1 mile	385	420	445	400	505	2155

Source: Annual School Report 1960
Population Survey Master Plan

3. Elementary (1-6) Plans

The policies established by the Sudbury School Committee, as previously noted, have limited the possible total number of elementary schools to a range of 7 to 10, or from 2 to 5 additional elementary schools. In the course of this study, four proposals were developed with two being clearly more desirable than the others. One of the desirable proposals called for eight schools and one for nine schools. Upon completion of all other community facilities studies and preliminary studies of future land use, circulation and utilities, the eight school system was selected as having the greater potential for service to the community. Plate No. 4 indicates the suggested locations for these eight schools and their logical service areas. The Community Facilities Plan, Plate No. 1 illustrates their integration and relationship with other Town improvements. The Circulation Plan, further indicates how the schools might best be served by existing and future streets.

As illustrated in Table No. 17, this eight school proposal calls for five 14-room schools and three 20-room schools. The allocation of classrooms to each site must, of course, be based on building trends within the Town. Initially each new school should be constructed at 14 classrooms expandable to 20 classrooms at an appropriate date if the trends so indicate. In accordance with this program each new elementary site should be at least 11 acres. The Haynes site should be expanded to at least this size.

Although an enrollment capacity of 3,765 pupils is indicated for the eight school system, the geographical distribution of the schools means that the system could serve efficiently 600 fewer or 1,000 more pupils by varying the number of rooms at each site between 14 and 20, and varying the average number of pupils per classroom from 27 to 30.

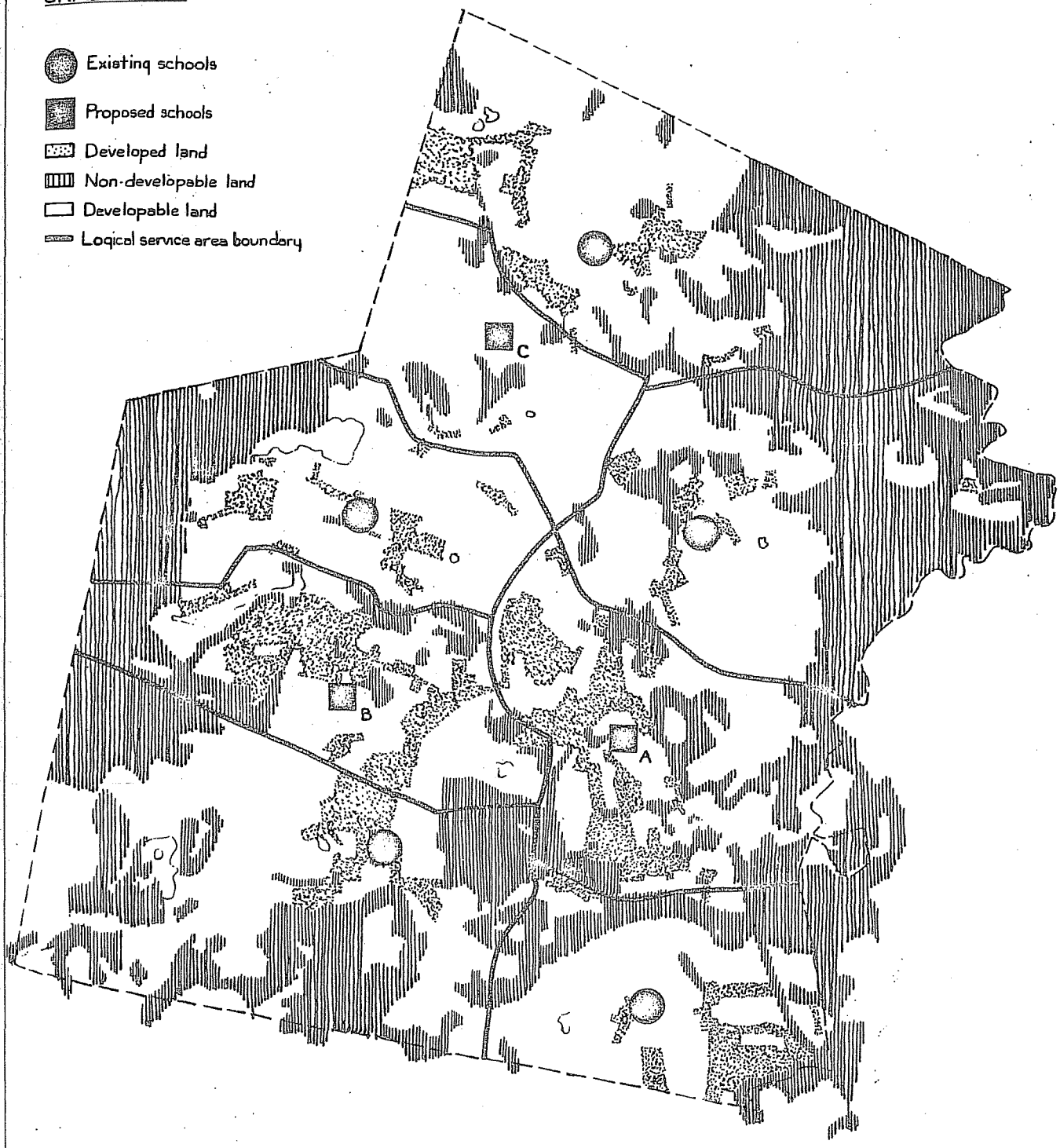
The three additional sites which would expand the present five schools to an eight school system are shown on Plate No. 4 and are discussed below.

Site "A" This location is probably the first new elementary (1-6) school that should be built, probably between 1965 and 1970. The proposed locus is between Goodman Hill and Our Lady of Fatima Church. Basically, this new facility would serve the area between the present General Nixon and Israel Loring Schools or from Wash Brook to Old Sudbury Road, and from the Sudbury River meadows to Old Lancaster Road between Hudson and Peakham Roads. If a school had been open at this site in 1960, approximately 250 to 300 elementary pupils, from the above service area, could have been served more efficiently than at any of the existing schools. At the saturation-population of the town, nearly 400 pupils would be so served.

PLATE 4

COMMUNITY FACILITIES: Schools

ULTIMATE PLAN - ELEMENTARY: GRADES 1-6



BASED ON USGS SHEETS
AND TOWN SUBDIVISION PLANS

CHARLES E DOWNE
PLANNING CONSULTANT

PLANNING BOARD SUDBURY, MASSACHUSETTS

The 1956 school plan suggested a school location near this proposed site as one of the more desirable in Town, but it was not possible to acquire suitable land. Preliminary investigation indicates that the proposed 'by-pass' as described in the circulation plan will make a suitable site accessible.

Site "B" The proposed location of this school, which would probably be the second in order of construction, is between Peakham and Pratts Mill Roads, approximately due south of Centre Street. The service area would essentially be between Peakham Road to the south and the Hop Brook to the north; Old Lancaster Road to the east and the Marlborough Town Line to the west.

If a school had been open at this site in 1960, approximately 300 to 350 elementary (1-6) pupils would have been more efficiently served than by the present school system. Since the desirable elementary school size as established by the School Committee is between 350 and 600, this location already qualifies as a good school site. At saturation-population this school would best serve over 500 pupils which is equal to the most desirable elementary school size. The proposed ultimate size of 20 rooms would be adequate for this anticipated enrollment. About one-third of this enrollment would be drawn from an overlap within one mile walking distance of the service areas of the Horse Pond Road and Fairbank schools, as indicated on Table No. 17.

Site "C" The proposed location of this school is immediately east of Willis Hill on Willis Street. A school at this site would serve an area generally bounded by the N. Y. N. H. & H. Railroad, Mossman Road, Maynard Road, the Maynard Town Line and Elaine Road. This part of town is sparsely developed today but has the greatest growth potential of any area in town in terms of easily buildable land. The suggested service area for the school is the smallest of the eight, except the Israel Loring area, but it could serve the largest number of pupils of any of the proposed and existing sites. No pupils would have to be bussed to fill the proposed 20 rooms.

In summary, the ultimate elementary (1-6) educational facilities in Sudbury, at saturation-population, under existing land use policies and current development trends should serve 3,800 pupils. These pupils could be best served, within the policies of the School Committee, by eight elementary schools of 14 to 20 rooms each. Such a plan would ultimately place between 85 and 90 percent of all elementary (1-6) pupils within easy walking distance of a school and would allow considerable flexibility in assigning pupils to facilities demanded by an ungraded system. Although this plan has been designed for 3,800 pupils, it could serve equally efficiently from 3200 to 4800 pupils by adjusting the school sizes accordingly. The plan would also allow for such possibilities as the following:

TABLE NO. 17 - ANALYSIS OF ULTIMATE ELEMENTARY SCHOOL PLAN (GRADES 1-6)

School Service District	Dwellings			Class Rooms			Ultimate Enrollments		
	Existing 1960	Potential New	Ultimate Total	Existing 1962	Needed Ultimate	Proposed Total	District Total*	School** Capacity	Excess or Deficient
Fairbank	326	842	1168	14	21.	20	610	580	-30
General Nixon	118	678	796	14	14.3	14	413	406	- 7
Haynes	283	872	1155	20	21.	20	610	580	-30
Horse Pond Road	236	565	801	14	14.3	14	416	406	-10
Israel Loring	210	581	791	14	14.2	14	412	406	- 6
District A	350	464	814	0	14.6	14	423	406	-17
District B	285	789	1074	0	19.3	20	560	580	+20
District C	29	772	801	0	14.3	14	416	406	-10
Totals	1837	5563	7400	76	133.0	130	3860	3770	-90

*Based on 52 pupils per 100 dwellings

**At 29 pupils per classroom

(1). the addition of kindergartens.
(2). the adoption of a 5-year elementary program.
(3). 25 percent greater ultimate enrollment than the projected saturation point.
(4). 15 percent lesser ultimate enrollment than projected.

This system has a significantly better potential for total integration with an overall Community Facilities Plan than any other studied, as will be examined further in other portions of the Community Facilities report.

4. Junior High Plans

The standards established by the Sudbury School Committee indicate that a junior high (7-8) enrollment capacity should not be smaller than 400 pupils nor larger than 800 pupils with a desirable capacity of 650. With an anticipated ultimate enrollment of 1,275 junior high pupils, the junior high facilities plan would be limited to either 2 or 3 schools with a two school system preferred from an administrative point of view. A third possibility neither specifically denied or allowed in the above criteria would be a campus type junior high facility with either 2 or 3 separate units.

The above criteria and number of schools are in reference only to a two-grade junior high or intermediate program. Many New England communities today, including Lincoln, have three-year intermediate or junior high programs and others are considering such an arrangement. These three-year programs are fitted into the overall local educational program in either of the two following ways:

5-3-4 or 6-3-3

As has been indicated, the proposed eight-school elementary (1-6) system would also work well as a five-year (1-5) program. The regional high school is likewise adaptable, to a three-year program, although this policy does not appear likely in the foreseeable future. Since there is a trend towards a three-year intermediate program and since it could work well from a facilities and service area point of view in Sudbury, it might be considered farsighted to design a junior high or intermediate school plan that would be adaptable to this potential. A three-school system to house the approximately 1,900 predicted pupils in three intermediate grades, or 635 at each site, would best serve this possible educational program.

No specific ultimate junior high facilities plan has been selected by the Master Plan. The arguments for alternate systems appear evenly weighted. From an administrative and educational point of view, an ultimate two grade (7-8) program would be best served by a two school system. From a more general point of view, the possibility of a three grade (either 6-8 or 7-9) junior high or intermediate program appears desirable. The long-range savings of bussing and the desirability of using the junior high buildings as neighborhood cores in a Town of an ultimate 30,000 population are also advantages of this alternate. A single campus-type junior high does not particularly recommend itself on the basis of the elements examined in this survey.

5. Regional High (9-12) Plans

The ultimate enrollment of the Lincoln-Sudbury Regional High School has been estimated at 2900 with 2200 being contributed by Sudbury and 700 by Lincoln. These figures indicate that regionalization should be continued, since it is quite probable that Lincoln enrollments alone would not meet generally accepted standards for a separate and comprehensive high school. The present Regional High School site includes approximately 72 acres of which about 80 percent or 57 acres is dry, easily-developable land at less than 15 percent slope. There are two general standards available to determine the adequacy of school sites: the State School Building Assistance Commission and the U. S. Department of Health, Education and Welfare. For high school facilities, the former uses 10 to 15 acres plus 1 acre for each 100 pupils and the latter suggests, as desirable, 35 acres plus 1 acre for each 100 pupils.

The State standard would allow 4,200 to 4,700 pupils on the 57 easily developable acres of the present site, in a campus-type deveopment and the Federal standard would allow 2,200 pupils on the same acreage. Therefore, depending upon a detailed engineering survey, the present site would be adequate for the ultimate enrollment by State standards and would require only an addition of about 10 acres to fulfill the Federal standards, using only the easily developable portion of the present site.

The two most feasible possibilities envisioned by the Master Plan would be (1) either to develop a centralized campus-type school at and abutting the present site (since there is considerable vacant land abutting this site) or (2) to establish two similar size buildings by expanding the present school to a capacity of about 1500 and securing an additional site for an ultimate enrollment of another 1500 pupils.

E. 1970 SCHOOL BUILDING PROGRAM

This study has taken the firm position that short-range programs must be based upon long-range plans. Therefore, the basic decision regarding a 1970 school building program, should be the answer to the question: What portion of the Ultimate Plan should be completed by 1970?

In a previous section, "classroom needs for 1970", it was determined that eleven new elementary (1-6) classrooms (based on 29 pupils each) would be needed between 1962 and 1970, or thirteen if the South School were retired; twenty-four new junior high school classrooms (based on 21 pupils each) would be needed in that same time period or thirty-three if the old wooden building were retired; and 900 new pupil stations would be required by 1970 at the Regional High School. These figures were predicated upon an average annual building rate of 175 new dwelling units per year.

Plates 5 & 6 indicate a comprehensive school building program for the eight-year period (1962-1970). A new facility, under this program, would be opened each year except in 1964, and no more than one new facility would be opened in any single year. During this time both the South School and the old wooden Centre School would be retired. At no time during the eight years is any facility intended to be used above its design capacity. In 1970, each grade group (1-6), (7-8) and (9-12) will be slightly above the capacity identified as "desirable" by the school administration. Between the "desirable" and "maximum" capacities in that year, there will be about 850 pupil stations not occupied, thus affording about a fifteen percent flexibility factor.

The suggested 1970 building program, year by year, is as follows:

1962

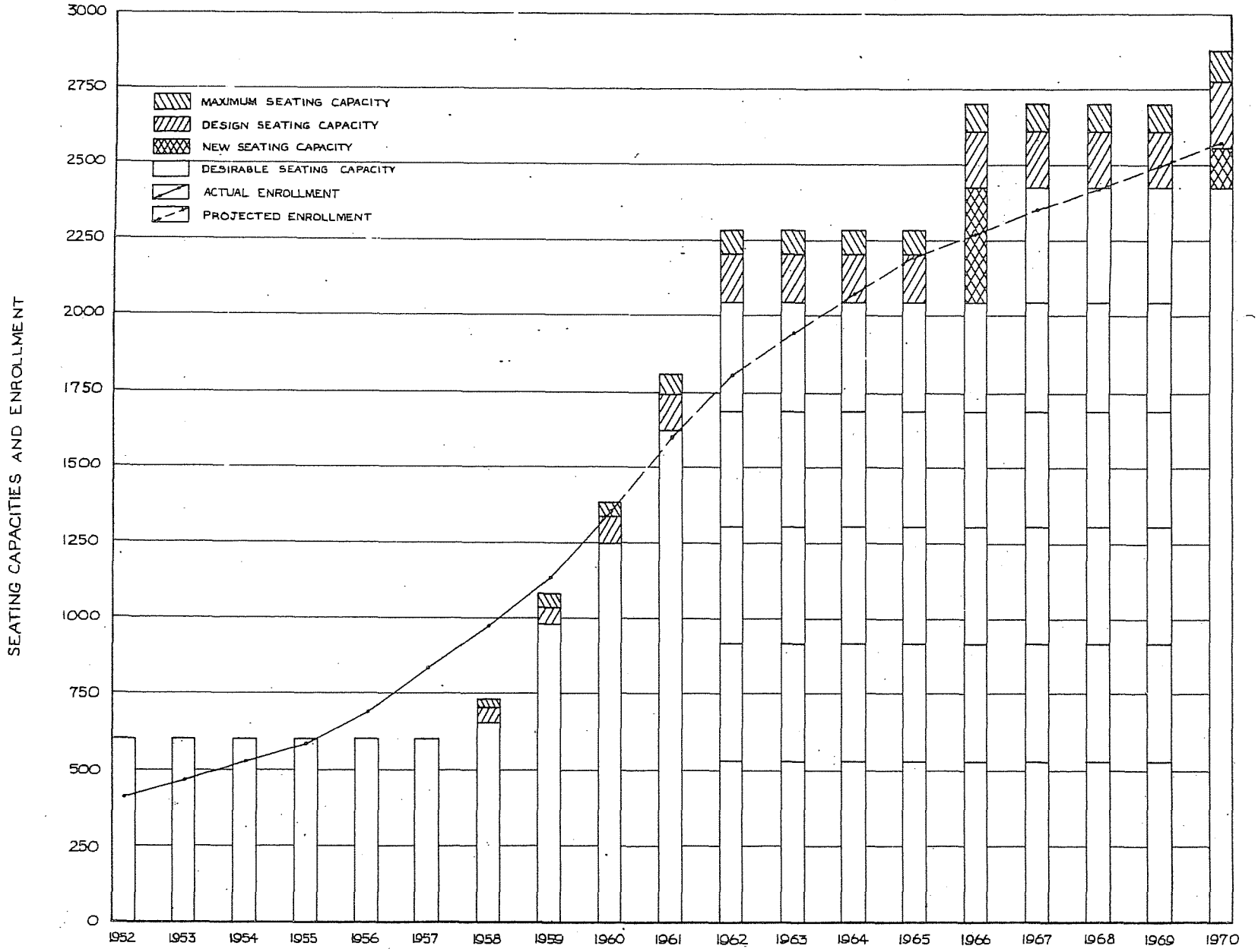
The Haynes Elementary School will be completed in this year with 20 new classrooms. For the projection of 1785 pupils at that time there will be 265 excess elementary classroom seats based on 27 pupils per classroom and 495 seats based on 30 pupils per classroom. This does not include the two rooms available for use in the South School.

1963

The program calls for the opening of 20 junior high classrooms in 1963 with a desirable capacity of 360 and a maximum capacity of 480 pupils. This number of classrooms would be adequate through 1967. If on the other hand only 15 classrooms were to be built in 1963, they would only be adequate through 1965. If these 20 rooms were built at the present site, there would be a total of 38 classrooms which would provide a capacity well above the desirable size of 650

COMMUNITY FACILITIES

1970 School Building Program - Grades 1-6
(at 175 new homes per year)



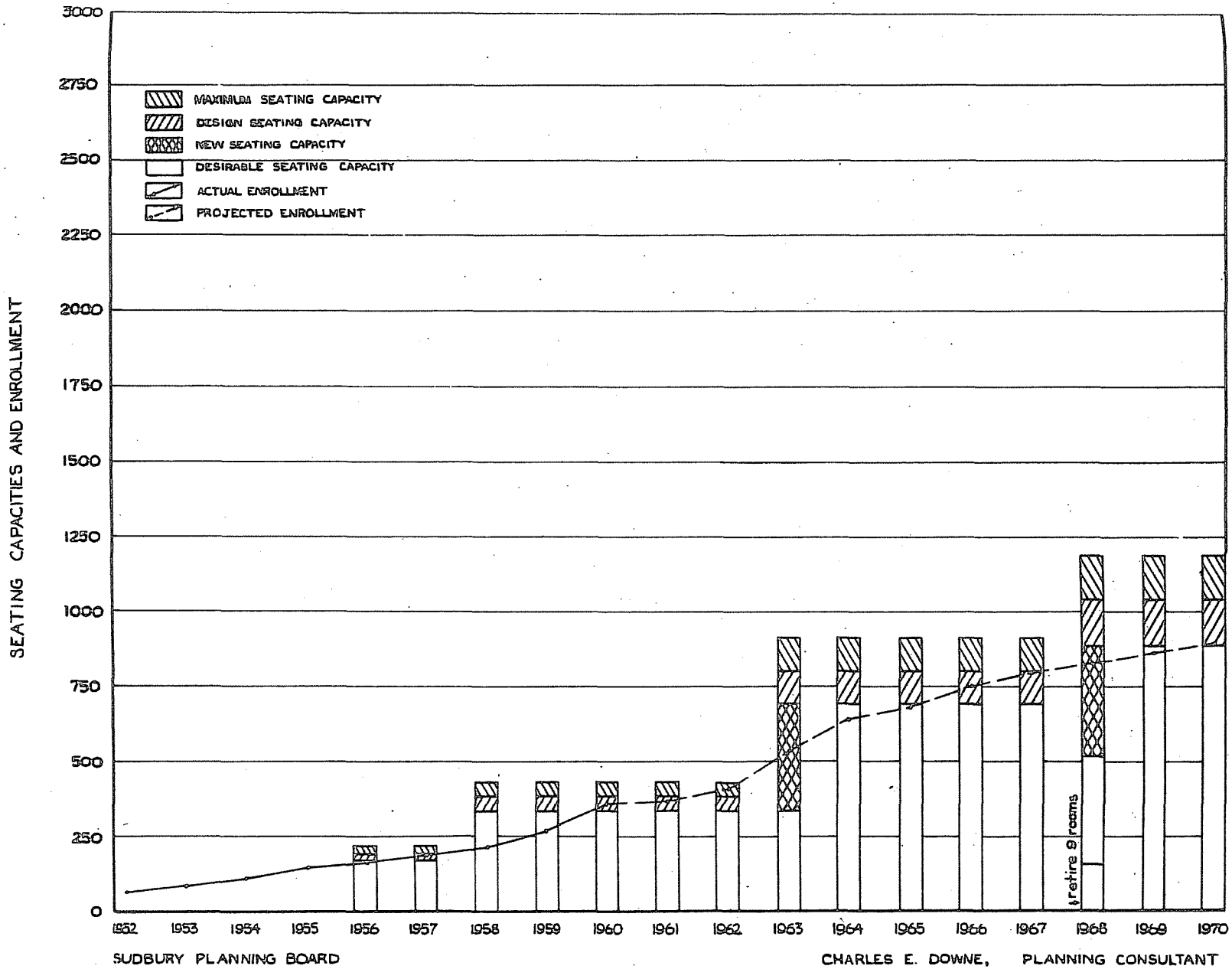
SUDBURY PLANNING BOARD

CHARLES E. DOWNE. PLANNING CONSULTANT

PLATE 5

COMMUNITY FACILITIES

1970 School Building Program - Grades 7-8
(at 175 new homes per year)



SUDBURY PLANNING BOARD

CHARLES E. DOWNE, PLANNING CONSULTANT

PLATE 6

pupils accepted by the Sudbury School Committee for a junior high. Placing 800 to 900 pupils on the present site would utilize that site fully. However, because of its central location, it might well be held in reserve for other essential community facilities.

In view of these considerations and the possible need indicated earlier for either two or three sites, it is recommended that these 20 classrooms be built at another site.

1964

No school construction is proposed to be completed in this year.

1965

The building program calls for 400 additional pupil stations at the Regional High School in 1965. This would probably be best carried out as an addition to the present building, bringing it up to the capacity intended for its core facilities, such as gymnasium, cafeteria and library.

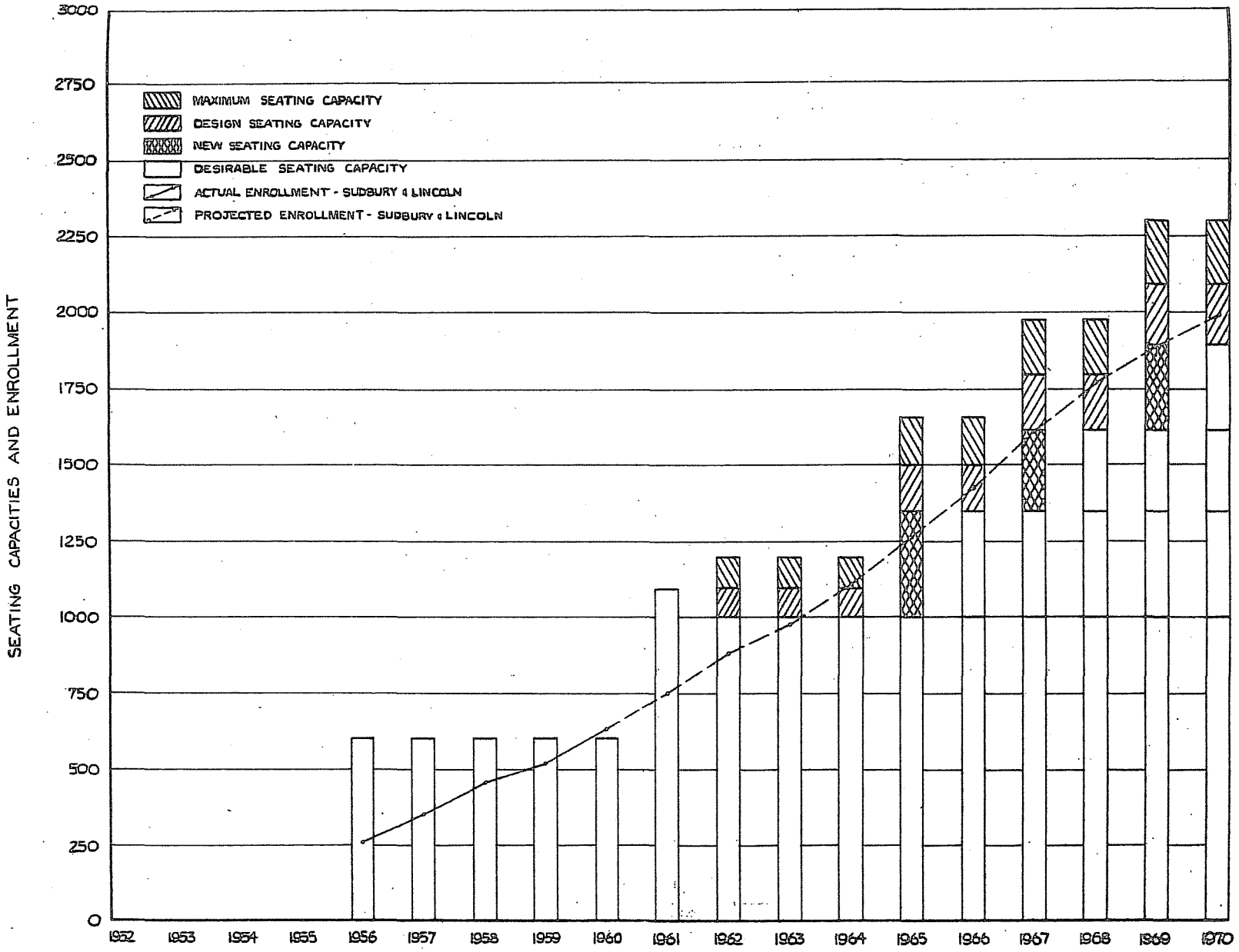
1966

In this year additional elementary space will be needed and a new 14-room school, expandable to 20 rooms is proposed. These classrooms should probably be located either at Site A of the ultimate plan near Goodman Hill, or at Site B between Peakham and Pratts Mill Roads.

A neighborhood or precinct elementary school system, such as Sudbury adopted in 1953, is implicitly concerned with maximum economic service to the residents of a relatively small portion of Town. Maximum service should include the concept of service to the neighborhood from sunup to sundown and beyond and not merely for 9 A. M. to 3 P. M. use. Economic service implies that, when the neighborhood is completely built up, a minimum of pupils would be bussed to school and a maximum would be within easy walking distance. In the discussion of the ultimate plan, it was shown that under existing zoningthe Israel Loring, Horse Pond, and General Nixon Schools would never require 20 rooms to serve pupils within a reasonable (1 mile) walking distance. This being the case, it would appear judicious to retain the expansion potential of these school sites as a reserve until the Town is much more built up than it is likely to be by 1970.

COMMUNITY FACILITIES

1970 School Building Program - Grades 9-12
(at 175 new homes per year)



SUDBURY PLANNING BOARD

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PLATE 7

The decision to build new elementary space in 1966 becomes a choice between adding 6 rooms to Fairbank and building a new 14-room school. If 6 rooms were built in 1966, additional space would be needed by 1968. Since Fairbank would already be expanded to 20 rooms, a new school would be required to make up the 8 room differential by 1968. Since the present program calls for 20 additional junior high rooms in 1968, a new elementary school in the same year seems inadvisable.

Therefore, it is recommended that a 14-room elementary school be opened in 1966 at either Site A or Site B of the ultimate plan.

1967

From 1965 to 1970 it is anticipated that high school (9-12) enrollments will increase more rapidly than either elementary or junior high enrollments. The integrated building program consequently calls for 300 additional pupil stations to be ready by 1967. Whether or not these should be on the present site or on a new site will depend upon trends between new and then. However, it would probably be the first unit of a new building complex.

1968

At this time some additional space will be needed for junior high (7-8) pupils. In view of this need and the increasing age of the 19th century Center School, it is suggested that 20 junior high classrooms be built in 1968 and that the old wooden Center School be permanently retired. The location of these 20 rooms, whether all at one site or divided between 2 sites, will depend upon the decision on a one, two or three school system and interim development trends.

1969

With the continued rapid increase in high school enrollments in the late sixties, an addition of 300 pupil stations is anticipated for 1969. This space would probably be an addition to the new facility begun in 1967.

1970

In this year the first expansion of an existing elementary school is proposed. This would most likely be at the Fairbank School.

TABLE NO. 18 - SUMMARY - 1970 SCHOOL BUILDING PROGRAM

			Proposed New Facilities								
	Existing	1962	1963	1964	1965	1966	1967	1968	1969	1970	Totals
Elementary Grades 1-6	Class-rooms	* 76	None	None	None	14	None	None	None	6	96
(29 pupils per classroom)	Pupil Stations	2204				406				174	2784
Intermediate Grades 7 - 8	Class-rooms	18	20	None	None	None	None	**20	None	None	49
(21 pupils per classroom)	Pupil Stations	378	420					420			1049
Secondary Grades 9-12											
(includes Lincoln)	Pupil Stations	1100	None	None	400	None	300	None	300	None	2100
Cumulative Pupil Station		3682	4102	4102	4502	4908	5208	5439	5739	5913	5913
Average Projected Enrollments ***		3082	3454	3820	4138	4424	4739	5010	5242	5460	5460

*does not include 2 room South School
**retire wooden building at centre-9 rooms
***projection B at 175 new homes/year

Note: classroom capacities as given are median figures
desirable capacity (1-6) is 27-max. cap. is 30
(7-8) is 18-max. cap. is 24
(9-12) is 10% less (desirable) or 10% more (maximum) than figure given

Summary

The process reviewed above suggests a program in which no more than 20 rooms would be completed in any one year with an average of 14 per year for the eight years. This program is based on an average building rate of 175 new homes a year and a relatively constant birth rate. As these and other enrollment-influencing factors come into effect during the decade, this program may be either accelerated or slowed down without extinguishing its value, since it is firmly built upon the Ultimate School Plan and any speed-up or deceleration of home building would not substantially change the sequence of needs, only their spacing over the ensuing years.

F. IMPLEMENTATION

Sudbury's experience in building six new schools since 1955 has undoubtedly well-equipped the several Town groups involved to carry out the program as proposed herein with such modifications as may become necessary during the period to 1970.

The most difficult task between the adoption of a proposed program and the construction of a building is the acquisition of sites. Two temporary sub-committees are presently investigating school sites, one for the Lincoln-Sudbury Regional School expansion anticipated in or about 1967 and one for the Sudbury Junior High proposed for 1963. Since neither of these sub-committees has the authority to investigate and acquire all of the necessary sites suggested in the foregoing building program, a permanent site committee might be established to acquire the school sites listed below, as well as other sites proposed by the Master Plan for the many community facilities which the Town will need during the next decade or two.

Such a committee should acquire the following school sites immediately:

(1) one, two or three junior high sites depending upon a decision by the Town on this question. A single junior high site should have an area of about 40 acres, two junior high sites should have areas of about 25 acres each and three junior high sites should have areas of 18 acres each.

(2) three elementary school sites of about 11 acres each, their location to be based upon the plans submitted so as to work well with the present 5 schools.

(3) an additional Regional High site or an expansion of the present site.

TABLE 19 SCHOOLS SITE RATING SHEET

SITE IDENTIFICATION			MAXIMUM RATING		
LOCUS	VEHICULAR ACCESS	Present Future			
	PEDESTRIAN ACCESS	Present Future			
	PUPIL DISTRIBUTION	Present Future			
SITE	ACREAGE SLOPE SOIL GROUND WATER PLANT COVER AESTHETICS				
COST	RAW PRICE SITE PREPARATION				
UTILITIES	WATER	Present Future			
	OTHER	Present Future			
INTEGRATION	COMMUNITY FACILITIES	Present Future			
	MASTER PLAN				
TOTAL RATING					

SITE A

SITE B

etc.

Table No. 19 has been prepared to assist such a committee in appraising possible sites and to aid the related Boards and Committees in reaching decisions on the proposals of the site committee. Each of the several factors included in the table are absolutely essential to the selection of a school site. Some of the factors may be evaluated in the field and some from research data obtained elsewhere. Each factor should be given a "weight" by the responsible agencies so a total score for each site may be determined for comparison purposes. Similar sheets can and should be prepared for the selection of sites for other essential community facilities prior to any investigating program.

The urgency of school site acquisition for ultimate needs cannot be overstressed. Delay will be costly not only in terms of dollars and work hours, but in the loss of good, centrally-located and economic sites and in terms of the quality and efficiency of the school system. Much can be gained and nothing lost by prompt, careful site acquisition.

G. COORDINATION

The school building program is only a part of the Master Plan for the Town. Since it will require the greatest expenditure of capital dollars, it should be most carefully developed. The coordination of other elements of the Plan with the school program should be just as carefully developed. The two elements which are most closely related to schools are recreation and circulation.

School sites provide major playground facilities and have been planned as integral parts of the overall park-recreation-conservation plan. This integration should also be carefully studied when any alternate school locations to those recommended are proposed, when the land for any actual site is taken and when the site development plans for the school are drawn.

Circulation plans, as they have been coordinated with the school plan, are of two types (1) pedestrian greenways and (2) streets with sidewalks. Each of the several proposed new school sites have coordinated circulation improvements, both vehicular and pedestrian, as integral parts of their site development plans. These proposals are shown in some detail on the "Community Facilities" and "Circulation", Plans of this report, and within the immediate areas of the proposed schools should be considered as much a part of the site development plan as the customary parking and driveway areas.

Coordination with other aspects of the Master Plan is not as easily visualized nor as definitive. Among these is the suggested incorporation of branch libraries in the appropriate junior high schools with parking and access for non-students, and the integration of the Featherland Park recreation area with the Lincoln-Sudbury Regional High School site to maximize the effective utilization of each facility for the high school pupils and the general public.

IV. RECREATION - CONSERVATION

A. INTRODUCTION

1. Needs and Demands

The complex but highly productive economy and culture in which we live has brought a substantial measure of leisure to man, together with the income and health to enjoy it. Recreation, including outdoor recreation, is a major outlet for his leisure.

Whatever may be the need for outdoor recreation - in terms of relieving tension, maintaining physical fitness, reducing delinquency and teaching us to live together in harmony - no one can deny that people demand it. Virtually every park or other outdoor recreation area in the U.S.A. has experienced steadily mounting attendance. Typically, each year sets a new record of use - and next year will set another record.

Few people can provide their own outdoor recreation areas beyond their own backyards. The latter will do for the small child, the quiet evening family cookout, and gardening; but for most of the many outdoor recreation activities much larger and more specialized areas are needed.

Therefore, it is obvious that there is a large measure of municipal responsibility for outdoor recreation, in two specific functions: the provision of suitable areas and the provision of leadership and instruction.

In the next several decades most or all of the social trends which have led to increased demand for outdoor recreation will continue. These trends include the following;

(1) longer life expectancy

(2) population growth

(3) larger families

(4) higher per capita income

(5) a shorter work week

In a recent study an outstanding authority* found that the use of local municipal recreation areas has been growing somewhat more than twice as fast as the population since 1940. During the same time period the use of state and regional facilities, according to the same study, has increased at a rate five times that of total population growth.

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*Clawson, Marion, "Statistics on Outdoor Recreation" 1958

Although these findings are general, they are particularly significant to rapidly developing suburban communities such as Sudbury. While existing recreation facilities such as State parks are being more intensively developed and used and large private holdings suitable for recreation purposes are rapidly decreasing in number and availability, the demand for local outdoor recreation facilities on the other hand can be expected to increase at least twice as fast as the population. In the light of the trends of population growth, per capita income, leisure time and lower average age, the demand for municipal outdoor recreation facilities and activities may well triple or quadruple the population increase in the rapidly growing suburbs.

The concern of this section is to provide some quantitative appraisal of the amount and scheduling of needed outdoor recreation facilities for Sudbury during the next several decades and to suggest the locations of the major facilities.

The need to conserve our rapidly diminishing natural resources is generally accepted today. An indication that this need has generated a public demand is the recent mushrooming of municipal Conservation Commissions in the Metropolitan Boston Area. The demand for conservation in most suburban communities and particularly in Sudbury is dominated by the need to conserve water for use, drainage and attractiveness. Because of its several streams and ponds and its proximity to the Sudbury River, the Town is well aware of its municipal responsibility in terms of water conservation.

Of somewhat lesser significance are the demands, being created by rapid development, to conserve the soil and its plant cover and the unique, character-giving, historical architecture of the Town.

Regarding conservation this section will be concerned primarily with suggesting certain areas that should be municipally controlled to conserve certain natural resources, first, in terms of sanitation and economic needs and second, in terms of the maintenance of the rural and suburban characteristics of the Town.

2. Potential for Development

Sudbury is uniquely endowed, both within the Town and in close proximity to it, with "natural features" that are contributing and will continue to contribute to unusual and valuable recreation - conservation areas and facilities. It is located on a major river; has several attractive greater and lesser hills or drumlins; is in close proximity to three Great Ponds (each belonging in perpetuity to all citizens of the State); has two large and about fifteen small streams of varying characteristics; and has some twenty natural and man-made ponds.

The major "natural feature" of the town is the Sudbury River and its adjacent marshes which make up about ten percent of the town area.

These marshes and adjacent uplands are an essential portion of the Massachusetts Bay Circuit, officially recognized by the State as a desirable "green belt" around Metropolitan Boston.

Since the Sudbury River has been recently freed from the pollution caused by sewage disposal in Framingham, the Wayland-Sudbury portion of the river is now rated officially as a class "B" stream, that is, suitable for all recreational activities including swimming.

The three nearby "Great Ponds", White Pond in Hudson and Stow, Heards Pond in Wayland and White Pond in Concord each have considerable, although neither easy nor inexpensive, development potential. Heards Pond was proposed as a State Park in 1949. Each of the lesser natural features of the Town have particular development potentials, many of which will be reviewed later in the report.

3. Review of Recent Recreation - Conservation Studies in and relating to Sudbury.

In March of 1948 the Sudbury Valley Commission, consisting of the heads of four Departments of the Commonwealth, issued a 142-page report which included considerable study of the Sudbury-Assabet-Concord watershed with emphasis on the "Valley Floor" extending from Cochituate State Park to North Billerica. Particularly pertinent to Sudbury were a proposed State Park at Heards Pond and a proposed Wildlife Management area including all of the Sudbury River Flood Plain, below 120 feet mean sea level, in Wayland and Sudbury.

Since 1950, there has been an increasing number of studies initiated at Federal, State, and local levels on the Sudbury River Valley. The primary concern of these various studies has been the conservation of existing wildlife habitats, flood plain and watershed control, protection of water resources and protection of the Metropolitan "green belt" (the so-called Massachusetts Bay Circuit). These topics are of fundamental concern to all of eastern Massachusetts and point up the need for the Town of Sudbury to cooperate in programs that are aimed at preserving the character and functions of the Sudbury River.

In January of 1958 the Massachusetts Department of Natural Resources completed a preliminary state-wide "Plan for Development of Natural Resources". This report proposed a 3,150 acre State park identified as the Carding Mill Pond Area, which was to extend from the Sudbury Reservoir lands in Marlborough to the U. S. Military Reservation in Maynard and to include facilities for swimming, picnicking, fishing, boating and golfing. Another proposal was for a 20-acre boat launching area at or near the crossing of the abandoned Old Sudbury Road and the Sudbury River.

The Massachusetts Department of Natural Resources has a historic interest in this proposal, since they once controlled the area of the U. S. Military Reservation in Maynard, Stow, Hudson and Sudbury. Should the military move out, the Department would probably be interested in reclaiming the area for recreation-conservation use.

In 1929 the "Governor's Committee on the Needs and Uses of Open Spaces" conceived of a "cresent-shaped arc" anchored on the north by Plum Island Beach and on the south by Duxbury Beach and including at its apex the Sudbury River Marshes. This arc has become known as the "Bay Circuit" which has been almost constantly, for the past 32 years, in various stages of planning or development. In 1961 the Federal government authorized special funds for the planning and development of regional 'open space' areas. This availability of funds, combined with considerable local enthusiasm, may yet make the "Bay Circuit" a dominant reality.

A bill approved in 1961 by the Massachusetts General Court authorized the Federal Government to purchase or lease some 3200 acres of low-lying land in the Sudbury and Concord River Valleys. The bill provides for the establishment of a National Wildlife Refuge and authorizes all land below elevation 120 feet mean sea level to be set aside. The land below the 120-foot contour was deemed the minimum area exposed to inundation and frequent flooding. Some 1500 acres of the total 3200 acre tract proposed for the Refuge lie in Sudbury. This is nearly 10% of the Town's land area.

In Sudbury several groups have taken an active interest in preserving the character of the Town and in creating new recreational facilities for a growing populace. The Sudbury Leage of Women Voters has done considerable research and is preparing a comprehensive Study of Parks and Recreation. It will trace in detail the history of Sudbury's public land acquisitions, presents an evaluation of existing sites, their potential, and the overall assets of the Town in terms of open land, historical sites, and aesthetic attractions and will compare Sudbury's facilities and those of other selected communities.

4. History of Town Actions

Action by the Town of Sudbury to create facilities for outdoor recreation did not seriously begin until after World War II. The vast areas of woods and open field, and the relatively small population existing prior to 1950, made it unnecessary for the Town to acquire such land.

In 1953, the Town voted to appoint two committees to acquire lands for recreation, parks and cemetaries. "The Bathing Beach Committee" of five members was appointed first and was authorized to acquire a site on Dutton Road and prepare a swimming pool thereon. The second committee

appointed was the "Parks, Playground and Cemetery Investigating Committee" which made its first report to the Town in 1954. Stating that it was trying to look ahead at least twenty years in its plans, the committee suggested that the Town immediately begin action to develop certain facilities including two artificial, sand-bottom, swimming pools.

Several areas were surveyed in 1954 and a report was submitted concerning their suitability for recreational programs. Areas surveyed included the Raymond property (since acquired by the town in 1961), the Town Field (now Highway Department land off Old Lancaster Road), the Vassalotti Pools, the Barton Pool, the Pine Rest Wading Pool, Blueberry Hill Park, Tim Jones Field and a ski slope on the back of Mt. Pleasant Hill in Sudbury Centre.

In 1956, the Parks and Playground Investigating Committee reported that the real need of the Town was new sites. It further stated that "in order to have a place to play within a five or ten minute walk from every potential house in Town, we will require at least forty-five play areas".* It suggested that several of these, especially the larger ones, should be on the grounds of the public schools. The School Committee in turn expressed keen interest in having school property fully utilized for recreational purposes. By the end of 1956, the Investigating Committee had acquired seven sites and was in the process of acquiring several more. In 1957 (and again in 1958) the above stated goals were reiterated in the Annual Town Reports. The same year the Investigating Committee added that every street serving the play areas "should be a landscaped parkway."

By the end of 1958, two basketball courts had been completed, one behind the library, and the other at Pine Lakes. In addition, there were two macadam tennis courts at the Centre School and a water skiing program, which proved to be very popular at Pine Lakes on Willis Pond. The Halper Playground, begun in 1957, was completed, but vandals wrecked its equipment due perhaps to the lack of visibility from a public way. The Town and Country playground pond was excavated and the Vassalotti Pool brought near completion. A wading pool was begun on Hudson Road and also a shallow fishing pond started in the northwest part of Town.

The present Park and Recreation Commission was established in 1959 to replace the former Investigating Committee. The 1960 report of the new Commission emphasized that the most pressing need was still adequate swimming facilities and a water sports program.

In 1960 the Town established a Conservation Commission charged by law with responsibility for the promotion and protection of the natural resources of the community. It has the duty to keep an index of all local open land and water resources and to make recommendations to the state or town as to their proper use and management. It should act as the coordinating

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*Town Report Sudbury, 1956 P202

agency of the community on conservation matters, and give assistance to any existing private or public agencies working in this field. It may conduct researches on related problems and prepare information and educational materials for the community's benefit. It may accept gifts of lands, funds, or buildings on behalf of the community and it may purchase and hold land or limited rights in land (easements) for conservation purposes, and manage the same. It may accumulate, through town meeting appropriations, a Conservation Fund, to be used for the above purposes. Approved projects will be eligible for 50% reimbursement by the state. Federal aid up to 20% of cost will also be available in special cases.

A private group with similar aims, called the Sudbury Valley Trustees, Inc., of Wayland, is also dedicated to conservation, especially in wetland areas, and presently owns four different tracts in Sudbury. The Trustees also disseminate information on propositions and programs that may affect open lands in the Sudbury Valley.

The record of achievement in building recreational facilities during the period 1953 to the present is an accomplishment of considerable magnitude. If Sudbury had remained more or less static in its population level, the program undertaken would have eventually met the needs of the 1953-1955 population level. Since 1955, however, Sudbury's population growth has been very great, emphasizing the need not only for more facilities but for the systematic development of facilities planned or in the making.

B. REVIEW AND APPRAISAL OF EXISTING FACILITIES

Sudbury has a comprehensive assortment of recreation - conservation facilities in comparison to many suburban town of similar size. In addition, it is conveniently located in relationship to other public and private recreation areas.

1. Local Parks and Playgrounds

(1)	Featherland Park	40.0 acres	Presently used by Little League. Has two tennis courts. Clear level grass areas, swamp, and interesting hilly areas.
(2)	Vassalotti Pools	8.0 acres	Has 2 pools. Both of improved construction. One has diving board.
(3)	Town & Country Park	7.0 acres	Impromtu recreation.
(4)	Clark Field (leased)	2.2 acres	Has supervised baseball on field with backstop.
(5)	Library property	1.8 acres	Basketball court - intensely used.
(6)	Halper Playground	1.1 acres	Has playground equipment.

Local Parks and Playgrounds (cont.)

(7)	Barton Pool	1.0 acre	Has $3\frac{1}{2}$ foot deep pool, caters to very young with supervision.
(8)	Pine Lakes Triangle	2500 sq. ft.	Basketball court.
(9)	Johnson Playground	1.0 acre	Impromtu recreation.
	Total	62.2 acres	

2. School Sites

(1)	Lincoln - Sudbury Regional High School	72.7 acres	Athletic fields; open fields; woods; swamp. (offers limited recreational use for Sudbury residents)
(2)	Centre School	25.0 acres	Ballfield; small skating pond; hard top areas.
(3)	General Nixon School	21.1 acres	Ballfield; playground equipment; hard top areas.
(4)	Fairbank School	13.7 acres	Ballfield, hard top area; play equipment.
(5)	Israel Loring School	11.5 acres	Ballfield; play equipment; hard top area.
(6)	Horse Pond Road School	13.3 acres	Portable ice rink; ballfield; hard top areas; wood area.
(7)	South Elementary School	0.5 acres	Open unimproved sloping lot.
(8)	Haynes School	8.0 acres	Level unimproved lot.
	Total	160.8 acres	

3. Other Public and Semi-Public Lands

(1)	Pantry Brook Reservation	384.3 acres	State owned. Has hunting, fishing, bird-watching priviledges.
(2)	Memorial Forest - (Mass. Fed. of Women's Clubs)	277.9 acres	Permission required from owners to enter; activities limited.
(3)	Wayside Inn, Inc.	90.0 acres	Public welcomed. Privately owned.
(4)	Sudbury Valley Trustees	70.0 acres	On 4 locations. Activities limited to nature walks. Permission of owners required.
(5)	Boy Scouts of America	467.3 acres	On 3 locations. Activity for public limited to nature walks.
	Total	1289.5 acres	

In addition to the above, there are a rod and gun club, a golf course and a swimming club, all of which provide outdoor recreation opportunities for Sudbury residents on a membership basis. Within ten minutes driving distance are Cochituate State Park and the Walden Pond Reservation, each with good, though overcrowded, swimming and boating facilities.

4. Conclusions

With the addition of the proposed Federal Wildlife Preserve along the Sudbury River and its tributary brooks, the Town is assured of an abundance of permanently open land along the whole eastern edge of Town. Similarly, the extreme southern and extreme western approaches to the Town are well protected over large areas from haphazard and indiscriminate residential development. On the western boundary of Sudbury is the 725-acre U. S. Military Reservation, the Women's Club Memorial Forest adjacent to it, and the unique Wayside Inn Corporation property with which, surrounding property, has a 5-acre minimum lot size as a deed restriction. The southern approach is partially protected by the Boy Scout Reservation, the recently purchased Raymond Land, the adjacent Water District properties and the abutting "Flood Plain". The above open spaces cluster like a series of protective sentries around the main portion of Sudbury.

It is evident that future recreation needs in Sudbury will be for facilities of particular types in particular locations, rather than for large undeveloped areas. Conservation needs will be determined chiefly by the location of critical resources, such as water, woods or hills, which require protection, or would in themselves provide buffer zones between other land uses.

C. THE RECREATION - CONSERVATION PLAN

The following discussion is largely a summary description of the Recreation-Conservation Plan. The areas described have been suggested for an ultimate population of about 30,000 mostly in single family homes. Acquisition of the lands suggested should be made well ahead of the need or demand for the facilities described in order to insure the best possible sites at a practical price. Such lands can be used effectively for other public or private open uses prior to their ultimate use.

The plan is based in part on the following studies, prepared as parts of the Master Plan Study.

(1) Analysis of topography, soils, and geological formations in the Town.

(2) A study and plan of school needs.

(3) An analysis of present and predicted population size and characteristics.

(4) Analysis of present and suggested land use.

Information, evaluations and policies were contributed by the Park and Recreation Commission, the Conservation Commission, private organizations such as the Boy Scouts and the League of Women Voters, and State and County agencies. Each of the several specific proposals were checked in the field and discussed with knowledgeable persons as to their feasibility. The plan consists of four basic elements which are blended into a whole.

1. Neighborhood Play-Parks

A policy adopted by the Sudbury Park and Recreation Commission has been continued; namely, "to have a place to play within a five or ten minute walk from every potential house in town".

This policy for an ultimate population of 30,000 would require about 40 neighborhood Play-Parks based on full development of the land suitable for residential purpose.

The concept of a neighborhood Play-Park as interpreted by the plan would be an area of about two acres with at least one acre reasonably flat for active recreation and some portion set aside for pre-school children. The development of these areas for the use of adults, particularly mothers and those over 60, is also considered as important. Each neighborhood Play-Park should have at least one boundary on a public way for adequate formal and informal policing and to add to the attractiveness of the open space to the neighborhood. Some, but not all, of these areas should have such special facilities as tennis

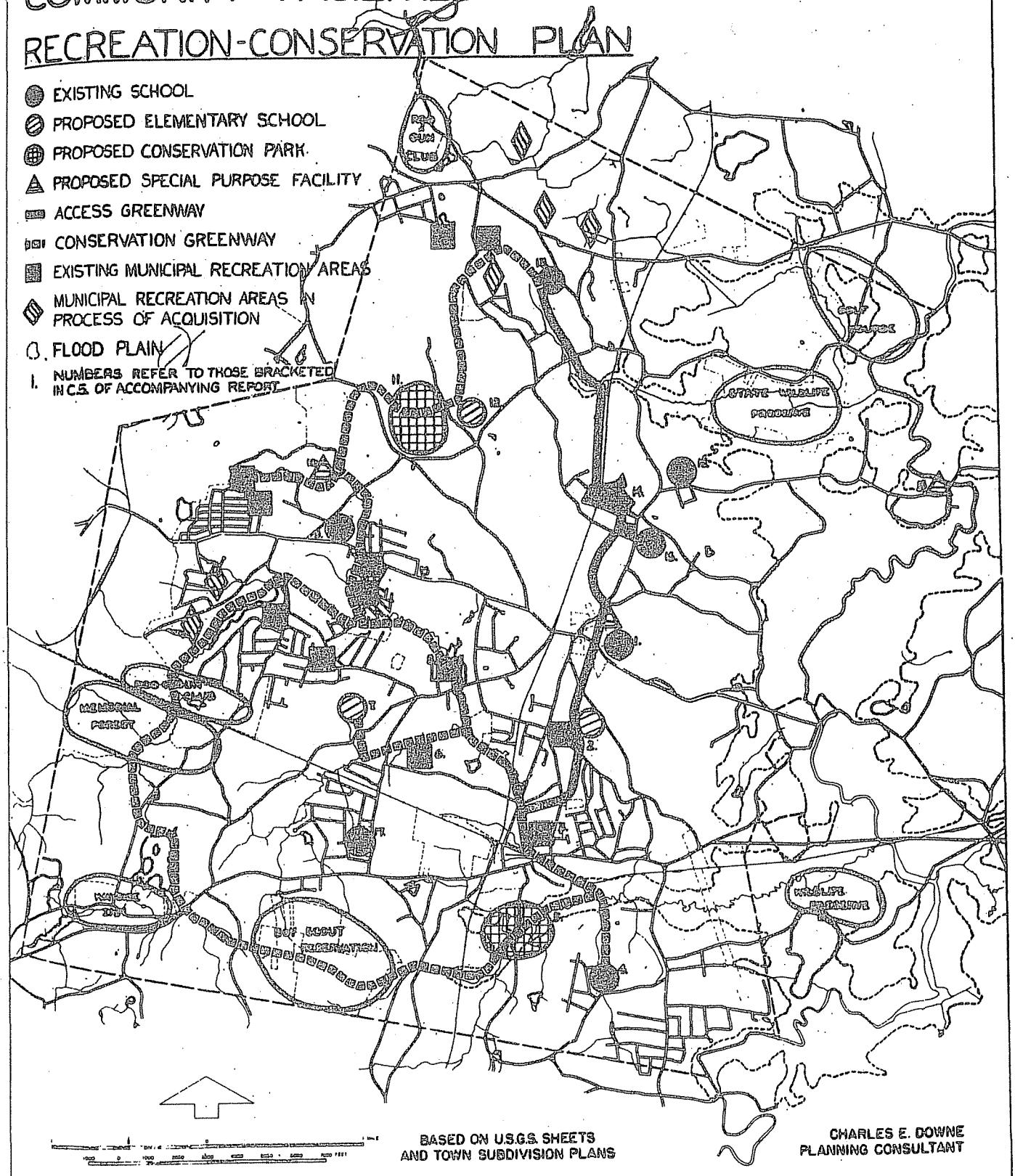
PLATE 6

COMMUNITY FACILITIES

RECREATION-CONSERVATION PLAN

- EXISTING SCHOOL
- PROPOSED ELEMENTARY SCHOOL
- PROPOSED CONSERVATION PARK
- PROPOSED SPECIAL PURPOSE FACILITY
- ACCESS GREENWAY
- CONSERVATION GREENWAY
- EXISTING MUNICIPAL RECREATION AREAS
- MUNICIPAL RECREATION AREAS IN PROCESS OF ACQUISITION
- FLOOD PLAIN

1. NUMBERS REFER TO THOSE BRACKETED IN C.S. OF ACCOMPANYING REPORT



BASED ON U.S.G.S. SHEETS AND TOWN SUBDIVISION PLANS

CHARLES E. DOWNE
PLANNING CONSULTANT

PLANNING BOARD SUDBURY, MASSACHUSETTS

courts and wading pools. Some of the need for this type of facility, particularly ballfields, will be served by existing and proposed school playgrounds which will reduce the overall need to between 30 and 35 additional Play-Park areas.

2. Community-Parks and Special Facilities

For the more mobile members of Sudbury society, children above grade school age and adults without perambulators, most of the outdoor recreation demand can best be fulfilled by larger multi-function or special-purpose areas.

Two types of Community Parks are proposed:

(1) an "Urban-Park", already being developed at what was formerly Featherland Farm, to include many and varied active recreation functions.

(2) two "Rural-Parks", more in the nature of a Town Forest, for less intensive uses such as hiking and picknicking, on the Raymond land and on Willis Hill.

Proposed special purpose community recreation facilities provide for swimming, boating, skating and similar activities.

3. Conservation Areas

Conservation areas are primarily concerned with the protection of water as a natural resource and the rural atmosphere of the Town including wildlife and indigenous vegetation. The two "Rural-Parks" above are, in part, conservation areas.

4. Greenways

The dominant design concept of the plan is a series of "greenways" which act as a recreation-conservation circulation system connecting each of the major elements described above. The aim of any recreation-conservation plan of "bringing nature as close as possible to the greatest number of people" is most efficiently served by the type of "greenway" envisioned herein.

The "greenways" as indicated on the Community Facilities Plan are of two major types: those concerned primarily with conservation or "Conservation Greenways" with infrequent use, and those concerned primarily with access from, or "Access Greenways", from one portion of town to another which would receive intensive use.

In the proposed plan the "greenways" are designed to provide a system of pedestrian circulation, separate from vehicular movement. Thus, it

becomes possible for children to go into schools, libraries, parks, and play areas, without depending upon streets with their traffic hazards. The "greenways" would be available for horseback riding and cycling but not for motorized vehicles. An exception might be police scooter patrol in heavily-travelled areas. Frequently, the "greenways" are routed to follow brooks, of which Sudbury possesses several. For example, a conservation greenway is proposed to follow Hop Brook, an important drainage outlet and the only stocked trout stream in Sudbury. In other areas, the "greenways" would follow portions of Landham Brook and Wash Brook in South Sudbury, Dun Brook in West Sudbury, Pantry Brook in North Sudbury, and a portion of Dudley Brook.

The fronting of "greenways" on stream courses has a dual purpose. One is to provide a scenic route for pedestrian traffic. The other is to provide for the preservation and conservation of the streams themselves. In the latter case, the land for the "greenway" itself, varying between 50 and 200 feet in width, could be acquired either by outright purchase, or by arranging for easements with persons owning property abutting the brooks. In the former case for the portion of the system between Featherland Park and the Town Library, the "greenway" could be 20 to 40 feet wide and might well have a paved walk to accommodate the heavier foot traffic expected just north and south of Sudbury Centre.

5. Overview of the Recreation - Conservation Plan

The following summary and description of the plan have been prepared as one might walk along the various proposed "greenways", beginning at the Town Centre, stopping at each of the major facilities as shown on the Recreation-Conservation Plan, and returning to the Centre.

(1) Civic Center with Park (Concord and Sudbury Roads)
The proximity of Featherland Park would make any extensive development for outdoor-recreation here redundant. A relatively small formal park, in addition to the play facilities at the Centre School, is proposed.

From the Centre a narrow "greenway" is proposed to connect to the South Sudbury business district. This "greenway" would be the major pedestrian way between the two points and should probably have a paved walk. It would pass through:

(2) Proposed Elementary School Site A, (between Goodman Hill and Our Lady of Fatima Church)
Either on this site or in an adjacent neighborhood Play-Park, such special facilities as tennis courts and a wading pool should be provided.

The "greenway" continues about midway between Concord Road and Clark Lane through Mt. Wadsworth Cemetery to:

(3) Gordon Memorial Library and Park (Concord Road and Church Street)
This plot, extending from Hop Brook to Concord Road and abutting the Business District, is suggested for development as a semi-formal park with some play equipment.

The "greenway" continues southward below the Post Road and becomes primarily a "Conservation Greenway", extending along several brooks to;

(4) Ireael Loring School (Woodside Road at Alta Road)
Near this site a relatively comprehensive neighborhood Play-Park should be developed to serve all Sudbury Residents south of the Boston & Maine and east of the N.Y., N.H. & Hartford Railroad Lines.

The southern portion of the "greenway system" travels in part through land below 120 feet, presently under consideration by the Department of Interior as a wetlands reservation, and connects also to a proposed Community Conservation-Recreation area.

(5) Raymond Community Conservation-Park (Raymond Road)
It is suggested that this major Community Park include a Town Wetlands Conservation area and some adjacent upland acreage for picnicking, fishing and possibly a Town Hall field and tennis courts. The acreage considered would involve between one-third and one-half of the land recently purchased by the Town and should be adjacent to both abutting Water District properties.

At the proposed Raymond Community Park, the "greenway" system splits with one branch heading north-west and another due west. The latter, a "Conservation Greenway", travels west over Nobscott Hill, through the Boy Scout Reservation to the Wayside Inn. From there it goes along the upper reaches of Hop Brook to the northerly end of Stearns Mill Pond, passing through the Memorial Forest of the Massachusetts Federation of Women's Clubs.

The path of this proposed "greenway" through the large organizational holdings mentioned above and through the Sudbury Rod and Gun Club could probably be achieved by negotiated agreements, the remainder by means of conservation easements. This portion of the "Greenway System" would be little used and maintenance could be of the type now carried out by the Boy Scouts.

The other branch of the Greenway System as mentioned above, follows the lower reaches of Hop Brook from its confluence with Landham Brook, at a point which might eventually be a Federal conservation area, to the northern end of Stearns Mill Pond. This "greenway" would be primarily a Conservation Greenway to protect Sudbury's largest stream, the extensive adjacent bogs and swamps, and the two millponds, one of which has been dry for several years, though it is proposed to be restablished with State and Federal Aid. This "greenway" would receive more use than the one over Nobscott Hill but much less than the one from the Featherland Park to the South Business District. It serves directly the following recreation areas:

(6) Vassalotti Pools (off Horse Pond Road, on Dudley Brook)

(7) Proposed Elementary School Site B (between Peakham and Pratts Mill Roads)

(8) Proposed Blueberry Hill Neighborhood Play-Park and Junior High Site - These coordinated facilities face on a re-created mill pond north of Peakahm Road and would be relatively comprehensive in facilities.

Extending northward from the Hop Brook "greenway" is a proposed Conservation Greenway, connecting to the Haynes Elementary School. This "greenway" follows Dun Brook to Willis Pond, crosses over Willis Hill and follows a ridge line from there past the Immaculate Conception picnic grounds to the Haynes School site. Along its way are the following major conservation and recreation areas:

(9) Fairbank Elementary School Site (Fairbank and Hudson Roads)

(10) Willis Pond Boating Area (Willis Pond off Fairbank Road)
This water-front area is proposed for summer and winter use primarily for boating and water skiing. Picnic-type facilities might also be appropriate.

(11) Willis Hill Community Conservation-Park (fronting on Maynard, Marlborough and Willis Roads)
This area is suggested to be of a similar character to the Raymond Community Conservation-Park. It would be somewhat larger including all of Willis Hill and some adjoining flat land. The site would be particularly appropriate on the north-east slope for a Town skiing area.

(12) Proposed Elementary School Site C, (Willis Road)

(13) Haynes Elementary School Site (Haynes Road)
At or near this school site there should be a comprehensive neighborhood Play-Park to serve as a core facility for this part of town.

The "Greenway System" continues southward from the Haynes School along Pantry Brook to the N. Y., N. H. and Hartford Railroad and then in varying relationships along the railroad to the Town Centre, the beginning point. All of this "greenway" from the Haynes School Site to the Centre, is apt to receive quite intensive use and a paved walk might be considered. A paved walk would be a "must" in the portion extending from the Regional High School to the Centre connecting to the paved walk from the Centre to the South Business District.

This part of the "Greenway System" connects directly to the following major recreation facilities:

(14) Featherland Community Recreation-Park (Morse and Concord Roads) This facility would function in the Recreation-Conservation Plan as the 'heart' of the system. It should have the most complete array of facilities for activities including swimming, indoor recreation, tennis, skating, picnicking and riding, with the exception only of those special facilities that are available to the townspeople at the adjacent Lincoln-Sudbury Regional School. Because of the proximity and centrality of all these facilities, it would appear advisable to consider them as a single, comprehensive, central recreation area.

(15) Lincoln-Sudbury Regional High School (Lincoln and Concord Roads)

(16) General Nixon Elementary School (Morse and Concord Roads)

Only two major existing or proposed Recreation-Conservation areas indicated on the Plan are not directly connected to the "Greenway System", namely:

(17) Horse Pond Elementary School (Horse Pond Road)

(18) Sudbury River Boating Area (Lincoln Road or Old Sudbury Road) An area on the Sudbury River is suggested for the launching of boats only. The purity of the River does permit bathing and if a lagoon were developed, swimming would be possible. It is important that the site be acquired before the Federal Government acquires it as part of its conservation area.

No neighborhood Play-Parks are shown on the plan because selecting some 30 to 40 sites would be both presumptuous and premature. Wherever possible it would be desirable to integrate Neighborhood Play-Parks with the "Greenway System" or to extend branch "greenways" to such areas.

TABLE NO. 20 - SUMMARY OF THE RECREATION-CONSERVATION PLAN

A. GREENWAYS

1. Conservation Greenways

a. Nobscot Hill
b. Hop Brook
c. Dun Brook
d. Dudley Brook
e. Willis Pond to Haynes School
f. Business District to Israel Loring School

2. Access Greenways

a. Haynes School to Business District

B. NEIGHBORHOOD PLAY-PARKS

1. About 40 in all including some school sites

C. COMMUNITY PARKS

1. Recreation - Parks

a. Featherland Park

2. Conservation - Parks

a. Raymond Park
b. Willis Hill Park

D. SPECIAL PURPOSE FACILITIES

1. Boating

a. Willis Pond
b. Sudbury River

2. Swimming

a. Vassalotti Pools
b. Featherland Park

3. Field Sports

a. Lincoln-Sudbury Regional High School

E. NON-MUNICIPAL FACILITIES

1. State, Federal, and private; mostly conservation-oriented.

In the Future Land Use Plan,"buffers", either natural or landscaped surrounding some proposed industrial sites, are indicated. In some cases these "buffers" may function as conservation areas particularly if they follow streams. Since these "buffers" would follow, in time, development of the industrial sites concerned, they could not reasonably be included in the Recreation-Conservation Plan.

As a portion of the Master Plan, which is primarily concerned with the future physical pattern of Town development, this report has concentrated upon "outdoor recreation". The Planning of indoor recreation should logically be integrated with the foregoing plan and vice versa.

At present and in the future many of the conservation and recreation needs and demands of Sudbury will be fulfilled by other than municipal facilities, including State and Federal facilities, and semi-public facilities varying from the conservation areas of the Sudbury Valley Trustees, with no improvements, to swimming clubs with intensive development. Sudbury is unusually fortunate in having variety of facilities that do not depend directly on local taxes for support. The more significant of these other facilities are indicated by name on the Plan and have been considered as essential elements in the Recreation-Conservation Plan.

D. CARRYING OUT THE RECREATION - CONSERVATION PLAN

Most of the techniques available to implement the Plan described above are already operating in Sudbury. The Park and Recreation Commission in cooperation with the Planning Board and other agencies is selecting, acquiring and developing Neighborhood Play-Parks and Community-Parks. The Federal Department of Interior in cooperation with the State Department of Natural Resources is in the process of establishing a major wetlands area. A private group is forming a Swimming Club and another has recently formed a Country Club. The Sudbury Valley Trustees is actively acquiring conservation areas. The Conservation Commission has been mapping and indexing open lands in Sudbury with special attention to the stream systems and watershed areas, for the sake of their drainage and water holding capacities and in process of developing a comprehensive long-range plan for the protection of strategic portions of these areas, which will in some cases serve to implement the "greenway" proposals of this report.

The Recreation-Conservation Plan is being completed during a time of dynamic action and will ideally function as a sterring mechanism for the forces already in motion.

The following is a brief check-list of techniques which are now being used and which could be used for acquiring land for outdoor recreation.

(1) Outright purchase, by the Town with or without eminent domain or state aid.

(2) Gifts accepted by the Town outright or in life estate.

(3) Holding tax title land by the Town

(4) Requiring developers to set aside a portion of a new subdivision for recreation use.

(5) Purchasing oversized plots for capital improvements, such as schools or roads.

(6) Flood plain or conservancy zoning.

(7) Establishment of an assessment policy for open space land users, such as defferals of payment or guaranteed fixed payment in return for development rights.

(8) Provisions for "Cluster Subdivision" and/or "Density Zoning".

(9) Oversized drainage easements.

(10) Scenic easements.

(11) Use of urban renewal funds.

(12) Implementing Great Ponds Act.

(13) Use of conservation rebate from state.

Many times the several items listed above can be used in combination on one particular project or in combination with techniques not listed. One of the more effective arguments in setting aside land for recreation and/or conservation is the value that is added to abutting and adjacent properties. In other words, recreation or conservation lands, of the right size in the right place, add to the tax base of a community. The "Greenway" or "Finger-Park" is particularly effective in this regard.

The standards in the following table have been adapted, from several authorities, to fit Sudbury's particular needs and demands, and to provide a general guide to establish uniformity of facilities throughout the Town.

TABLE NO. 21 - PROPOSED RECREATION FACILITY STANDARDS

Type of Facility	Population Per Acre	Walking Distance (in miles)	Minimum Area (in acres)	
			Gross	Flat Land
Neighborhood Play-Park	500 (125 Homes)	$\frac{1}{2}$ ($7\frac{1}{2}$ min.)	2	1
Community Parks	200	2 $\frac{1}{2}$ hour	25	12

Conservation-Greenways - where appropriate, 50 to 200 feet in width

Access-Greenways - where needed, 20 to 50 feet in width

Special Facilities - design requirements will supersede any general standards

Major emphasis has been placed during the preparation of the Recreation-Conservation Plan upon its integration with other municipal, public, and private facilities and the Future Land Use Plan. In carrying out the Recreation - Conservation Plan, continued attention should be paid to its integration with all other Town development factors. Basically, no decision on acquiring new recreation or conservation lands should be made without joint consultation with the Planning Board, School Committee, Highway Superintendent and other Town and private agencies which have plans for future developments. Conversely, development or land acquisition by all other agencies should follow consultation with the Park and Recreation Commission and the Conservation Commission.

In conclusion, it should be repeated that, at this atage of Sudbury's growth, the primary concern of the Town in the Recreation and Conservation field should be the acquisition of appropriate and strategic sites for all the purposes outlined above in the Recreation-Conservation Plan. Development of sites can take place gradually over the years as the population and its needs and demands increase.

V. MISCELLANEOUS COMMUNITY FACILITIES

A. INTRODUCTION

The school system is so dominant in Suburbia today in terms of employees, required acreage and buildings, social impact, and dollars on the tax rate, that there is a strong tendency to equate the concept of "Community Facilities" with "Educational Facilities". Previous analysis has already emphasized the similar importance of Recreation and Conservation facilities in terms of; land use, maintenance of property values, conservation of natural resources, and the continuation of physical and mental health in all age groups. Several other community services that require specific facilities are equally essential, although not as significant in terms of the landscape or the pocketbook.

The demand for these other services is generally in proportion to the size of the population regardless of its age distribution. This is in sharp contrast to the demand for schools which is very much influenced by the age structure. Although the age structure of the local population is not particularly significant to these "miscellaneous' community services, other factors of the population composition are. Most significant of these are the economic and educational status of the population. A well-educated population usually demands more library space; a high economic standing usually denotes less demand for police, health and welfare services; and so forth.

The services to be examined in this portion of the report are essential services, without which the Town would not be a "community". Therefore, the facilities should first be provided upon a basis of need. The level to which these services are developed, or the standard which they set, will probably be established on a basis of demand. The standard of education in Sudbury today is at quite a different level than the standard of street repair. The demand for the advantages of a good school system is apparently greater than the demand for the advantages of a good street system. In accordance with the foregoing, the suggested development of Community Facilities that follows has been based upon the continued residency in Sudbury of the kind of people that now reside there, as examined in the "Population" and "Economic Base" sub-reports.

B. INVENTORY, ANALYSIS, AND RECOMMENDATIONS

1. Police Protection

The Sudbury Police Department has recently moved into new headquarters in South Sudbury. This facility appears adequate for the next ten years and is on a lot that will allow considerable expansion after that.

2. Fire Protection

A new fire station is now under construction on Route 20 and another is

scheduled for the near future on Route 117. The present station in the basement of Town Hall does not provide the kind of space and equipment necessary for an efficient, well-trained Fire Department and should be replaced as soon as possible following the completion of the other two stations. Three fire stations will probably be sufficient for all time, although expansion of these facilities may be necessary at some future date. Since the South and proposed North Stations are west of the N.Y. N.H. and H. railroad, the central station should continue to be east of the railroad and within a few hundred feet of the intersection of Route 27 and Concord Road. This latter station location should be designed as an integral part of a Civic Center to be developed at this geographic center of the Town.

3. Libraries

The present library in South Sudbury is both inadequate to meet demands and poorly suited for expansion in terms of structure and site. The location, abutting the main business area, is excellent to serve population which is most heavily concentrated in this part of town. As Sudbury grows the population center will shift northward. It is suggested that this facility might well continue as a circulation branch of expanded library facilities, with the main library located at Sudbury Centre in the future Civic Center there.

(A more detailed discussion of Libraries has been presented to the Planning Board in a separate memorandum, dated April 24, 1961.)

4. Public Works

The major services normally provided by a "Public Works Department" are presently carried out by the Highway Department and the Sudbury Water District. The operational facilities of these agencies are now on adjoining lots near the center of the Town. The garage and offices are of recent construction and temporarily adequate, With the rapid addition of new streets in the recent past and the trend towards greater use of motor equipment by such an agency, it is apparent that the need for additional enclosed storage space is not far off.

The Water District has begun, in 1961, site preparations for a new central facility in South Sudbury which will reportedly be adequate for ten to twenty years.

The present site of the Highway Department facilities is a good one and it would appear reasonable to expect all future expansion to take place on the same lot. Several studies have indicated that this property might be partially used for recreation purposes. This suggestion appears practicable either as a temporary or as a permanent measure.

5. Waste Disposal Areas

The "dump" which the Town is using at present is on leased land off Route 117. This facility appears adequate for the near future but a new site or sites should be acquired within the next few years for later development and use.

Considering the rapid rate of growth of Sudbury and adjacent towns, it is predictable that the unpleasantries of open dumps will cause public demand for municipal incinerators. It is recommended that Sudbury in selecting a site for waste disposal, select it as an incinerator site with interim potential as a "dump". It should be noted that an incinerator also requires an area for the disposal of the inert ash and residue, though it is relatively small in volume and far more acceptable "fill". If the plot selected is publicized at acquisition and continuously thereafter as a proposed incinerator site, development of adjacent plots will be planned and developed accordingly.

6. Cemeteries

There are presently three areas owned by the Town either being used or designated for use as cemeteries, one each in South, Centre, and North Sudbury. It has been estimated that there are approximately six gross acres available at the three sites for new burials. Four factors principally control the per acre capacities of cemeteries.

(1) The size of the tract:
Because of the need for drives, paths, administration and maintenance areas, large tracts generally have a higher per acre capacity than small tracts.

(2) Topography and soil types:
Steep slopes, rocky areas and heavy soils reduce the per acre capacity.

(3) The ratio of family plots to single graves:
Past experience indicates that single graves allow about two and one-half times as many burials per acre as family plots.

(4) The size of plots and graves:
Assuming a continuation of past trends of the family plot to single grave ratio in Sudbury, taking into consideration the relatively small tracts, good soil conditions, and relatively flat terrain; and assuming further that the size of plots and graves will be about average, it would be reasonable to predict that the six acres available will bury about 3,000 persons.

The responsible organizations concerned recommend that cemetery capacities could be planned 100 years in advance. The fact that many urban areas are sorely pressed for burial space attests to the wisdom of this recommendation.

The number of deaths per year in Sudbury since 1955 has been about 50. A burial capacity of 3,000 would indicate 60 years capacity if present annual deaths continued. For several reasons Sudbury does not have a 60 year burial capacity:

(1) Each year several persons are returned to Sudbury to be buried who are not residents at time of death.

(2) The death rate represented by 50 annual deaths is about one-half of the State average and may not continue at this low rate indefinitely.

(3) The population of Sudbury is increasing very rapidly and deaths are a characteristic of any population.

The above factors indicate that Sudbury's present burial capacity is more realistically between fifteen and thirty years.

Throughout the United States cremations amount to about five percent of all deaths and although the trend of cremation is upward, it is moving upward very slowly and more slowly in New England than other parts of the country. It appears reasonable to assume that burials of non-residents will continue to exceed cremations in Sudbury for many years in the future.

For the purposes of cemetery planning, it is suggested that Sudbury acquire sufficient burial acreage to inter all deaths 50 years beyond saturation population assuming saturation population to be reached within the next 50 years. The implications of this suggestion are that the Town should acquire about 50 acres of good burial ground.

7. Museums

Sudbury has in the Wayside Inn and its related lands and structures one of the finest museums in New England. This fact should encourage rather than discourage the preservation of historic buildings, places, and artifacts in the Town. With the wealth of historic structures in the Town it would appear advisable to convert one of them into a museum. Such an action is already in process in Sudbury and is endorsed by the Master Plan as a part of the Civic Center concept.

8. General Government, Health and Welfare

The space for these Town functions is already quite insufficient and will become more so with each new family moving into Town. Considerable additional space for these functions might be found in other municipal structures, such as upstairs in a fire station, in an abandoned school or in a historic house.

Any such borrowing of space can only be a temporary and a somewhat expensive delay to a comprehensive Town Office Building. Such a structure, the timing and size of which could only be decided after a detailed study, should be located at Sudbury Centre, preferably in close relationship to the Town Hall as a major element of the Civic Center.

C. SUMMARY AND CONCLUSIONS

The picture, of the miscellaneous community facilities in Sudbury sketched briefly in this report is generally one of existing or imminent inadequacy. Only the Policy Chief and the Cemetery Superintendent can boast of facilities that are adequate for any substantial lengths of time.

One conclusion is clear from the study, namely, there is a need for detail planning for land acquisition and building program for practically all Community Facilities. This is summarized in Table 22 below which indicates the adequacy or inadequacy of each facility. As an indication of local awareness of these problems, two if not three of these functions are presently the subject of detailed study.

TABLE NO. 22 - ADEQUACY OF MISCELLANEOUS COMMUNITY FACILITIES

	Adequate Facilities		
	for 5 or more years	for less than 5 years	Inadequate Facilities
Police	x		
Fire		x	
Library			x
Public Works		x	
Waste Disposal			x
Cemeteries	x		
Museums			x
Health and Welfare			
General Government		x	
Total	2	3	4

The most significant recommendation that can be made as a result of this sub-report is that the expansion programs of all of these public services and those of the school and recreation agencies be coordinated. Coordination can take place in time, in place and in aesthetics. A library, a fire station and a town office building, with or without health and welfare facilities, are all contemplated in the forseeable future as a part of the Town Centre. These should all be the subject of a comprehensive architectural, landscape, site development, analysis and program. Economy of land use, efficiency of parking areas, programming of capital outlays, the relationships with contiguous private development and appropriateness of the function and architecture of building design are important items that must be considered to make these facilities integral parts of a strong and distinctive "Civic Center" for Sudbury.

A Civic Center study to determine needs, prepare a site plan, and to prepare detailed building plans can be carried out under 702 program of the H.H.F.A. This program provides an interest free loan to cover the total cost of such studies, repayable if and when construction is carried out, and only for those portions actually constructed.

MASTER PLAN STUDY

CIRCULATION STUDY & PLAN

Planning Board

S U D B U R Y, M A S S A C H U S E T T S

February 1962

Charles E. Downe, Planning Consultant

I. INTRODUCTION

The movement of people and goods through a community in an efficient and pleasant manner can never be the result of a happy accident, but must be the result of extensive planning. As the pattern of development in Sudbury is constantly being crystalized by day-to-day building, the Town must be sure that such construction will not stand as an obstacle to predictable circulation need in terms of new rights-of-way and expansion or realignment of existing ways. The locations of the more important streets and highways must be determined many years in advance of the need. If this is not done, the excessive costs of acquiring rights-of-way may prohibit the building of an essential road and the price will be paid for all time in terms of inconvenience and reduced safety.

Sudbury is located almost equidistant from circumferential Route 128, the outer circumferential Route 495, the Massachusetts Turnpike, which is under construction as an expressway to Boston, and Route 2 which is proposed to become an expressway to Boston. In a semi-rural town such as Sudbury where isolation from major lines of communication may be deemed a prime asset by residents, it is interesting to note that the majority of residents of Sudbury are and will be more remote from the major highways discussed above (Routes 495, 128, 2 and the Massachusetts Turnpike), than the majority of residents of any other town located within the confines of those four expressways.

In the following pages there is a description of the circulation problems, including vehicular and pedestrian movements and parking, and proposed improvements that should be made over a period of years. It is essential to recognize that these proposals result from all of the studies included in the Master Plan and that they would serve best the general development pattern indicated in the Future Land Use Plan.

II. APPRAISAL OF EXISTING CIRCULATION SYSTEM

A. REVIEW OF EXISTING FACILITIES

Circulation facilities in Sudbury today consist of railroads, streets and highways, an airstrip, walkways, and parking areas.

1. Railroads

There are two railroads, one aligned east-west for passenger travel, the other aligned north-south for freight transport. Both of these lines carry a minimum of traffic, hence their grade crossings in Sudbury cause negligible traffic interruption and constitute no great safety hazard. No proposals are included in the Circulation Plan in regard to the railroads, as their locations are fixed, and relatively permanent. Abandonment is possible but not likely and not recommended. Elimination of all grade crossings would be desirable but could not be justified economically.

2. Airstrip

The airstrip in Sudbury does not presently handle inter- or intra-metropolitan traffic and does not appear to have the potential or intent of conversion to such use. The availability of several small airports in nearby towns has influenced the decision not to include an airport in the Circulation Plan.

3. Walkways

At present there are only bits and pieces of unconnected, ill-constructed and maintained walkways in Sudbury. They do not provide any foundation on which to build a future pedestrian circulation system and, therefore, all proposals regarding walkways or sidewalks refer to entirely new facilities.

4. Streets

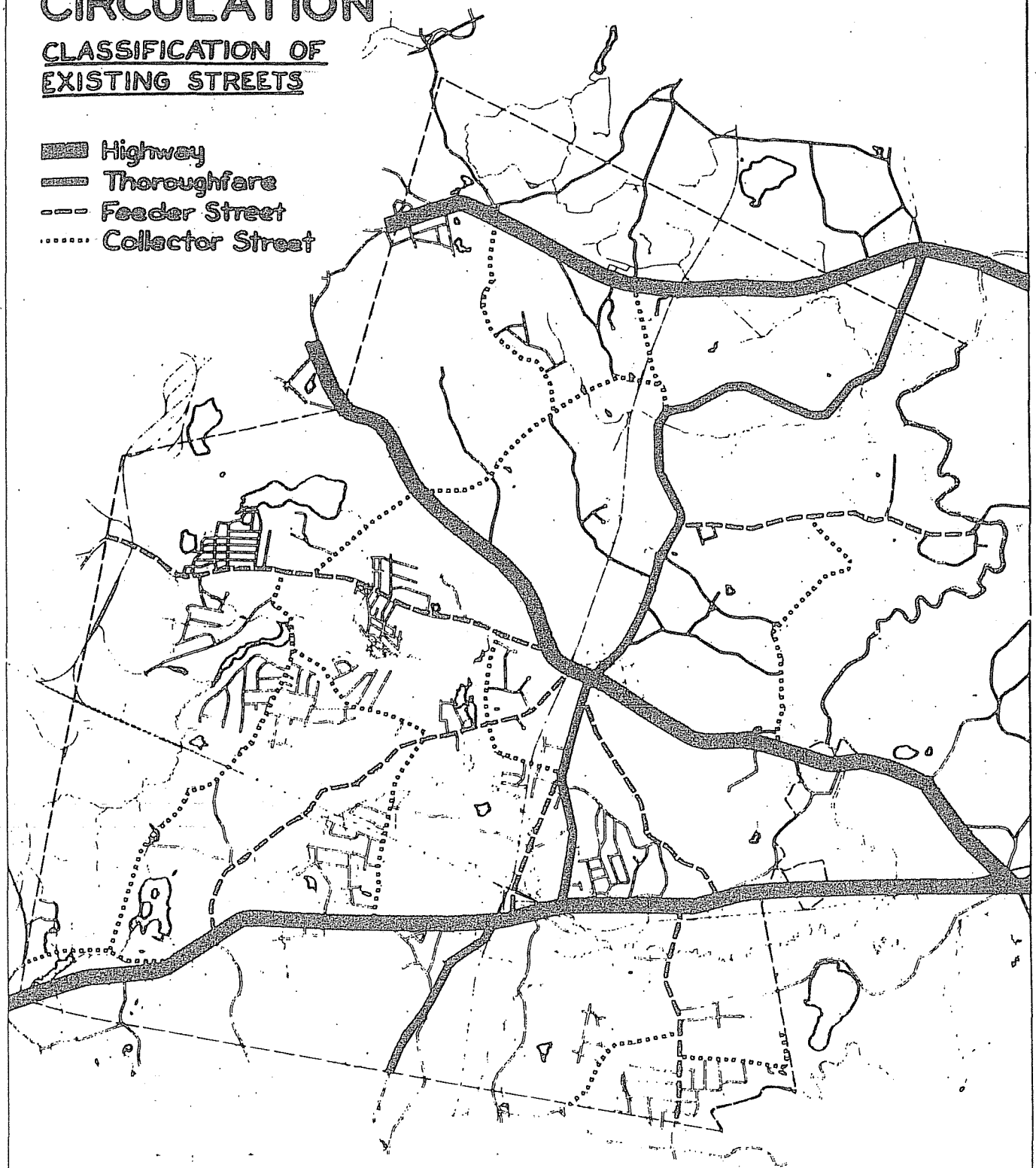
The streets of Sudbury are classified into five types, which will serve as a basis for present and future circulation analysis.

(1). major highways: are the state highways which carry most of the through traffic and much of the local traffic. Two roads have been classified as major highways in Sudbury. The most important is Route 20 (Boston Post Road), a much-travelled road between Boston and Worcester. The other is Route 27 (Maynard Road and Old Sudbury Road) which connects Wayland with Maynard.

PLATE I

CIRCULATION

CLASSIFICATION OF EXISTING STREETS



BASED ON U.S.G.S. SHEETS
AND TOWN SUBDIVISION PLANS

CHARLES E. DOWNE
PLANNING CONSULTANT

PLANNING BOARD SUDBURY, MASSACHUSETTS

(2). minor highways: carry much through traffic, but a larger percentage of local traffic than major highways. Three minor highways exist. One is Route 117 (North Road) and its westward extension, Great Road. The others are Concord Road extending from the Concord Town Line to Route 20, and Nobscot Road, which starts at Route 20 and continues south as Edgell Road in Framingham.

(3). feeder streets: are local streets which provide direct connection between two minor highways or a minor and a major highway or "feed" traffic from a collector street to a highway. One feeder street is Hudson Road. Others are Peakham Road, Union Avenue, Goodman's Hill Road, Lincoln Road, and Landham Road.

(4). collector streets: are those which "collect" traffic from one or more residential streets and carry it to the feeder streets or directly to highways. Collector streets include Pratt's Mill Road, Horse Pond Road, Old Lancaster Road (between Peakham and Concord Roads), Fairbank Road, Marlboro Road, Mossman Road, Pantry Road, Water Row Road, and south of Route 20, Woodside and Pelham Island Roads.

(5). residential streets: all remaining streets not named have been classified as residential streets.

Due to the scattered low density character of development in Sudbury at the present time, about 45% of all accepted street mileage is classified as major streets. Close to one-third of all accepted ways in Sudbury was found to be carrying substantial through traffic.

TABLE NO. 1 - CLASSES OF STREETS 1961

Type	Miles	Percent
Major Highways	8.9	9.1
Minor Highways	9.3	9.6
Feeder Streets	10.5	10.8
Collector Streets	15.3	15.7
Residential Streets	53.3	54.8
	97.3*	100.0

*Includes all accepted Town ways and Planning Board approved ways as of January 1961.

B. APPRAISAL OF THE DESIGN AND CONDITION OF EXISTING STREETS

1. Width and Condition of Pavement

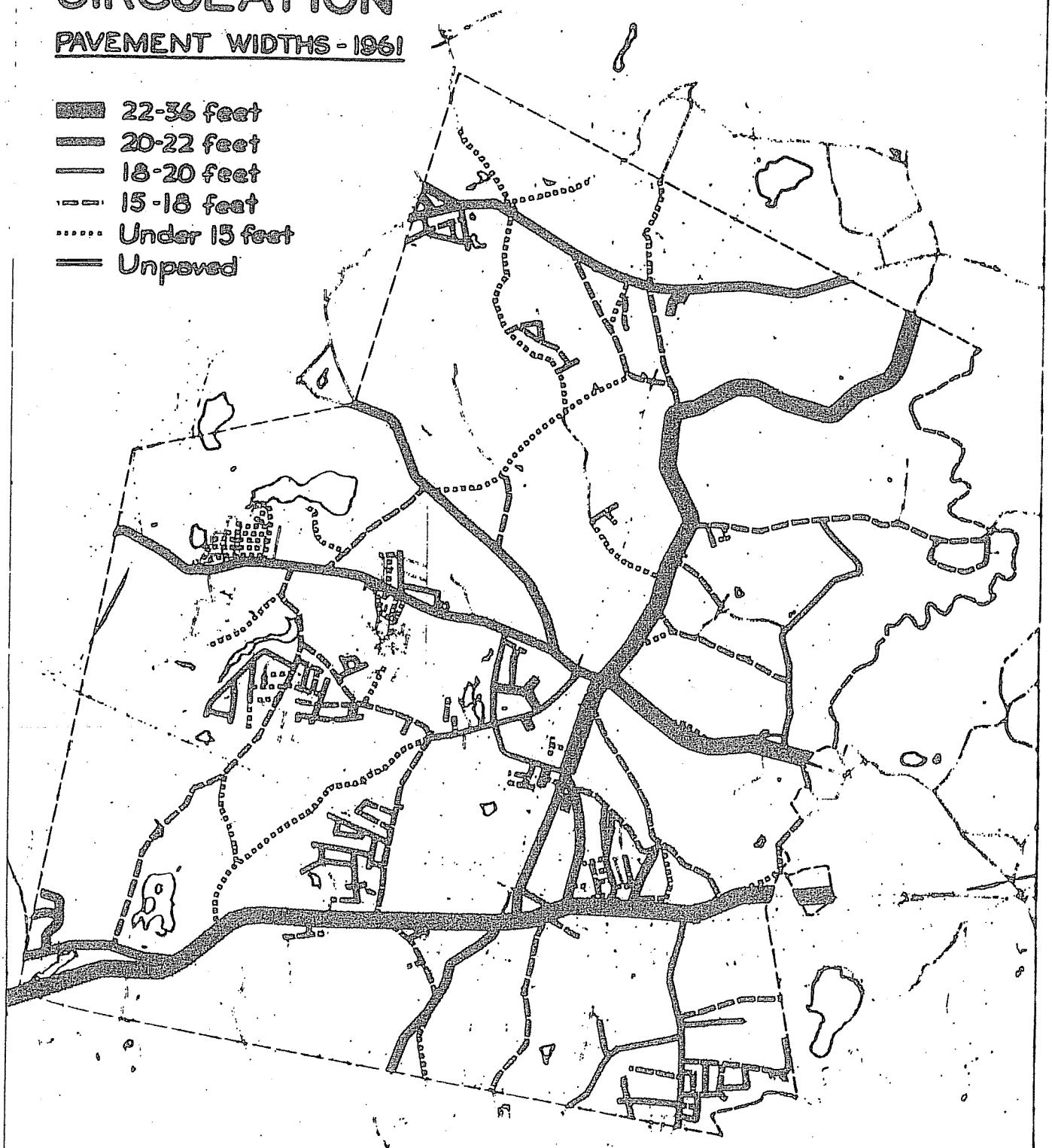
During the summer of 1961 a field survey of every street in Sudbury was carried out to determine the width and condition of the existing street pavements. The results of the survey are shown on Plate Nos. 2 and 3. This survey did not include core borings or use a tape measure or any other close tolerance analysis technique. It was visual survey and relied upon the eyesight of trained personnel. The "dimensions" indicated in the accompanying data represent the controlling factor rather than the average or the dominant characteristic of any particular way. The "conditions" as stated should be intrepreted as the relative average condition during July 1961 over the most travelled portion of the way.

About 82 miles of public ways had been paved prior to the summer of 1961. Over half of this mileage had an effective width of less than two lanes (18 feet). No major street or highway pavement should be less than 20 feet wide. This is a width that would allow a truck and a fire engine to meet and pass. In Sudbury there are 44 miles of major streets and highways. In the Summer of 1961 only 23 miles of pavement were effectively over 20 feet in width. Since some mileage of the streets which are over 20 feet wide are in new subdivisions, not even half of the major streets in Sudbury are over 20 feet in width.

CIRCULATION

PLATE 2

PAVEMENT WIDTHS - 1961



BASED ON USGS SHEETS
AND TOWN SUBDIVISION PLANS

CHARLES E DOWNE
PLANNING CONSULTANT

PLANNING BOARD SUDBURY, MASSACHUSETTS

PLATE 3

CIRCULATION

PAVEMENT CONDITIONS - 1961

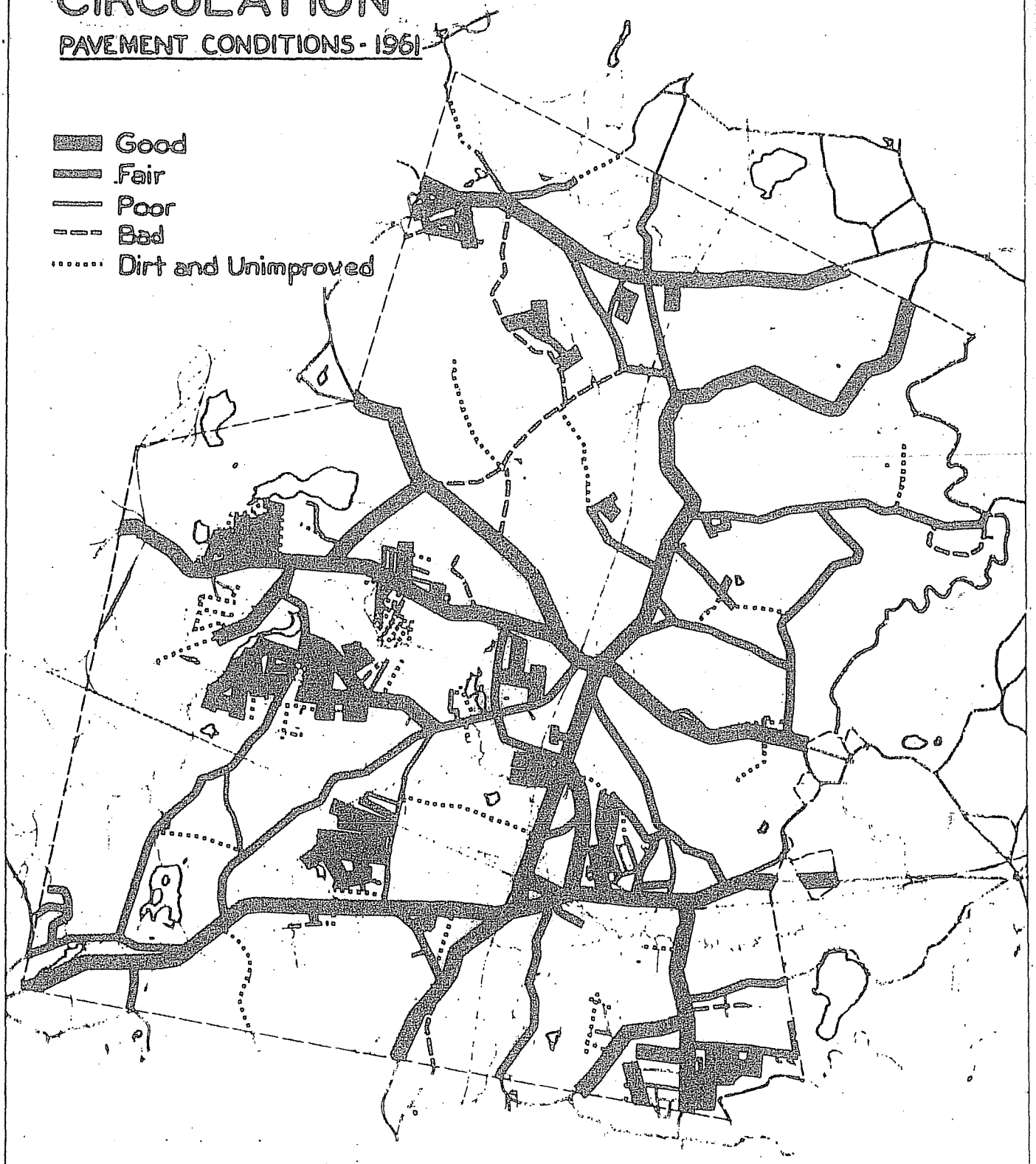


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TABLE NO. 2 - STREET PAVEMENT WIDTHS 1961

Widths	Miles	Percent
22 - 36 feet	11.3	13.7
20 - 22 feet	11.6	14.1
18 - 20 feet	15.7	19.2
15 - 18 feet	26.6	32.4
Under 15 feet	16.9	20.6
	82.1 miles*	100.0

*There were 15.2 miles of unpaved ways in 1961

Major streets that were particularly deficient in paved width included Landham, Dutton, Peakham, Goodman's Hill, Lincoln, and Pratt's Mill Roads, even some of the major streets with less than minimum width were not in good repair. When the field inspection was carried out, about one-half of all paved street mileage was in good condition, that is, not obvisouly needing repair; about one-third was in need of minor repairs; and about one-seventh was in need of major repair. Some of the latter mileage was actually dangerous to travel on. Although there are several unpaved ways in Sudbury, only one or two seem to offer any real problem to efficient, convenient circulation.

TABLE NO. 3 - CONDITION OF STREET PAVEMENT 1961

Condition	Miles	Percent
Good	39.3	48.0
Fair	28.5	34.7
Poor	8.2	9.9
Bad	6.1	7.4
	82.1 miles*	100.0

*There were 15.2 miles of unpaved ways in 1961

2. Miscellaneous Factors

Several other factors of the circulation system of Sudbury are presently inadequate. Sight distances, as limited by horizontal and vertical curves, are inadequate on almost all major streets in town, particularly, Landham, Peakham, Lincoln, Concord, Dutton, Old Sudbury and Water Row Roads.

Intersections are in many cases quite blind or they have an angle of less than 60 degrees, or they include excessive slopes. Examples of poorly designed intersections would include:

Landham Road and Route 20
Old Boston Post Road and Route 20
Maynard and Hudson Roads
North, Powder Mill, and Old Marlboro Roads
Horse Pond, Peakham, and Pratts Mill Roads
Framingham and Nobscot Roads
Old County Road and Route 20

There are many instances of inadequate offsets, particularly along Landham, Dutton and Hudson Roads. The excessive length of certain dead-end roads such as Stockfarm, Moore and Butler Roads also causes major inefficiencies in the circulation system.

C. TRAFFIC FLOW AND ACCIDENTS

To some degree traffic flow over streets and highways is similar to the flow of water through plumbing pipes and fixtures. Within this simile, accidents and congestion might represent leaks and insufficiencies. It is the obvious intent of the Circulation plan to reduce existing congestion, to avoid it in the future, and to eliminate as far as possible the identifiable physical contributors to accidents.

Plate No. 4 shows both traffic flow and accidents and emphasizes that generally the most accidents occur where the largest number of vehicles pass. The traffic volumes shown on this map were interpreted from the following data.

PLATE 4

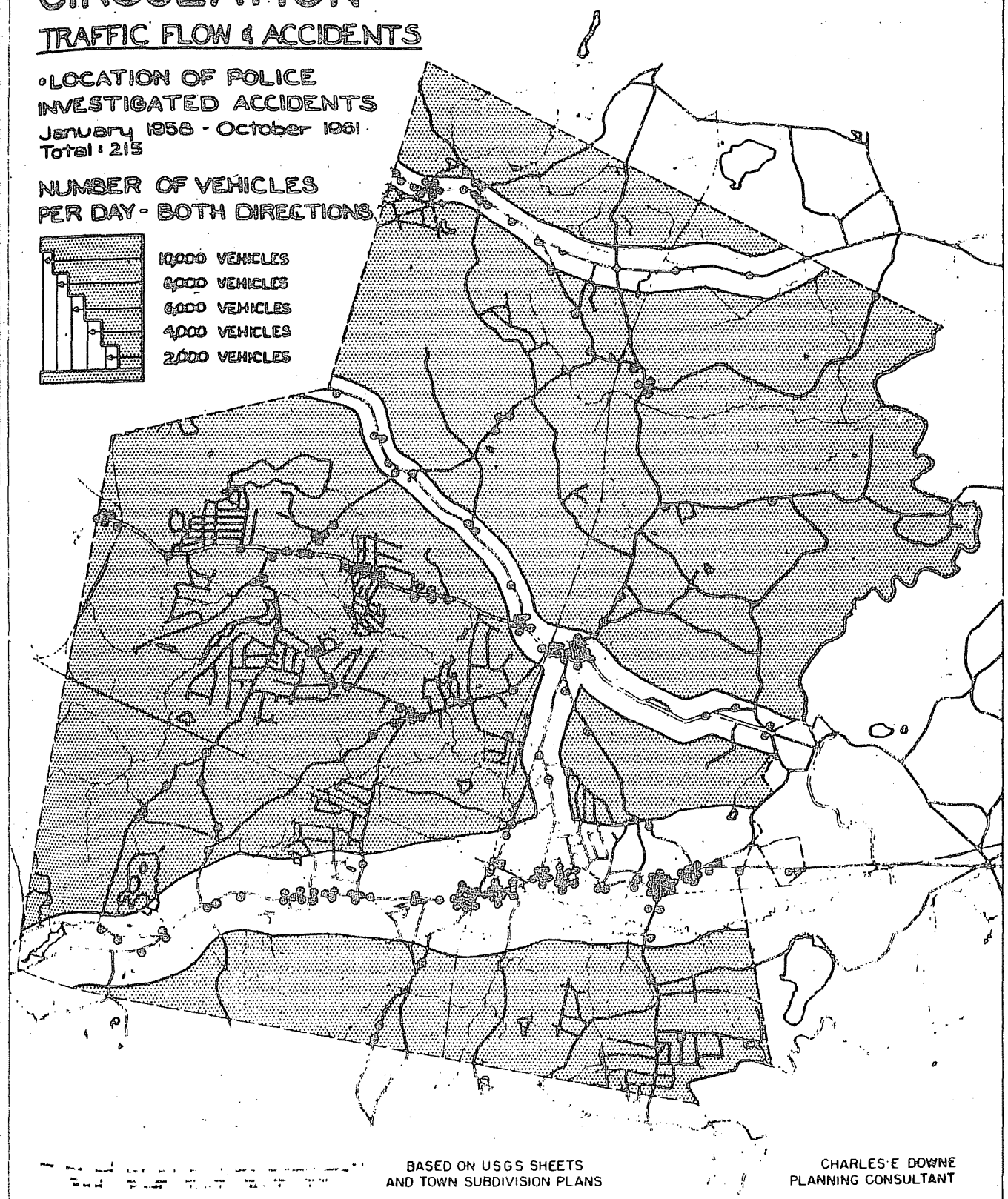
CIRCULATION

TRAFFIC FLOW & ACCIDENTS

• LOCATION OF POLICE INVESTIGATED ACCIDENTS
January 1958 - October 1961
Total : 215

NUMBER OF VEHICLES PER DAY - BOTH DIRECTIONS

10,000 VEHICLES
8,000 VEHICLES
6,000 VEHICLES
4,000 VEHICLES
2,000 VEHICLES



BASED ON USGS SHEETS
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PLANNING CONSULTANT

PLANNING BOARD SUDBURY, MASSACHUSETTS

TABLE NO. 4 - AVERAGE DAILY TRAFFIC FLOW* AT SELECTED POINTS

Location of Count	1958	1959	1960	Average Annual Percent Increase
Route 20 at Concord Road	8370	8610	10,120	11
Route 20 at Marlborough Line	4830	6035	-	25
Concord Road at Route 20		2750	2,980	9
Route 117 at Route 126	3550	4355	-	22
Route 117 at Route 27	1840	2115	2,230	11

*All traffic both directions for 24 hour period.

Source: Mass. Dept. of Public Works

These figures indicate that traffic volumes on the highways of Sudbury are increasing at a more rapid rate than the local population. There is no reason to believe that the relationship between these growth indicators will change in the near future particularly since large scale subdivision has only just begun in the towns immediately west of Sudbury. Two factors that may influence the trend in the east-west traffic will be Route 495 and the proposed extension of the Massachusetts Turnpike into Boston. At present responsible officials do not feel that either or both of these proposed roads will stop the increase in traffic on the minor east-west highways such as Routes 20 and 117 but they may slow down the rate of increase.

The majority of traffic accidents in Sudbury during the past few years has been on the State highways.

TABLE NO. 5 - POLICE-INVESTIGATED ACCIDENTS ON STATE HIGHWAYS
January 1958 to October 1961

Route No.	Accidents Investigated	Percent of Total*
20	82	38
27	32	15
117	18	8
Sub-totals	132	61
All other	83	39
Totals	215	100

*215 police investigated accidents that were so described that they could be mapped 1/1/58 - 10/31/61.

Source: Sudbury Police Files

As can be interpreted from the Table No. 6 statistics; the intersections with the State highways are particular points of stress in the Sudbury Circulation System and an improvement program at these points would be particularly fruitful in terms of reducing the accident rate. There is some reason to believe that such action might also ameliorate congestion although accidents and congestion are not necessarily directly related.

To the local resident the number of serious accidents on the local streets should be more appalling than those on the heavily-travelled highways. Plate No. 4 indicates that many of the police-investigated accidents on Town Roads are at blind intersections, tight curves, acute intersections, areas of poor pavement conditions, and pavement widths of less than eighteen feet.

The general trend in traffic accidents in Sudbury is upward although not as sharply as traffic volume. Assuming that police-investigated accidents are generally the more serious ones, minor accidents have been increasing in recent years more rapidly than more serious ones. A sustained increase in minor traffic accidents can usually be related to increasing congestion, such as that caused by a larger percentage of total traffic moving during the peak or commuter hours.

TABLE NO. 6 - INTERSECTIONS WITH FIVE OR MORE POLICE-INVESTIGATED* ACCIDENTS

January 1, 1958 to October 31, 1961

Intersection	Accidents Investigated	Percent of Total
Route 20 at Landham Rd.	12	5.50
Route 27 at Concord Rd. (Sudbury Centre)	11	5.00
Route 20 at Nobscot Rd.	10	4.50
Route 20 at Union Avenue	8	4.00
Sub-totals	41	19
Route 20 at Goodman's Hill Rd.	6	2.75
Route 20 at Concord Rd.	6	2.75
Route 27 at Hudson Rd.	6	2.75
Route 117 at Great Rd.	6	2.75
Sub-totals	24	11
Other intersections on State Highways 20, 27 and 117	34	16
Sub-totals	100	46
All others	115	54
Totals	215	100

*215 police investigated accidents that were so described that they could be mapped, 1/1/58 - 10/31/61

Source: Sudbury Police Files

TABLE NO. 7 - TRENDS IN LOCAL TRAFFIC ACCIDENTS 1955-1960

Year	Police-Investigated Accidents*	Percent Change	Accidents Not Investigated**	Total	Percent Change
1955	123				
		-25			
1956	90				
		00			
1957	90				
		+33			
1958	120		64	184	
		+63			+50
1959	196		80	276	
		+21			+ 6
1960	154		105	259	

Source: *Annual Police Report
**Police Files

D. PARKING

Facilities for the temporary storage of vehicles are as important to a good circulation system as streets, railroads or runways. Sudbury has acknowledged a municipal responsibility for such facilities in a Zoning By-Law provision that requires all business and industry in the Town to provide off-street parking within 300 feet of their principal building.

During the field survey of street pavement widths and conditions, Sudbury Centre and Route 20 from the Wayland Town Line to Peakham Road were selected for detailed parking surveys.

1. Sudbury Centre

The Centre, being principally a government and cultural center, requires a considerable amount of parking space for infrequent peak demands. It would be reasonable to assume that a good deal of any off-street parking for this type of an area could be unpaved because of its limited use.

Since much of the parking at the Centre is unmarked, no accurate count could be made, but a reasonable estimate indicates that there are about 120 public and 210 private off-street parking spaces at the Centre with room for about 70 cars along public roads for a total of about 400 spaces. This capacity, in separate parcels and as a whole, would appear to be adequate for every day of the year but Town Meeting Day. This evaluation would presume the use of public spaces for private meetings and vice versa. Any substantial expansion of the Town Hall, the churches, the commercial enterprises or the school will require additional parking facilities.

TABLE NO. 8 - PARKING SPACES AT SUDBURY CENTRE

Location	Off-Street Spaces Paved	Off-Street Spaces Unpaved	Curb Spaces	Type Owner
Spiller		3		Commercial
Crause	7			Commercial
Town Hall	84			Public
Fire Station	10			Public
School	27			Public
First Parish	40			Church
New Methodist		150		Church
Old Methodist		10		Church
Hudson Road			12	Public
Old Sudbury Road			32	Public
Concord Road			15	Public
Other Streets			10	Public
Sub-totals	168	163	69	
Totals		331	69 = 400	

Source: Field Survey

2. Route 20 (Wayland Town Line to Wayside Motor Lodge)

An extensive survey of the built-up portion of Route 20 included photographs of most commercial abuttors, perusal of pertinent assessment records and a field inspection of each property on the highway.

From the above there was no evidence of present or impending inadequacy of parking facilities for residential uses. Industry appeared to be providing enough off-street spaces for its employees and visitors at present. The small industries on Union Avenue and Route 20, however, did not have paved parking as is desirable for lots that receive daily year round use. Of the several public facilities on or near Route 20, only the Telephone Company appeared delinquent in providing adequate off-street parking in terms of sufficient, paved, well-located spaces.

About ninety percent of Sudbury retail businesses are located on or near Route 20. Of these business locations about sixty percent, in terms of floor space, are located between Dudley Road and Massasoit Avenue.

For analysis purposes, this portion of the Route has been identified as "Central Route 20", and the area to the east and west, each being about thirty percent and ten percent respectively of the Route 20 total were identified as "East Route 20" and "West Route 20" respectively. The analysis that follows includes only off-street parking spaces since Route 20 is not sufficiently wide to accommodate curb parking. Despite this inadequacy curb parking is practiced daily, particularly during rush hours, making a substantial contribution to the congestion at these times.

All of the businesses on Route 20 have been grouped under four general categories namely:

(1). Retail goods; (the sale of merchandise)

(2). Retail Services; (the sale of services; including restaurants, service stations, dry cleaners and so forth).

(3). Professional services; (doctors, dentists, lawyers, accountants, and so forth).

(4). Recreation; (indoor and outdoor commercial recreation, such as driving ranges, bowling alleys, and so forth).

For each of these categories off-street parking spaces were compared to the floor area of the various enterprises as recorded by the Town Assessors. This comparison is summarized in Table No. 9. The amount of space needed to park a car in an unattended lot varies from 180 sq. ft. to 200 sq. ft. depending upon the width of the stalls. The amount of additional space needed per stall for access drives, turning space, walks and buffers varies from 90 sq. ft. to 180 sq. ft. As a minimum rule of thumb for ground level unattended off-street parking, each car requires about 300 sq. ft.

TABLE NO. 9 - OFF-STREET PARKING SPACES AND COMMERCIAL FLOOR AREA ON ROUTE 20

	"East Rt. 20"		"Central Rt. 20"		"West Rt. 20"		"Total Rt. 20"	
	O. S. Parking Spaces	Sq. Ft. of Floor Area Per Space	O. S. Parking Spaces	Sq. Ft. of Floor Area Per Space	O. S. Parking Spaces	Sq. Ft. of Floor Area Per Space	O. S. Parking Spaces	Sq. Ft. of Floor Area Per Space
Retail Goods	72	114	177	195	35	198	284	176
Retail Services	117	73	227	167	57	166	401	135
Recreation	112	179	14	98	--	---	126	169
Professional Services	---	---	15	126	--	---	15	127
Totals	301		433		92		826	
Average		122		146		182		163

East Route 20 - Massasoit Avenue to Wayland Town Line

Central Route 20 - Dudley Road to Massasoit Avenue

West Route 20 - Dudley Road to Wayside Motor Lodge

Sources: Field Survey

Sudbury Assessor's Files

TABLE NO. 10 - PARKING AREA TO FLOOR AREA RATIOS ALONG ROUTE 20

	East Route 20	Central Route 20	West Route 20	Total
Retail Goods	2.60	1.55	1.50	1.70
Retail Services	4.10	1.80	1.80	2.20
Recreation	1.70	3.50	-	1.75
Professional Services	-	2.40	-	2.35
Averages	2.45	2.05	1.65	1.85

Source: Field Survey

Assessors Records

The parking area to floor area ratios as indicated on Table No. 10 vary widely from 1.50 to 4.10. In most cases and in average they exceed the present Sudbury Zoning By-law requirement of a 1.65 ratio for ground floor areas. During recent years new shopping centers are being build with a gross parking area to gross floor area ratio ranging from 3.0 to 5.0.

Much of the off-street parking abutting or adjacent to Route 20 has not been paved. This is a rather unfortunate circumstance in view of the type of climate customary in Sudbury and the fact that the commercial establishments in the survey area are in year round operation with minor exceptions.

TABLE NO. 11 - PAVED AND UNPAVED OFF-STREET PARKING SPACES FOR MAJOR BUSINESS TYPES

	Route 20		Paved as Percent of Total Spaces
	Paved	Unpaved	
Retail Goods	165	119	58.1
Retail Services	266	135	66.5
Recreation	121	5	96.0
Professional Services	15	-	100.0
Totals	567	259	68.5

Source: Field Survey

It is interesting to note that all other categories have a higher proportion of paved parking spaces than retail goods. When one considers the large restaurants and the Bowladrome, it would seem that paved parking is provided for out-of-town spenders, but not for local shoppers, since the restaurants and Bowladrome serve a larger number of out-of-towners than the local retail stores.

The prevalence of unpaved parking spaces is not limited to farm stands or marginal businesses as over half of the spaces can be found in the "Central Route 20" area.

TABLE NO. 12 - PAVED AND UNPAVED OFF-STREET PARKING SPACES BY LOCATION

	Route #20		Paved as Percent of Total Spaces
	Paved	Unpaved	
"East" - East of Massasoit Ave.	225	76	71.3
"Central" - (Massasoit Avenue to Dudley Road)	294	139	68.0
"West" - West of Dudley Road	48	44	52.3
Totals	567	259	68.5

Source: Field Survey

The prevalence of "front yard" parking without a grass or landscaped buffer creates the following detrimental conditions:

(1). Dangerous in terms of contributing to accidents

(2). Expensive in terms of congestion and inconvenience

(3). Unsightly in terms of the fact that Route 20 may be considered Sudbury's "front door".

During the field survey on Route 20, fifteen separate cases of similar situations were noted, such as the following:

(1). Customers must back into through traffic.

(2). Parking area is merely an unpaved extension of roadway.

(3). Large parking lot (over 100) with no controlled access or egress.

(4). Front yard parking is so shallow that most American cars overhang the highway.

A considerable amount of this obnoxious front yard parking is caused by insufficient setbacks of older structures, though some of it is found in front of post-war buildings. However, no instance was observed during the survey where front yard parking could not be either controlled at one entrance and one exit drive or eliminated and equal off-street parking provided within a few hundred feet.

III. EVALUATION OF CIRCULATION NEEDS

A. RAILROADS

A continuation of present trends and the effectuation of proposed State highway programs will make two railroads somewhat superflous to Sudbury and in all probability to the surrounding towns. The importance of the New Haven line as a civil defense facility in terms of an effective Boston by-pass may be ample argument for the continuation of that line. The Boston and Maine line would appear equally essential as a connector to the Ordinance Depot in Maynard.

B. WALKWAYS

Today's population density, car ownership, and bicycle ownership does not demand very many walkways. The obvious need immediately is for good, paved walkway connections from the Regional High School to the South Sudbury Business District and from Landham Road to Horse Pond Road along Route 20.

During the next ten years the population of Sudbury is expected to double. In 1970 it will be much less safe to walk along a street or road. As development becomes more dense, the number of persons who will choose to walk to shopping, to visit, and to school will be a greater proportion of the total population. Therefore, it can be anticipated that the need for walkways, both as sidewalks along streets and pedestrian ways at other locations, will increase more rapidly than population.

C. STREETS AND HIGHWAYS

1. Highways

Based on population and employment projections for Sudbury and surrounding towns, it is estimated that the Highways in Sudbury will need to serve in ten years time about double the 1960 traffic volume. Ultimate traffic loads at total development might be anticipated at about five times 1960 volumes. Within this long-range viewpoint immediate improvements are needed at various intersections and at several curves.

2. Feeder Streets

Some of the feeder streets in Sudbury are handling more traffic than they were designed for. This is particularly true of Landham, Hudson and Peakham Roads. Traffic volume increases on feeder streets can be predicted to be affected by population and employment growth as will highways but since they carry less through traffic, increases will probably be some-what less than the anticipated increase on the local highways.

3. Collector Streets

The function of these streets, collecting traffic from residential streets, has made many of them inadequate today. This inadequacy and minimal maintenance of these streets is the main contribution to the generally poor effect generated by the present Sudbury circulation system. Further increases in traffic can be anticipated to be in direct proportion to residential development.

D. PARKING

During the detailed field survey, as previously discussed, it became abundantly clear that, on the whole, there was insufficient parking available along Route 20. Detailed information concerning number of parking spaces and square feet of floor space for the various businesses concerned are on file with the Planning Board.

The most acute lack can be found between Nobscot Road and Massasoit Avenue. There is sufficient open land within 300 feet of any of the businesses in this stretch of road to provide adequate parking.

As Sudbury grows and traffic increases on Route 20, the parking problem will become much more serious, not only because of anticipated new businesses but also because existing businesses can expect to attract more customers.

IV. CIRCULATION PLAN

A. STREETS AND HIGHWAYS

The majority of major streets and highways in Sudbury have been in existence for over 150 years. This old circulation system has been patched and repaired by the Town, the County and the State without any overall or long-range plan. The Circulation Plan as described below is intended to establish a frame-work for "decision making" by both state and local agencies in reference to the needs of the local population. This plan has accepted three primary, motivating criteria:

(1) to serve the Future Land Use Plan, separating as much as possible through and commercial traffic from local residential traffic.

(2) to preserve to the largest extent possible the present good character of the community particularly as relating to the rural atmosphere of the roads.

(3) to prepare a plan that Sudbury can afford assuming a continuation of present economic trends.

1. Highways

It is recommended that the three State highways that pass through Sudbury be improved so that they will be capable of handling twice as many vehicles in 1971 as 1961. Specific improvements should include:

(1) Redesign & construction of the following intersections:

Route 20 & Landham Rd.	Route 27 & Hudson Rd.
Route 20 & Old County Rd.	Route 27 & Concord Rd.
Route 20 & Nobscot Rd.	Route 117 & Haynes Rd.
Route 20 & Wayside Inn Rd.	Route 117 & North Rd.

(2) Construction of a limited access by-pass of Route 20 around South Sudbury. The accompanying Circulation Plan indicates several alternative routes for such a by-pass that are presently under consideration by the Mass. Dept. of Public Works.

(3) Reduction to a practical minimum the number of driveway and minor street accesses onto the highways.

2. Thoroughfares

It is recommended that certain streets be designated "Thoroughfares" with the primary intent of carrying through traffic that cannot be practically assigned to the three highways. Because the three highways in Sudbury are generally east-west, the major need for thoroughfares is north-south. Four "thoroughfares" are recommended:

(1) The principal and by far the most significant proposed "thoroughfare" would travel generally from the northeast corner of Sudbury to the southwest corner. It would be made up of the following existing streets in a considerably improved state:

Concord Road	Dutton Road
Marlboro Road	Old Garrison Road
Fairbank Road	Peakham Road

The development of this "thoroughfare" will require only three very short "rights-of-way" to connect: Concord Road to Marlboro Road; Marlboro Road to Fairbank Road and Fairbank Road to Dutton Road.

(2) A less significant proposed "thoroughfare" would combine Nobscot Road, Union Avenue, Concord Road, and Pantry Brook Road. All construction related to this proposal would be minor except the linking of Nobscot Road and Union Avenue. This last could be accomplished by a road parallelling the Railroad from Route 20 to a point between Station Street and Codger Lane.

(3) The least significant of the four thoroughfares is a proposed road to skirt the floodplain, parallelling Route 126 in Wayland, by integrating Landham Road, Old County Road, Water Row Road, Wier Hill Road, and Concord Road.

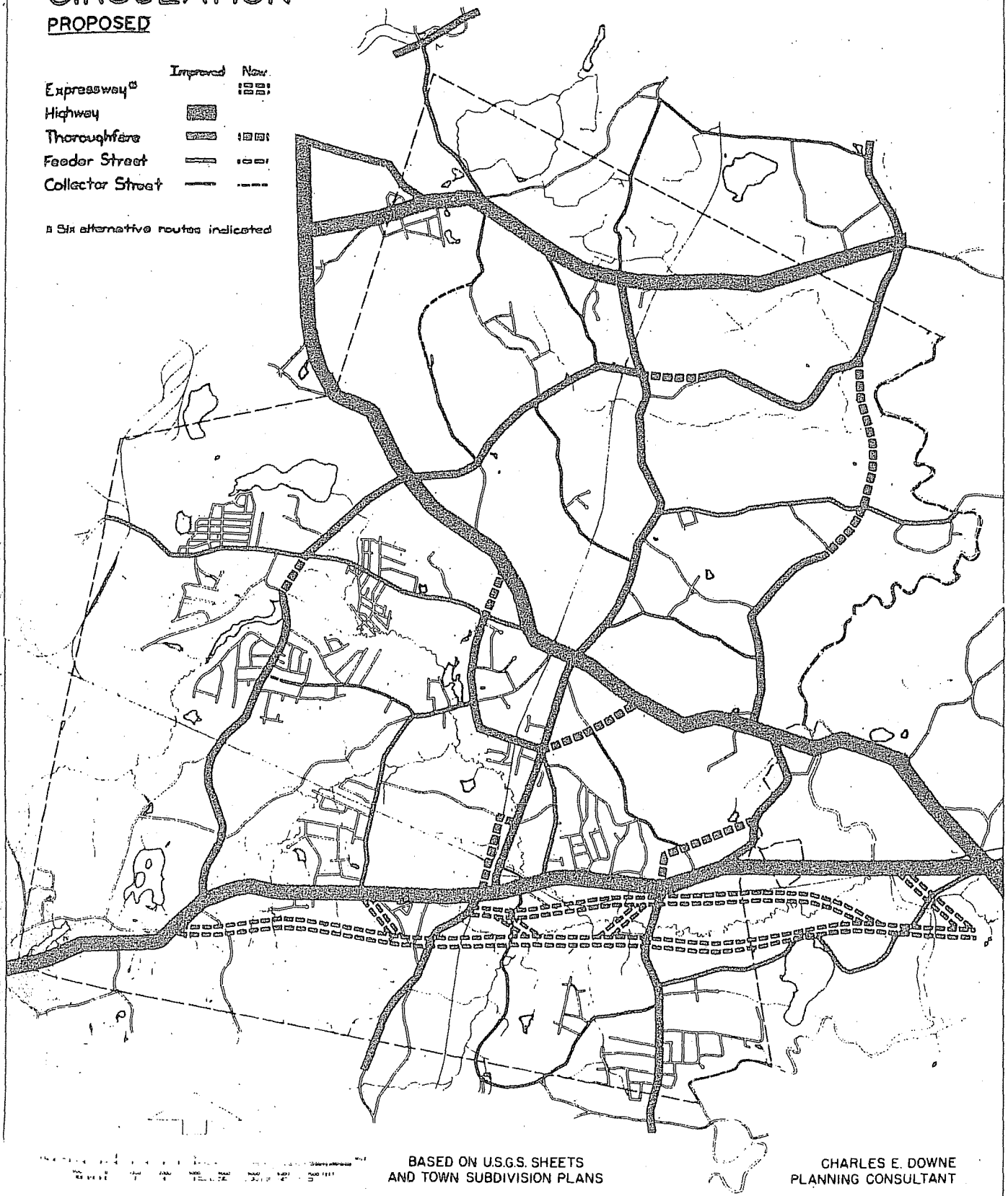
PLATE.5

CIRCULATION

PROPOSED

	Improved	New
Expressway[1]		
Highway		
Thoroughfare		
Feeder Street		
Collector Street		

[1] Six alternative routes indicated



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Three new sections of right-of-way would be needed; from Concord Road to Wier Hill Road, from Wier Hill Road to Water Row Road and from Landham Road to Old County Road. This last will also serve to provide access to a proposed "Sudbury-Wayland Industrial Park".

(4) A "ring road" is proposed to by-pass the congestion at Sudbury Centre and to assist the Centre in maintaining its colonial character. The "ring road" is proposed to be created by extending Old Lancaster Road north to Maynard Road from its present junction with Hudson Road and by building a new road connecting Old Lancaster at Concord Road to Old Sudbury Road near Rice Road. This "ring road" or "inner belt" would thus connect seven (7) major radial roads and would allow local and some through traffic to move from one radial to another without passing through the Centre.

Every effort should be made to keep to a minimum the intersection of minor streets and driveways with "thoroughfares" as these roads are intended for relatively free moving "through" traffic.

3. Feeder Streets

No new feeder streets are proposed, but only the realignment and re-surfacing of existing roads.

The following are proposed to be feeder streets:

Powder Mill Road	Peakham Road (part)
Hudson Road	Concord Road (part)
Bowditch Road	Lincoln Road
Horse Pond Road	Pelham Island Road

4. Collector Streets

The streets in the above classifications are intended to carry a greater or lesser amount of "through" traffic in the sense of traffic either passing through Town or moving from one part of Town to another. Collector streets should in all cases carry only neighborhood traffic. The proposed collector streets are:

Dakin Road	Morse Road
Haynes Road	Goodman's Hill Road (part)
Mossman Road (part)	Woodside Road
Willis Road (part)	Raymond Road

Candy Hill Road

Pratts Mill Road (part)

Plymton Road (part)

Willow Road (part)

Only two new rights-of-way are proposed for collector streets, one connecting Willow Road to Dutton Road and the other connecting Willis Road to Mossman Road. The intended character of these ways would not require limitations on driveway intersections as traffic should be quite slow and non-directional.

5. Residential Streets

All of the remaining streets and roads in Sudbury are proposed to remain or to become residential streets serving mainly the abutting properties. Some minor additions should be made to existing residential streets to provide better access to proposed Community Facilities.

6. Walkways

On Plate No. 6 a proposal is outlined for a pedestrian circulation system. The program would begin with walks built along major streets from each elementary school to a distance of one-half mile; along Route 20 from the Wayland Town Line to Uplook Drive; and along a "Greenway", as proposed in the Recreation-Conservation Plan, from the South Business District to the Regional High. A second phase of this plan would extend walks along streets to about one mile from existing elementary schools and would extend the "Greenway" to the Haynes Elementary School.
Provision should be made for such a walkway system, by selecting relatively exact locations in the immediate future, with actual construction of walks being carried out when the need has become more generally accepted. To delay adopting a plan and program will contribute to unnecessary delays in construction when the need for walkways develops in the community.

Although the program as outlined is closely related to school sites, the actual utility of the walkways is not tied only to the education of children. The proposed system has been specifically designed to serve commercial, cultural, and recreational facilities for all age groups.

7. Parking

Parking areas are not specifically indicated on the Circulation Plan. It is the intention of the Plan in relation to the South Business District and Route 20;

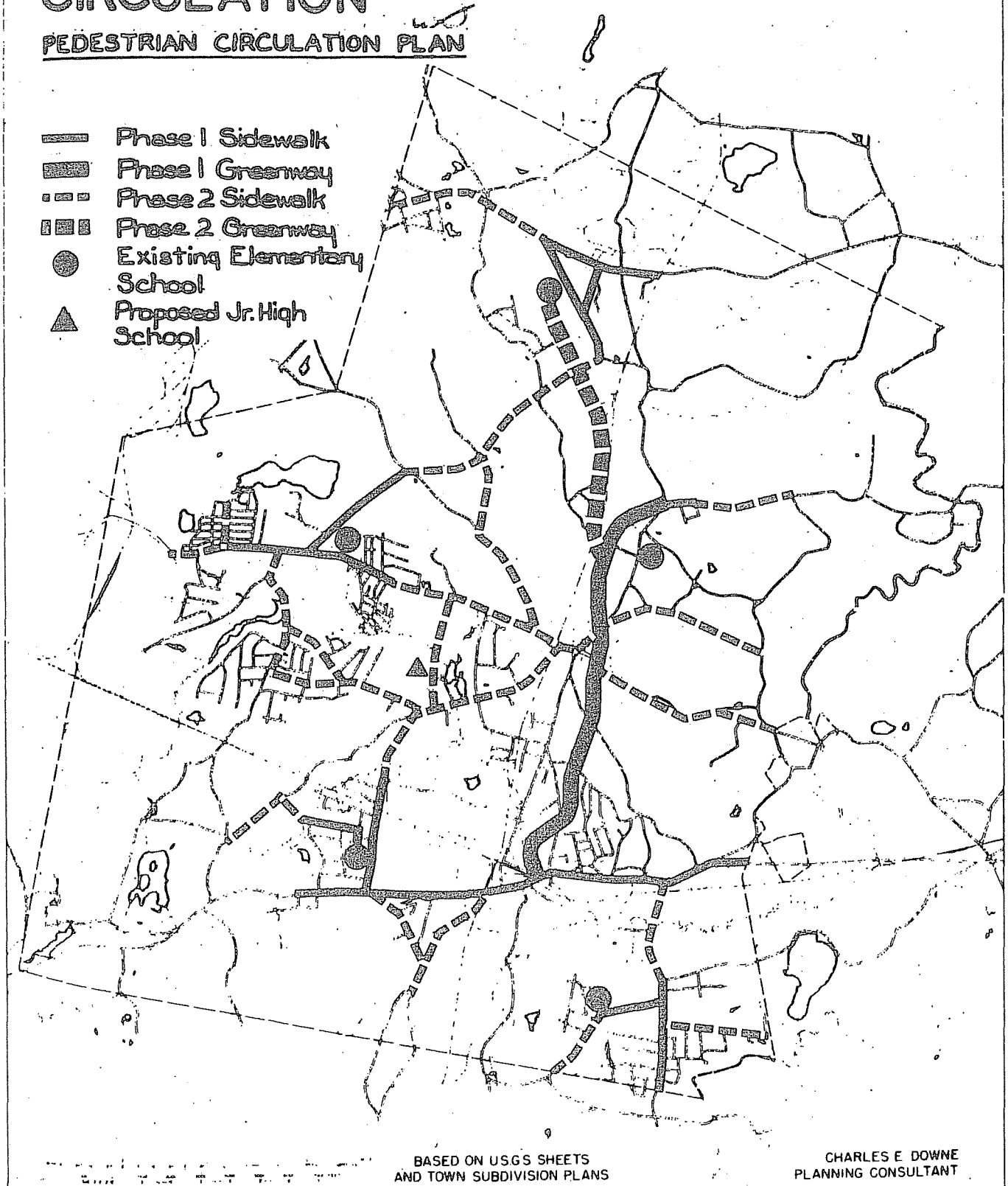
(1) that more off-street parking be made available.

(2) that interference with traffic flow on Route 20 due to cars

PLATE 6

CIRCULATION

PEDESTRIAN CIRCULATION PLAN



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entering and leaving parking areas be reduced.

(3) that the danger to life and limb to local residents and visiters due to avoidable congestion on Route 20 be reduced.

(4) that the unsightliness of poorly conceived parking areas be ameliorated.

(5) that curb parking on Route 20 be discontinued.

V. EFFECTUATION OF THE CIRCULATION PLAN

This portion of the Comprehensive Plan is one of the most urgent yet easiest of accomplishment. It is urgent because if the circulation system breaks down, none of the other portions of the plan will work. It is easy to accomplish because of public awareness and available assistance from larger governments and from the subdivider. As has been stated previously, the present program of incremental improvements have not and will not keep up with demands. An accelerated and a different kind of a program is needed.

There is very little mystery about the means of implementing a Circulation Plan. The following is a summary or check list.

A. AVAILABLE TOOLS

(1) Adoption of an official map showing existing and proposed streets. Upon adoption, one may build except on streets shown on the official map of a community or on streets in accepted subdivisions.

(2) Subdivision controls can require the subdivider to construct streets, walkways and parking areas to the specifications of the community.

(3) Purchase and construction by the Town of streets with or without eminent domain.

(4) Grants-in-aid such as Chapters 80 add 90 of the General Laws. These programs can solve many of the present problem spots such as intersections, street extensions, improvement of pavement widths and repaving.

(5) State highway construction can solve some of the problems, such as the Route 20 by-pass.

(6) Urban renewal funds are available for circulation improvements in renewal areas.

(7) Capital programming can plan and schedule improvements five or more years ahead and can be very helpful in getting things accomplished.

(8) Traffic and engineering studies are essential to specific and difficult problems in any implementation program and must be prepared well in advance.

(9) Zoning can establish standards for off-street parking.

(10) Standards can be established as guides to define the basic elements of the proposed circulation system. (Further studies should supplement these to detail cross-sections, intersections, walkways and other circulation features.)

TABLE NO. 13 - PROPOSED CIRCULATION STANDARDS

	Speed MPH	Width Pavement	Width Right-of-Way	Width Improved Shoulders	Access
Expressways	60	52	200	10	limited
Highways	50	48	80	10	restricted
Thoroughfares	35	38	70	8	restricted
Feeder Streets	30	32	60	8	restricted
Collector Streets	25	28	50	curb	free
Residential Streets	15	20	50	curb	free

(11) Betterment assessments for improvements and walkways are an accepted tool that makes it an easy aid to use in carrying out a Circulation Plan.

(12) Use fees such as are frequently charged for parking at meters or in lots.

(13) Building set back lines on all existing ways provide for sight distance, future sidewalks and ultimate widening as required.

CIRCULATION

CENTRE INTERSECTION PLAN

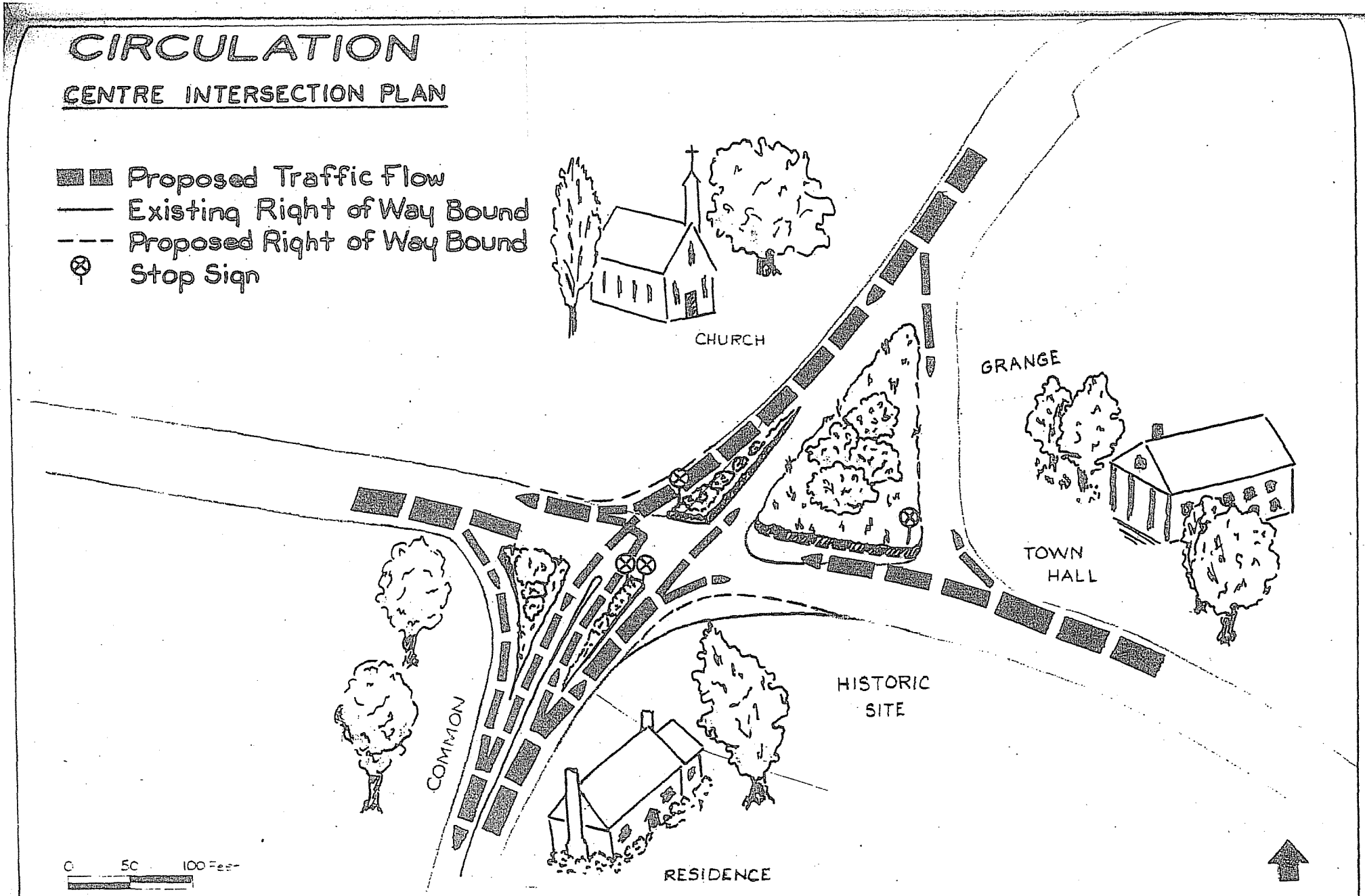

PLATE 7

SUDBURY PLANNING BOARD

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B. PRIORITIES

The following list is an estimate of the order of importance of the various projects mentioned in the description of the Circulation Plan.

(1) Parking: this problem on Route 20 is the most stultifying to the entire community.

(2) Highway Intersections: the breakdown in the smooth movement of traffic is due primarily to the few major intersections as listed.

(3) Concord to Marlborough Thoroughfare: land taking or adoption of an Official Map, and improvement should begin immediately.

(4) Route 20 by-pass: close cooperation with the state could achieve this improvement quicker and better.

(5) Centre "ring-road": land taking should begin immediately or adoption of an Official Map, and early improvement connecting to Maynard Road, with the eastern extension being programmed over a longer period of time.

(6) Concord to Saxonville Thoroughfare: land taking should be initiated immediately, or adoption of an Official Map, and improvements begun on the Landham Road portion.

(7) Reconstruction of Proposed Feeder and Collector Streets to new standards:

(8) Walkways:

(9) Nobscot to North Sudbury Thoroughfare: Intersection with Route 20 scheduled under (2) above needed soon. Next should be improvement of Pantry Road.

The priorities given result from extensive objective analysis during 1961. A re-evaluation of the importance of each of these factors should be made every year when preparing the Annual Capital Budget.

C. DETAILED STUDIES

Two detailed studies were carried out as a portion of the Circulation Study and Plan, one concerned with Sudbury Centre and one with the Business District. The latter is discussed in some detail in the Future Land Use Plan because the impact upon the future development of the land was the dominant purpose of the suggested circulation improvements.

The problem of traffic congestion at Sudbury Centre indicated a special study because of the need (and demand) to preserve the colonial setting. Three proposals, already described, would help to reduce congestion at the Centre considerably, namely the Concord-Marlborough "thoroughfare", the Centre "ring road" and the Concord-Saxonville "thoroughfare".

Either before these are carried out or at some later date when the Town is more developed, the intersection at Sudbury Centre will need to be improved. The Master Plan proposal as illustrated on Plate 7 suggests a simple channelization that could handle about two and one-half times the present traffic efficiently while in no way conflicting with the colonial atmosphere.

The three "landscaped islands" could be constructed of brick or cobblestone and planted with indigenous evergreens. The long "bumper curb" could be built of field or cobblestone. The few square feet of land borrowed from the Common and the Unitarian Church are more than made up by the square footage added to the "Hosmer property" and of the "landscaped islands". Hopefully traffic signs could be designed and accepted that would be compatible with the existing architecture.

VI. SUMMARY & CONCLUSION

Sudbury is unusually fortunate in its inheritance of a street system that is readily adaptable to an efficient circulation system with a minimum loss of the rural characteristics of the existing ways.

Very little new street construction for major circulation needs will be required to handle double and triple present traffic loads. The most urgent street need is for widening and lengthening sight distances by the elimination of bumps and the smoothing of sharp curves. These improvements can, in many cases, be made within the existing rights-of-way and historic stone walls. In order to preserve the ancient walls and have wider "through" streets, a program might be initiated to plant street trees behind the walls so that they will be well established when widening and/or the addition of a sidewalk requires removing plant growth between the wall and the street pavement.

Specific parking proposals for Route 20 will be included in suggested changes in the Zoning By-Law. The proposed Circulation Plan has been designed to serve the proposed Future Land Use Plan and the Community Facilities Plan. The proposals as regards "through" traffic would remain substantially the same for modified Future Land Use and Community Facilities Plans. Of all of the effectuation tools the official map appears most essential, not only because of its effectiveness in reserving new rights-of-way, but also in adequately forewarning any prospective builder or developer of the probable future character of the street frontage to be developed.

M A S T E R P L A N S T U D Y

UTILITIES

Planning Board

S U D B U R Y, M A S S A C H U S E T T S

February 1962

Charles E. Downe, Planning Consultant

I. INTRODUCTION

The extension of utilities to serve the population of Sudbury has always been the subject of considerable planning. There is evidence, brought out in the research necessary to the preparation of this report, that this past planning has been of generally higher quality than that of many communities presently experiencing the pangs of suburbanization. In the past extension of utilities has been planned by each agency as an individual effort with informal coordination with the plans and activities of other utilities. Hopefully, the discussion that follows will promote more coordinated utility planning and execution in the future. Such coordinated planning can result in better timing of construction, lower cost of services, the right service in the right place, and the most favorable location of utility lines.

Electricity is provided to Sudbury by the Boston Edison Company. Service is generally from pole lines following the public streets. Power is provided to the community via a substation on Route 20 which is fed from a high-tension line which travels through the southeast corner of Town extending from Waltham to Framingham. Plans for the continuation of this high-tension lines, on poles, to the northwest corner of Town, skirting the east and north boundaries, are in the final design stages by the Boston Edison Company. The Town of Sudbury is presently fighting this proposed construction and suggesting that the power line could be placed underground.

Telephone service is provided by the New England Telephone and Telegraph Company, generally from the same utility poles as electricity along the public ways. Service is provided from a small exchange on Route 20 in South Sudbury.

Gas is provided to all of Sudbury by the Boston Gas Co., with trunk lines generally following the public rights-of-way. One of the two major gas pipe lines serving the Boston area from the natural gas supplies of Texas bisects the southwest corner of the Town. This pipe line is owned and operated by the Tennessee Gas Transmission Company and from reports gas would be available at a low rate, on an off-peak demand basis, to a large industrial user.

Water is provided by the Sudbury Water District and is discussed in some detail below. All sewage is treated on each individual site in town and is the subject of further discussion below.

Although none of the utilities described above are provided by the Town, there is a community responsibility involved since most of them are subject to certain public controls and make use of the public and private rights-of-way in the Town.

II. SUMMARY AND CONCLUSIONS

The following review of public utilities in Sudbury indicates several severe and incipient problems for which the answers have not been resolved by the town.

A crisis situation exists by reason of the Boston Edison Company's proposal to erect a 115-thousand volt high tension line along the east and north boundaries of the Town. The responsible town agencies and the general citizenry have recognized that the long-range effect of such action would be to reduce considerably the economic worth of the community. In terms of a 40 or 50-year time period, it would appear that the town would benefit financially through increased property valuations if such power lines were placed underground.

During the past five years, the Sudbury Water District has grown 50 percent faster in terms of services and 200 percent faster in terms of water delivered than the Town population. Considerable foresight by the District Commissioners has adequately coped with growth to the present. Neither a comprehensive long-range plan for ultimate development or a short-range plan for improvements during the next five years has been clearly articulated. Both of the above appear desirable particularly in terms of reserving water sources and in terms of integrating expansion of water service with other utilities and community facilities.

The drainage chapter of this report has not pinpointed specific drainage problems but provides a relatively detailed survey of the soil and geologic characteristics that will serve to uncover specific areas where drainage problems do or will exist. The time for a comprehensive drainage study of the entire town, with emphasis upon the areas that are already or are rapidly being built-up, is long overdue.

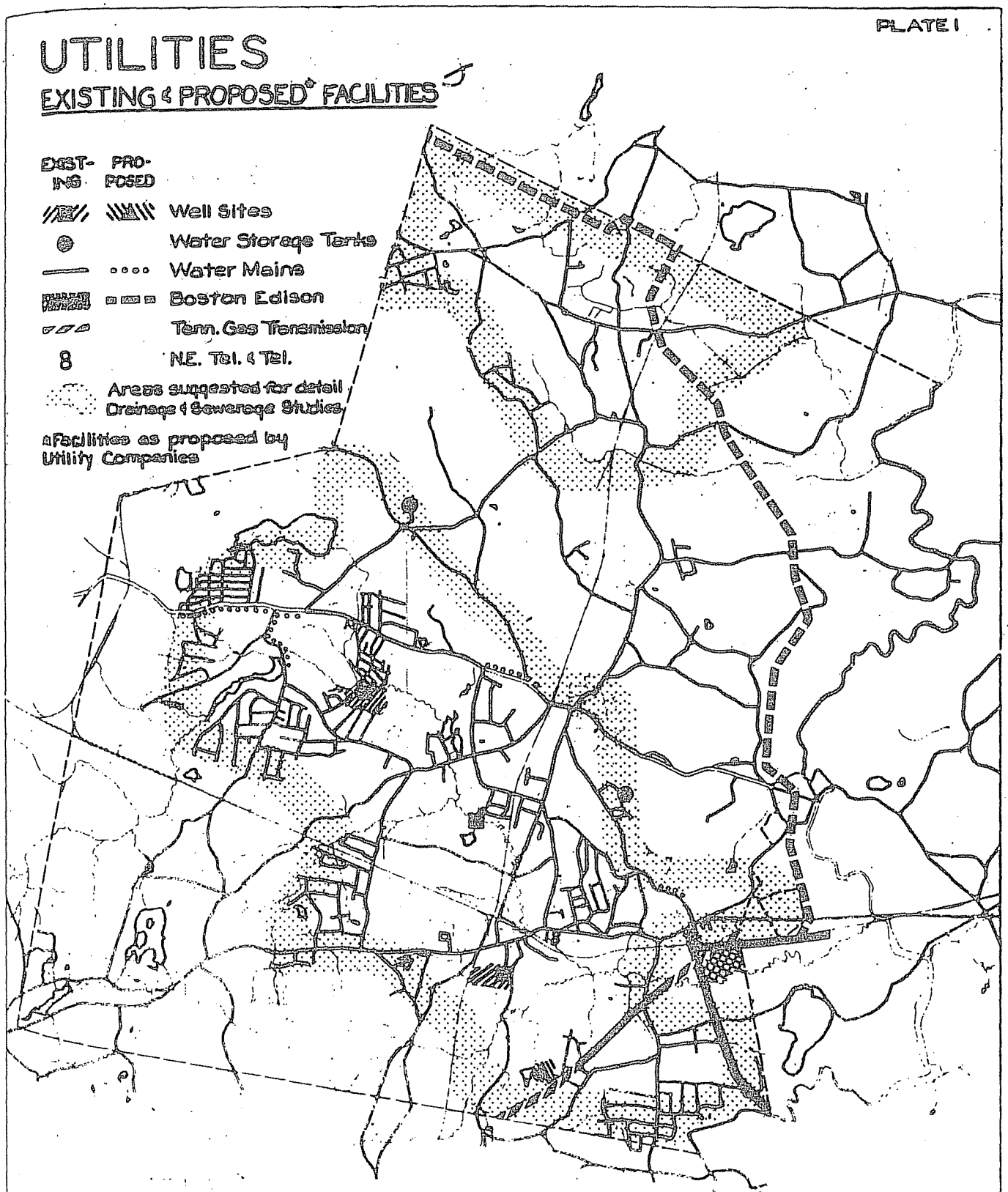
The disposal of sanitary waste has not yet caused any acute problems in the Town. However, the rapid rate of development in recent years and the character and types of soils which exist in the Town point clearly to the seriousness of such problems in the future. The time is nearing for a comprehensive sewer-needs study.

Sudbury's location in the Boston Metropolitan Region places it within reasonable access distance to regional aqueducts and trunk sewers. Such access makes it incumbent upon the town either to tie into these facilities or to provide an equally reliable and lower cost service. Good long-range plans are prerequisites to good long-range service. Interest free loans are available from the Federal Housing and Home Finance Agency to prepare long range plans for water, drainage and sewer systems. During the preparation of this study Sudbury has considered applying for such funds to plan for drainage and sewerage. A similar program probably should be initiated by the Water District.

PLATE I

UTILITIES

EXISTING & PROPOSED* FACILITIES



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PLANNING CONSULTANT

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III. WATER

A. REVIEW OF THE EXISTING SITUATION

Water for domestic and commercial use in Sudbury is supplied from two major sources, private wells and the Sudbury Water District. The Water District cannot be described because the boundary lines change more or less annually. It is the stated goal of the District to eventually serve all of the Town. The District, in the past, has grown by accretion by favorable action of the voters upon a petition presented by abutting land owners.

Plate No. 1 shows the size and extent of water services as they existed January 1, 1961, and the location of pumping stations, storage tanks, and lands owned by the Water District. Over half of this physical plant has been built since 1955. The recent pattern of growth has been for each ensuing year to be greater than the last. This growth has properly been accompanied by a continuous search for new sources and reappraisal of needs. New sources have been acquired through lease or fee in recent years and others have been developed.

The network of mains as completed in January 1961 amounted to about 43 miles although streets accepted by the Town or approved by the Planning Board amounted to some 97 miles. In the Population Analysis, carried out under a separate contract, it was determined that in the summer of 1960 there were approximately 2100 homes in Sudbury. During 1960 there were 1227 active services handled by the Water District, the vast majority of these being domestic services. From the foregoing it can be reasonably assumed that, in 1960;

(1) water mains served between 45 and 50 percent of all completed street mileage in Sudbury.

(2) between 55 and 60 percent of all households in Sudbury were served by the Water District.

The location of the various mains, pumping stations, and storage tanks is such that expansion of the district to serve the entire community would appear to be a reasonable goal.

Table No. 1 illustrates statistically the growth of the Water District. Perhaps the most startling fact is that the number of gallons billed has increased about three times as fast as the town population during the past five years. The increased use of water has not been due entirely to greater use by the individual home owner since several industries, notably Union Carbide and Raytheon, have moved to town during this time period and are substantial water users.

TABLE NO. 1 - SELECTED CHARACTERISTICS OF THE SUDBURY WATER DISTRICT 1955 - 1960

	Debt and Interest	Total Taxes Assessed*	Total Cost	Town Population	Active Services	Water Mains in 1,000 ft.	Gallons Billed in millions	Hydrants
	(in thousands of dollars)							
1955	12	11	34	3646	462	84	27	96
1956	14	10	44	--	560	107	34	118
1957	20	17	67	--	683	131	67	153
1958	34	25	94	--	844	149	80	174
1959	35	48	97	--	1056	183	83	212
1960	39	41	131	7430	1227	224	110	261
Increase	27	30	97	3784	765	140	83	165
Percent Increase	230	270	285	105	165	165	310	170

*On Personal and Real Estate (most income is from "Water Rates" not "Taxes")

Sources: State Census 1955
Federal Census 1960
Annual Water District Reports

B. APPRAISAL OF NEEDS

Future demand for water in Sudbury will be determined by the number of takers and the amount used by each taker. In another chapter of the Master Plan Study it was estimated that at ultimate development there would be about 7,500 families in Town. It was further estimated that commercial and institutional growth would slightly exceed the rate of increase in new homes. Based on these estimates it would be reasonable to expect that the ultimate development of Sudbury would include between six and seven times as many additional public water users as the twelve hundred in 1960. During recent years, as illustrated in Table No. 1, water use has increased about twice as fast as water users. No definitive evidence has been uncovered to indicate that this relationship will either accelerate or decelerate during the next few years. The trend will be considerably influenced by the number and characteristics of commercial users tied into the system during the period. Water use throughout the United States and particularly in urbanizing areas has been increasing more rapidly than population. The increase in water demand has ranged between 25 to 50 percent above new construction from one part of the country to another. In view of these factors it would seem reasonable to anticipate that the ultimate demand upon the Sudbury Water System will be ten (10) times the 1960 service of 110 million gallons or a one billion one hundred million (1,100,000,000) gallon ultimate annual demand. In terms of the largest annual day the estimate would represent a need for ten million gallons compared to a million and thirty thousand for the largest day in 1960.

C. RECOMMENDATIONS

The stated intent of the Sudbury Water District to eventually serve the entire Town is a pertinent planning goal. Within this goal several intermediate statements of intent would appear worthwhile:

(1) to serve the residents of the town on a basis of need first and demand second

(2) in view of potential soil saturation by sanitary wastes, to serve first those areas of Town zoned or developed at densities of one acre or less per family.

(3) to delay for the longest practical period of time serving those areas of Town which for any reason might be developed at densities of less than one family per acre, such reasons including covenants, zoning regulations, topography or access. These sections of town might for all time be able to rely upon individual wells.

In view of a relatively predictable ultimate demand of ten times the 1960 use, no delay should be countenanced in the acquisition of sufficient well-fields to fulfill that demand. Good convenient sites are rapidly becoming scarce and costs in the long run will inevitably rise. Surveys carried out by the Water District give good reason to believe that sufficient sites, to supply such a tenfold increase in demand, are available. Further detailed studies should be carried out to affirm this preliminary conclusion. If there is any reasonable doubt as to the availability of such supply, posaible agreements with the Metropolitan District Commission to supply water on a demand basis might be explored. Interest free loans to plan for the growth of the Water District are available from the Federal Government, to be repaid at the time of construction of planned facilities. Such monies are available for investigations of potential supply, overall preliminary plans, and detailed construction plans.

Potential pollution of water supply has been greatly underestimated in the recent past, particularly since the advent of the general use of detergents. A vigorous program should be initiated to protect all streams and well sites from the slightest possibility of pollution. Such a program should include the use of acquisition in fee, scenic easements, drainage easements, zoning regulations (including density and setback requirements), and arrangements with adjacent communities that drain into Sudbury.

IV. DRAINAGE

A. INTRODUCTION

The drainage problem is one of great concern and has increased in seriousness over the past few years. Generally, drainage patterns are due to the topography of an area; more specifically drainage is directly a result of the interaction of rock structure and soil erosion. In view of this, it is most desirable to protect watersheds in order to control run-off and to maintain protection from pollution.

Several terms need to be identified as they will be used in this report. (1) Watershed: an area based on topography surrounding one or more main streams which carry surface water away from the area. (2) Drainage Area: a subdivision of a watershed based upon a culvert under a man-made feature such as a roadway. (3) Run-off: water which does not sink into the soil or rock due to their low rate of porosity and/or permeability or the water during a certain time period which cannot be absorbed by the soil. (4) Permeability: described as the ease with which water may pass through the ground materials. (5) Porosity: the total percentage of pore space in rocks or soil.

The most desirable soil for drainage is one which has enough sand to promote good drainage, enough clay to promote aggregation and reasonable water-holding capacity, and sufficient silt to give body without promoting either excessive drainage or imperviousness. However, there are other characteristics which may affect soil suitability as well, such as depth of soil, slope of land surface, types of underlying material and ground water level.

Coming closest to this ideal soil are Sudbury's droughty soils including gravelly and stony loams. They have excellent permeability and desirability for various uses, such as roadways, building foundations, water supply and sewage absorption. These soils are well-graded, easy to compact, little affected by hydrologic conditions, are not subject to frost action, and appear to be located within the Town in regions of the outwash plain. The group of soils with "fair to good" drainage includes stony-sandy loams, sandy loam, loamy sands, and rough stony land. These soils are moist and of good texture, are little affected by frost action, and, when found in valleys or along foot hills, tend to be stony and rough.

The final group, wet soils, is more or less saturated year round by a high ground water table, and, because of the fineness of composition, these soils have lost most of their potential to act as a sieve.

This group of loams, fine-sandy loams and meadow lands also includes muck and peat, a composition which is extremely difficult to compact and is not usually utilized as foundation material. When fills are put over soft matter such as this, the weight of the fill and the weight of a building cause serious settlement.

When considering watersheds, it is important to realize that they are based on topography which does not abruptly change at a town line. Other towns drain into Sudbury and Sudbury drains into Maynard, Concord and Lincoln. The surface geology of Sudbury reflects the effects of a glacier which many years ago covered the area. Much of the western section of the Town can be classified as an outwash plain, an extensive fan-like area of bedded sands and gravel which were deposited by streams spreading out from the glacier. The central section and southern area consist of ground moraine and fluvial sands. Throughout the glacier, and particularly near the bottom, was clay-like substance and heterogeneous rock which, when the ice melted, was dropped to the ground and left the area with an undulating topography. The fluvial sands and gravel were deposited when the velocity of the stream decreased. In the eastern section of Sudbury is low-lying sand and gravel, and because the Sudbury River sometimes overflows its banks, this section is generally considered flood plain.

The soils of Sudbury vary a great deal more than does the topography. Speaking generally, and in conjunction with Plate 3 which shows drainage in relation to soil character, it appears that the northern one-third of the Town is not as richly endowed with soils providing excellent drainage or even fair to good drainage as is the remainder of the Town.

A study of existing conditions in terms of topography, soils and water flow has proved most valuable for this analysis.

If the drainage patterns of Sudbury are considered as a whole, Sudbury can be divided into four parts, namely, those sections which drain:

(1) to the Assabet River
(2) to Pantry Brook
(3) to Wash Brook and
(4) to the Sudbury River.

B. APPRAISAL OF EXISTING CONDITIONS

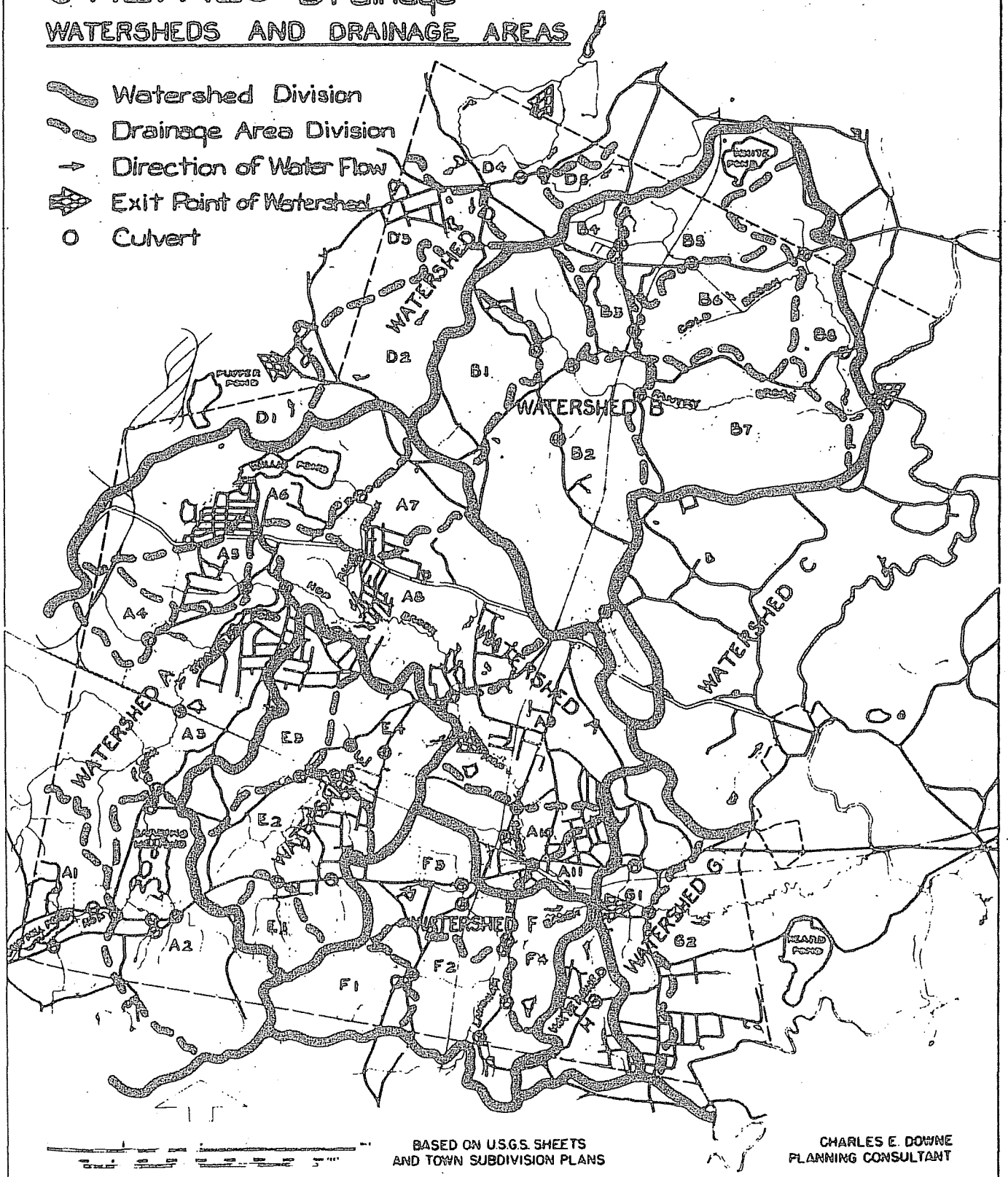
1. Watershed A - (Hop and Run Brooks)

This section of Sudbury which centers around Hop Brook and includes Run Brook represents approximately one-third of the Town's total area of 15,596 acres and contains 1,041 dwelling units. Hop Brook enters Sudbury at the northeastern end of Grist Mill Pond near the Framingham-Marlborough line. It empties into Carding Millpond, then

PLATE 2

UTILITIES: Drainage

WATERSHEDS AND DRAINAGE AREAS



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PLANNING BOARD SUDBURY, MASSACHUSETTS

flows northward to Stearns Mill Pond, from which it follows an easterly then southerly direction to the Sudbury River. Based on selected culverts, Watershed A is divided into eleven drainage areas (see sub-report submitted separately).

Watershed A offers a great variety of soil types and conditions. Because of a restrictive covenant requiring a five-acre lot size, and the extensive amount of acreage in public and semi-public uses, much of the area will probably not be further developed intensively. Generally speaking, only the northern and eastern sections of this Watershed have soils capable of supporting considerable additional development. The other portions of areas with poorly drained soils should be the last and least developed. The maintenance of much of this Watershed in its natural state (as in the case of the Memorial Forest, U. S. Military Reservation, the Boy Scouts Reservation and the Rod and Gun Club) has greatly protected the Watershed, for it has helped to equalize run-off and protect the area from pollution.

2. Watershed B - (Pantry Brook)

The second largest watershed with 3450 acres and 156 dwelling units, is located north of Sudbury Center, and generally speaking, constitutes about 25 percent of the area of the Town. Watershed B centers around the Pantry Brook complex of streams which flow in several directions from Old Sudbury and Rice Roads before finally emptying into the Sudbury River. It has been subdivided into eight drainage areas (see sub-report submitted separately).

The detailed study of Watershed B points out that there is a great deal of poorly-drained soil, particularly in the three eastern-most drainage areas where the flood plain predominates. Because this soil condition is so widespread and scattered, it is difficult to choose a particular section which would be suitable for further development. However, the best section for use is the higher, better-drained land in the northwest part of the Watershed which is composed of outwash plain, ground moraine and fluvial sands. Other than this, most of the land would be most beneficial if left in limited development.

3. Watershed C - (Sudbury River)

This watershed, located along two-thirds of the Sudbury-Wayland Town Line and along the Town's portion of the Sudbury River, offers a great amount of relatively flat land with poor drainage. The flood plain extending west of the River covers over one-half of this Watershed C and dampens the chance for much future development in this section. However, the remainder of the Watershed offers some possibilities. Although Watershed C is 3040 acres and contains 259 dwelling units, it was not sub-divided into drainage areas because

the drainage pattern was not sufficiently complex for such action, (see sub-report for detailed discussion)

4. Watershed D -(Assabet River)

Next in size, 1400 acres, is Watershed D located in the northwestern corner of Sudbury next to the Maynard and Concord Town Lines. It is subdivided into six drainage areas, each of which includes a section of another town. (see sub-report submitted separately)

Generally, the areas along the northern and eastern borders of the Watershed offer the greatest amount of soils capable of supporting further development. However, there are many poorly-drained soils not suitable for more than the present 134 residential units or for intensive development.

This is the only watershed in Sudbury that does not drain to the Sudbury River. Waters of drainage area D1 flow north into Maynard, D2 and D3 waters mainly flow south and west to Maynard and those of D4 and D5 flow north into Concord; all flow to the Assabet River.

5. Watershed E -(Dudley Brook)

This watershed, centering around Dudley Brook, is approximately the same size as the preceding watershed. There are also four drainage areas. (see sub-report submitted separately)

Soil conditions and topography vary, but most of the land is of good soil character for urban settlement. The best draining soils stretch diagonally in a pattern from southwest to northeast.

Watershed E is restricted in its future land development. Partially, this is due to a five-acre restrictive covenant and to semi-public ownership of land by the Boy Scouts and Rod and Gun Club. It is due, also, to the 423 dwelling units already established in the watershed.

6. Watershed F -(Landham Brook)

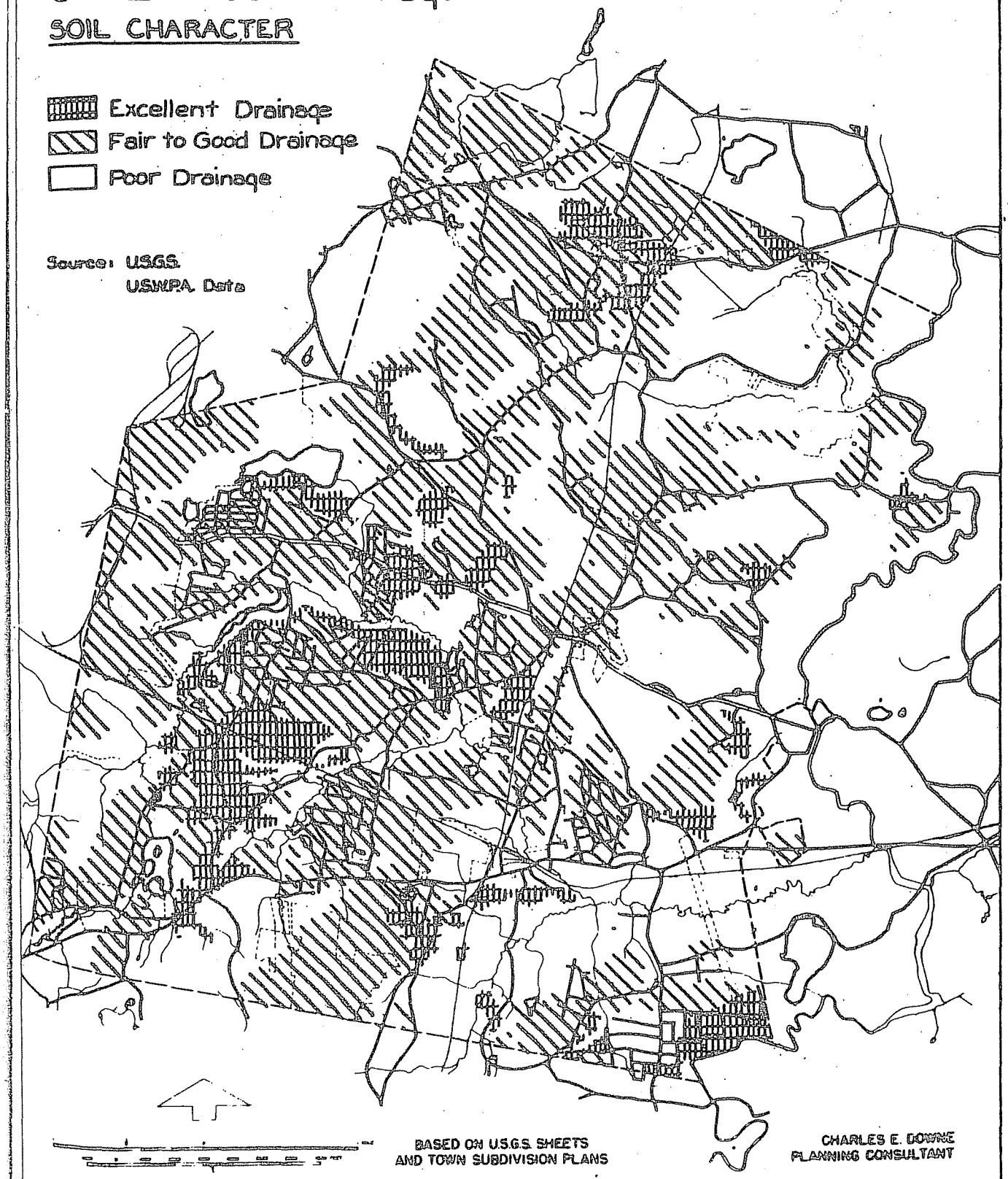
This watershed is drained principally by Landham Brook which flows northward then eastward to the Sudbury River. The area is located in the south of Sudbury along the Sudbury-Framingham Town Line. The watershed is divided into four drainage areas. (see sub-report submitted separately)

Of the entire watershed, 1130 acres, detailed study points out that the area around the intersections of Route 20 and the railroads offers the most potential in terms of land capability. It is not yet built up to the extent that it can accommodate with the present number of 100 dwelling units. The Boy Scout reservation also contains good soils. The other drainage areas have attractive sections (in terms of drainage), but these are not extensive enough to overcome the drawback of being surrounded by large areas of poor drainage.

PLATE 3

UTILITIES: Drainage

SOIL CHARACTER



BASED ON U.S.G.S. SHEETS AND TOWN SUBDIVISION PLANS

CHARLES E. DOWNE
PLANNING CONSULTANT

PLANNING BOARD SUDBURY, MASSACHUSETTS

7. Watershed G - (Wash Brook)

Along the southeastern corner of Sudbury at the Framingham and Wayland Town Lines is this 1027 acre Watershed focussing on the Wash Brook which is a combination of Hop and Landham Brooks. (see sub-report submitted separately)

A study of the soil conditions reveals that the best drainage is in the most northern and southern sections of the entire watershed. These soils can support a higher density of building construction than now exists, for example, dwelling units additional to the present number of 18, but this is not a possibility for the wetter sections of the watershed surrounding the river.

8. Watershed H - (Woodside Brook)

This is the final watershed and the smallest one. It is located between Watersheds F and G along the Framingham Town Line and is drained by a tributary which flows toward the Hop Brook-Landham Brook confluence. The drainage pattern does not warrant any subdivision of the watershed.

Watershed H is small in acreage, 220 acres with 37 dwelling units, but it still offers potential for development. Fair soil conditions predominate in the southern half of the watershed and there is room for residential expansion particularly south of Woodside Road.

9. Overview

As the town of Sudbury grows, the drainage problem will also. Demands on the land are rising and, unless drainage facilities such as proper-sized culverts, channels and stream protection measures are provided, these new demands will not be met or solved. It is not only the greatly varying amounts of surface run-off water which must be handled, but the problem of possible sanitary sewage flow underground is important.

There are only two Watersheds C and G on the flood plain, bordering the Sudbury River. These contain predominantly poor drainage conditions, as indicated in Table No. 2 due to the existing soil characteristics. Areas such as these are most valuable if left in their natural state.

Building on filled land has most often proved unsatisfactory and unreasonable. Lands of higher elevation (with fair to excellent drainage) have been and are being developed for housing, business and industry. This table also shows that there is much developable acreage available for more intensive use, although the acreage is scattered in various sections of the town.

TABLE NO. 2 - ANALYSIS OF EXISTING DRAINAGE CONDITIONS

Watershed	Predominant Character of Soil		Acreage	Dwelling Units	Acres per Dwelling Unit	Dwelling Units per Sq.Mi.	Population** per Sq. Mi.
	Poor	Fair-Excellent					
A		x	4949	1041	4.8	140.0	504
B		x	3450	156	22.1	28.9	104
C	x		2040	259	7.9	81.2	292
D		x	1400	134	10.4	60.3	217
E		x	1380	423	3.3	196.0	706
F		x	1130	100	11.3	56.5	203
G	x		1027	18	57.0	11.2	40
H		x	220	37	6.0	100.0	360
Total or Average			15,596	2168	71.5	89	306

* Population Survey Master Plan - Summer 1961
** Based on 3.6 persons per family - U. S. Census 1960

Further analysis of Table No. 2 reveals the following points:

(1) The highest population per square mile is in Watershed E where there is the highest percent of excellent and fair to good drainage, as shown on Plate No. 4.

(2) Watershed A with the largest acreage has the second highest population per square mile. Population density is largely due to the extent of both excellent and good soil conditions.

(3) The smallest acreage is in Watershed H. This has the third largest population per square mile, which is probably due in part to the fair to good and excellent draining soils in the southern half of the watershed.

(4) Watershed B is the second largest in acreage and second lowest in dwelling units per square mile. This area is ranked fourth out of the eight areas in number of dwelling units. The amount of poor soil is approximately the same as that in the fair to good category.

The extremes of the five quantitative items in the Table are as follows:

(a)	Acreage	4949	(Watershed A)	-	220	(Watershed H)
(b)	Dwelling Units	1041	(Watershed A)	-	18	(Watershed G)
(c)	Acres per Dwelling Units	57.0	(Watershed G)	-	3.3	(Watershed E)
(d)	Dwelling Units per Sq.Mi.	196.0	(Watershed E)	-	11.2	(Watershed G)
(e)	Population per Sq.Mi.	706	(Watershed E)	-	40	(Watershed G)

C. PROPOSALS

On the basis of the foregoing analysis, the following preliminary proposals are made:

(1) Consider the advisability of a Federally-financed 702 drainage study program either for the entire town, areas such as indicated on Plate No. 1, or for specific drainage areas as required.

(2) Require detailed evidence of topsoil and subsoil conditions from subdividers in areas indicated as having fair and/or poor soils on Plate No. 3.

(3) Begin a comprehensive program of stream improvement including the taking of easements and dredging, to delay the date of soil becoming saturated with sanitary waste.

(4) Require all septic tanks to be cleaned bi-annually through a public health by-law either privately or as as a tax rate item with the town contracting for such cleaning.

(5) Enforce, under subdivision control, minimum disturbance of the natural drainage patterns.

(6) Encourage similar studies, No. (1) above, and controls in neighboring communities, particularly those that drain into Sudbury.

V. SEWERAGE

A. REVIEW OF PERTINENT STUDIES

Various portions of the Master Plan Study provide the essential data for a preliminary evaluation of future public sewer needs. The studies that are particularly pertinent and contributory to the discussion are, "Existing Land Use Analysis", "Population Study", "Areas of Influence", "Future Land Use", and the two preceding utilities studies, "Water" and "Drainage".

The Existing Land Use Analysis indicates that approximately 12 percent of the Town is presently "built-up". Ultimately about 50 percent of the entire Town could be "built-up". This analysis measures in terms of acres the future demand that will exist in the town for the processing of sanitary wastes.

The Population Study points out that whereas Sudbury's 1960 population was 7,500 it could eventually climb to about 30,000. This increase would indicate an ultimate density, in persons per square mile, four times as great as at present. Since the present density is about 300 persons per square mile, it might eventually be about 1,200 persons per square mile. A very general rule-of-thumb indicates that areas of over 500 persons per square mile should be analyzed for possible public sewerage. Overall, Sudbury is not too close to this figure. If the flood plain and extensive public lands in Sudbury are subtracted, however, the figure would be about 450 persons per square mile in 1960 and over 500 persons per square mile according to preliminary figures in January, 1962. An analysis of population trends concluded that Sudbury's location on Route 20 and in relation to Boston, Framingham, the Massachusetts Turnpike, Route 2, Route 128, and Route 495 would encourage both short and long-range growth.

The Areas of Influence Study indicated that several nearby towns already have public sewers and that one is presently developing plans to re-construct and expand its system. The location of a regional sewer main just south of the Town in Saxonville presents the possibility that, if Sudbury should ever need public sewers, the Town might be connected to a regional system rather than processing it at a local treatment plant.

The Future Land Use Plan indicates a realistic pattern for Sudbury's future development and, therefore, serves to delineate logical areas for a detailed sewer needs study.

A preceding section entitled "Water" arrives at the conclusion that there are probably sufficient water sources within the town to serve its ultimate needs. The necessity for great care to protect these valuable sources from pollution is stressed. Public sewers would act to protect potable water sources from pollution.

The preceding section on "Drainage" points up the fact that there are a great many areas in town with soils of less than good characteristics for the leaching of sanitary waste. The division of the town into 36 separate drainage areas in this study, with an appraisal of each, presents a firm foundation for the determination of future sewer needs.

The Sudbury Board of Health is more directly concerned and familiar with the sanitary waste disposal problem in Sudbury than any other agency. In its opinion it seems likely that all portions of Sudbury now, or in the future, developed at densities greater than one family per acre will require public sewers. The Board is convinced further that some areas with less than good soil conditions, developed at densities of about one family per acre, will also have to be sewered.

B. APPRAISAL AND CONCLUSIONS

The trends in land development which are taking place upon the types of soils in town point towards the need for some public sewers within a 10 to 15-year period. These trends are particularly strong in the Hop Brook and Landham Brook watersheds, extending from Willis Pond to the junction of Wash Brook and the Wayland Town Line. Within this combined watershed, comprising about 40% of the area of the Town, is located about 90% of the business and industrial uses and residential densities over one family per acre. A second area that is presently undergoing intensive development is the northern portion of the Pantry Brook Watershed and the adjacent lands which drain toward the Assabet River. The Future Land Use Plan proposes that all industrial uses, commercial areas and residential sections with medium to high densities (more than one family per acre) be located within these two watershed areas which are suggested for further analysis as to sewerage needs.

It is anticipated at this time that the areas not designated for further study on Plate 1 might never need the service of public sewers if they are developed at the low densities proposed by the Future Land Use Plan.

Every precaution should be exercised by the Planning Board, Board of Health and Board of Appeals to avoid any situation in these areas that might create a need for sewers. The lot sizes proposed by the Future Land Use Plan in these areas hopefully will be adequate to allow both private wells and on-site sewage disposal.

It appears upon present evidence that consideration should be given to provide public sewers for all present and possible future business areas, all industrial areas, and all residential areas that might be developed at densities of one family per acre or greater.

Plate 1 indicates the areas that according to the analysis should be subject of a detailed sewer needs study which might well include the preparation of preliminary plans. Such a study could be carried out with Federal financing under the H.H.F.A. "702" program. Upon the completion of such a study all future construction could be required to be built in such a way that it could be easily connected to a future sewer system. Such requirements might include control of the elevations of foundations of buildings and the placing of septic tanks at the front of buildings.

Since there are two areas designated for detail study and possible future provision of public sewers, the study should include a careful analysis of the cost differential between a pumping station and a force main to connect the two areas into one treatment plant (about 2 miles in length) and two separate plants, one on Wash Brook and one on Pantry Brook. The degree of treatment which should be given to the sewage, before it is discharged into the Sudbury River or its tributories, should also be examined with considerable thoroughness. The Sudbury River is presently classified as pure enough for bathing, The continuation of the River at this purity level will undoubtedly be of considerable value to the Town and the type of sewage treatment should be determined accordingly. Informal contacts with the State Water Resources Board and the Massachusetts Dept. of Health indicate that sewage treatment should be complete because of the present status of the river, the low flow problem, and the flat gradient from Saxonville to North Billerica, and the amount of natural pollution.

Studies should also be carried out to determine whether or not it might be reasonable to require subdivisions to provide "dry" sewers, in accordance with a Master Sewer Plan, prior to the completion of the Town Sewer System. Such a requirement has been adopted by many towns in order to save the roads and to protect the new home owner against excessive betterment charges shortly after taking title. By requiring "dry" sewers the cost is included within the original mortgage and amortized over a reasonable period. The possibility of connecting a Sudbury sewer system to the M.D.C. regional system should also be examined.

In summary, parts of Sudbury will probably have to be served by public sewers within 10 to 15 years. A sewer-needs-study should be carried out in the near future in portions of the Hop Brook - Landham Brook watershed and in the Pantry Book watershed. Such a study can be made with an interest free loan from the Federal Government. This report including Plate 1 could become a valuable source in preparing an application for such a loan.

M A S T E R P L A N S T U D Y

FUTURE LAND USE PLAN

Planning Board

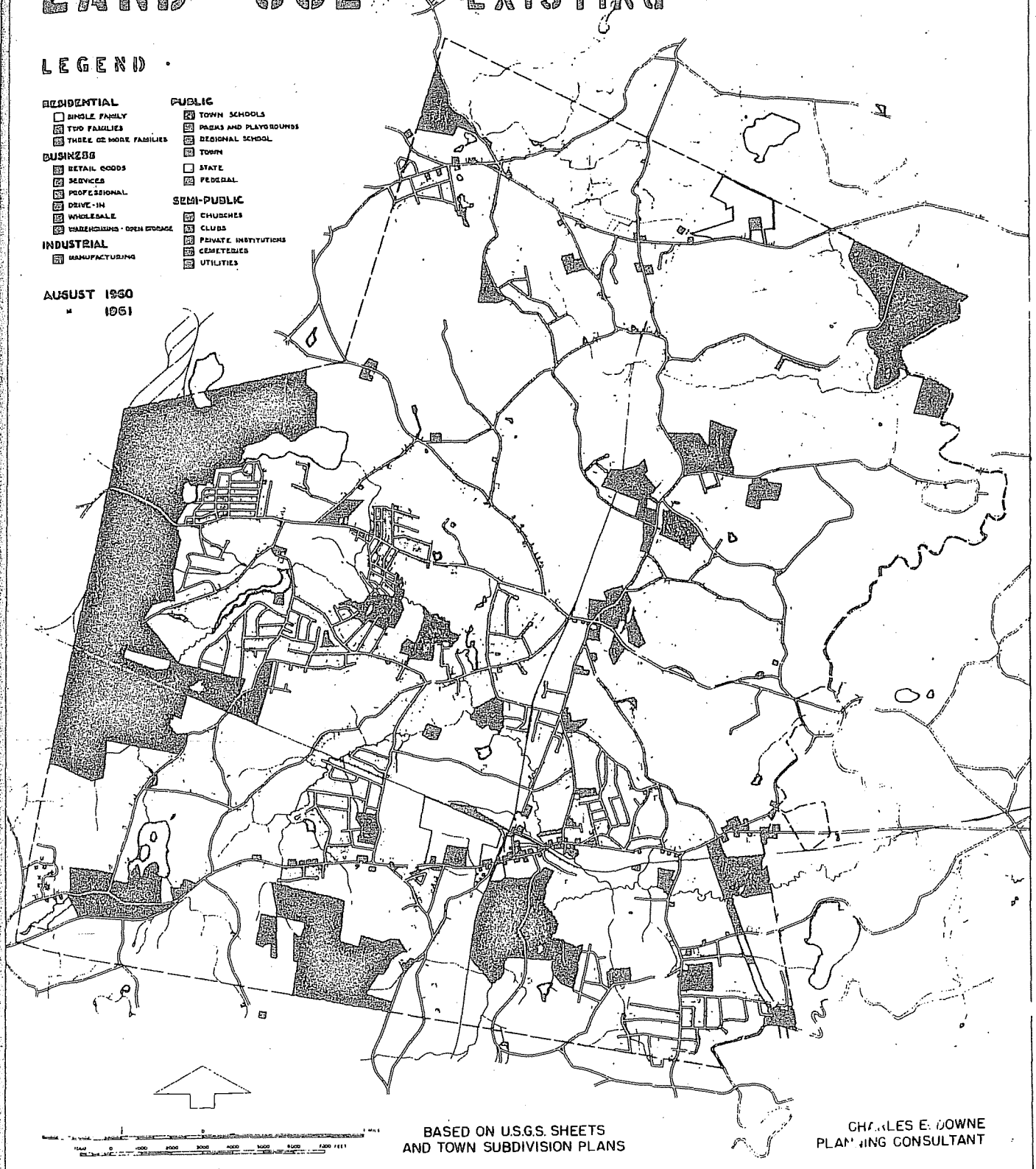
S U D B U R Y, M A S S A C H U S E T T S

March 1962

Charles E. Downe, Planning Consultant

PLATE I

LAND USE - EXISTING



PLANNING BOARD SUDBURY, MASSACHUSETTS

I. INTRODUCTION

The Future Land Use Plan that is described in the following pages is the the result of all of the studies in this report and the contributions made by all of the various Town Boards, Committees, Commissions and similar agencies; several local and larger area private organizations; state, county and Federal agencies; and many private citizens. The planning function as it is reflected in the Plan has been one of coordinating these studies and contributions and supplying the missing links.

The Plan as presented here should be interpreted as a guide plan for the development of the Town for the next 20 years. Many portions of the Plan such as public lands and the flood plain are intended to extend far beyond the 20-year time span. The scope of the Plan is "general". Certain "specifics" are spelled out in other portions of this study and others can be assigned for more detailed planning studies in the future.

The Plan is for the Town itself. In concept, however, the future land use has been planned as an integral unit of the Boston Metropolitan Re-tion and the Greater Framingham sub-region. This integration has included a careful appraisal of many factors that will influence the future land use in the regions mentioned above and a particularly careful analysis of past and projected land use trends in the several adjoining communities. Although the Plan takes into consideration the forces and trends within the Metropolitan Region, the accomplishment of the Plan cannot result from merely assimilating these factors. Much creative, dynamic action by the Town will be required to achieve a relatively unique and desirable identity within the region.

In achieving this identity through growth and development, the Plan as a portion of the Master Plan Study should ideally function as a framework, a guide- a statement of policy towards specific actions rather than a point of view, a prediction or a "final" blueprint for development.

All of the foregoing portions of this study have contributed to the Future Land Use Plan. This is particularly discernable in the cases of such earlier studies as Drainage, Land Use, and Population. The chapters that follow in this report are largely oriented to the effectuation of the Plan.

The closest relationship between the Future Land Use Plan and any other portion of the study is the relationship with the Proposed Zoning Map and the suggested revisions in the Zoning By-Law. Zoning is the legal implementation of land use planning. There is one basic difference between the Future Land Use Plan and the Proposed Zoning Map. The Future Land Use Plan expresses short range goals and also long-range objectives, ideas and concepts not fully developed through public opinion and understanding for immediate adoption. The Proposed Zoning Map is based on the Future Land Use Plan, being designed however as a shorter-range "legal" plan, and containing immediate objectives and growth concepts accepted by the community.

II. THE FLOOD PLAIN

During the hurricanes of the late 1950's between 10 and 12 percent of Sudbury was inundated by the overflowing of the Sudbury River. World-wide experience with floods has exhibited that such excesses of nature spread many types of misery for the individuals and the municipalities involved.

In order to keep to a minimum the ravages that future floods might wreak upon the Town and its residents, the Future Land use Plan proposes that the "Flood Plain" remain substantially undeveloped for all time. The area designated as "Flood Plain" has been interpolated from United States Geodetic Survey data and would include all the land within the Town which is below 125 feet above mean-sea level. This area would include approximately 13% of the Town. The area between this level and the highest flood of record (122.8 m.s.l.) is needed as a reasonable safety factor to protect the Town against higher floods which may occur. Each new structure, driveway, patio and street, and each acre taken out of forest or farm and compacted by bulldozers affects the flood runoff characteristics and tends to increase the peak flow and therefore flood elevations in the river.

It is not the intention of the Plan that the "Flood Plain" should remain totally unused, only that no building should be allowed or filling carried out that would restrict the natural flow of the Sudbury River or reduce the storage capacity of its flood plain. Such uses as agriculture, recreation, off-street parking, open storage, air strips and conservation, substantially the present uses, would continue to be appropriate.

The flood plain in Sudbury is a portion of the largest inland flood plain in Massachusetts, adjoining the lower reaches of the Sudbury River and most of the Concord River. Three abutting communities (Concord, Lincoln, and Wayland) have enacted legislation to protect the "Flood Plain". The Future Land Use Plan would preserve the portion of the "Flood Plain" in Sudbury as part of this cooperative action. From a regional viewpoint all of the flood plain is a crucial link in the Bay Circuit, which is in turn an essential factor in the Boston Metropolitan Regional Plan. One of the functions of the Bay Circuit is to provide a parkway and green belt around Boston. The Concord-Saxonville thoroughfare proposed in the Circulation Plan would aid in the achievement of this end.

III. PUBLIC AND SEMI-PUBLIC LANDS

This category of Future Land Use has been extensively discussed under the heading of "Community Facilities" and requires but little analysis at this point.

In January of 1962 approximately 17.5% of Sudbury's total land area was held in public and semi-public ownership. About 40% of the above acreage was either on the flood plain or in that portion of Town restricted by covenant to 5-acre residential lots. Thus, public and semi-public land users, on normally usable land, held about 10.4% of the total Town area at the above date.

The Community Facilities and Future Land Use Plans indicate that approximately an additional 4% of the Town area might be set aside for such uses, of which about one-half would be for conservation uses on generally unbuildable lands. The remaining 2% of the Town suggested for public and semi-public acquisition would be principally used for school and recreation purposes.

The possibility of the Federal Government selling the Ordinance Depot, which makes up over 25% of Sudbury public and semi-public lands, will call for extensive revision of the Future Land Use Plan in that portion of Town. Since the depot is in more than one town, its reuse should involve a joint study at the appropriate time. The pending Federal acquisition of a portion of the flood plain will not affect the Plan as the motivation of the Dept. of Interior is similar to that of the Plan.

The location of the major public and semi-public land holdings on the periphery of the town is contributory rather than restrictive to the development of Sudbury as a unique community within the Boston Metropolitan Region.

IV. RESIDENTIAL DEVELOPMENT

At the time that the land use survey was completed (August 1960) it was determined that 11% of Sudbury's total acreage was developed for residential purposes. The existing zoning, soil conditions, topography and land holdings at that time, would allow an additional 47% of the Town to be built up for residential use, a five-fold increase. The future land use policy of the Town at the time, as expressed by the Zoning By-Law and restrictive covenants, would allow a total of 44% of the Town to be developed at a density of one family per acre, 7% to be developed at a density of one family for each 1½ acres, and 7% of the Town to be developed at a density of one family per five acres (all including present development).

This policy if carried out exactly would place 87% of Sudbury's ultimate population at a one family per acre density, 10 percent at one family per two acres, and 3 percent at one family per five acres density. So, although a policy of residential diversity had been adopted, it was not one that would in fact achieve very much diversity in terms of an ultimate population.

During the two-year Master Plan study the following conclusions were reached as regards desirable modifications in the residential land use policy for the town.

(1). Since considerable areas were either presently built-up or subdivided at an approximately 1/2 acre per family density, this fact should be reflected in a Future Land Use Plan.

(2). Although some development exists at approximately 3/4 acre per family, the character of the development is so similar to existing one acre per family development, that this density is not included in the Plan.

(3). The predominant required density of one acre per family has been working well and should be continued as the basic type of residential development in town.

(4). The land presently restricted by covenant to a density of five acres per family should be reflected in a Future Land Use Plan. Major areas of extremely difficult soils, not within the "Flood Plain", should also be designated for this density of development since such areas are not suitable for higher density development.

(5). Certain small areas for low density "Garden Apartments should be proposed at excellent points of access (that will not place undue traffic on residential streets). This proposal has the aims of (a) providing residences for school teachers, retired persons and local new marrieds with no or few children; (b) broadening the tax base of the community; (c) providing a reasonable alternative to commercial development along Route 20; (d) adding desirable diversity to the age distribution of the Town's population; and (e) meeting the increasing pressures for apartment development in a reasonable manner.

(6). To expand the area presently designated for a density of one family per 1½ acres and to lower the required density to one family per two acres for the following reasons; (a) two acres per family appears to be the minimum that would allow private water supply and private sewage treatment on the same lot indefinitely for the types of soils that predominate in the proposed area. Due to drainage patterns and the required frontage requirements providing either public water or sewers to either 1½ or 2 acre densities would be extremely costly; (b) a two acre per family density would achieve a substantial rather than a moderate change in aesthetics and housing market from the basic one family per acre density; (c) the present portion of buildable land (7% of town area) allocated to this density is too small to have an appreciable effect on the character of the town or to achieve appreciable economies; (d) setting aside a substantial portion of the less developed parts of town for two acre per family development would have the effect of encouraging more compact economical development in the areas of town available for higher density development; (e) future development at a density of two acres per family in the parts of Town suggested on the Plan would be more in keeping with present development in these areas than a higher density.

To each of the above comments, (1) through (6), many ramifications can be added by those with intimate knowledge of the Town. Several of the points covered are touched upon in other portions of the Master Plan Report, particularly the Utilities Study, the Population Study, the Existing Land Use Study, the Community Facilities Study, and the Economic Base Study.

Table No. 1 presents a statistical review of the impact of the proposed comprehensive modification of Sudbury's residential land use policy. The table should be perused simultaneously with a copy of the 1961 Zoning Map and a copy of the Future Land Use Plan included in this Report.

TABLE NO. 1 - ANALYSIS OF THE RESIDENTIAL PROPOSALS OF THE FUTURE LAND USE PLAN

A. Proposed Residential Land Use

1. Development Type	2. Gross Area in Acres	3. Net* Area in Acres	4. Total** Dwelling Units	5. Total*** Population	6. Percent Total Population
Single Family					
1/2 acre	500	450	810 a.	3080	13.1
1 acre	4200	3760	3380 b.	12,850	54.7
2 acres	3060	2500	1125 c.	4260	18.2
5 acres	1600	1350	245 d.	930	4.0
Multi-Family	240	240	840 e.	2350	10.0
Totals	9600	8300	6400	23,470	100.0

B. 1961 Residential Zoning****

	15,063	8953	7435	28,530
Difference B minus A	5463	653	1035	5060
Percent Change B minus A	-36%	-7%	-14%	-18%

* Excluding land not suitable for residential construction
** Dwelling Units per 100 acres - a. 180; b. 90; c. 45; d. 18; e. 350
*** Persons per single family dwelling - 3.8; per multifamily dwelling - 2.8
**** All figures from Existing Land Use and Population Studies

The 5,463-acre difference in column 2 between the proposed land use and 1961 Zoning is caused by the fact that the 1961 gross area of 15,063 acres included the Flood Plain and public and semi-public lands. Proposed increases in commercial areas also contribute to the difference. The reductions in column 3 of net or buildable acreages is primarily due to proposals for additional public lands and commercial areas.

The reductions indicated in columns 4 and 5 are due in part to the factors in column 3, but to a greater extent to the proposed change of the present 1½ acre per family district to 2 acres per family and the increase of buildable acreage in this category from 7 percent to 16 percent of the Town.

The reduction in the statistical ultimate population from 28,500 to 23,500 does not imply a specifically greater merit in the latter figure as a numerical amount. It does however, imply that the lower figure would be a much more desirable ultimate population of the proposed 8,300 residential acres in Sudbury particularly in the distribution recommended.

Column 6 in Table No. 1 indicates the diversity of residential types offered by the Future Land Use Plan in terms of the distribution of population. To a substantial degree this policy represents a continuation of the Policy of the 1961 Zoning By-Law, combined with the facts of existing land usage and the facts of the housing market in the western sector of the Boston Metropolitan Region.

The most significant difference in the proposed Plan and the existing "Plan", as represented by the Zoning By-Law, is that the latter calls for 87 percent of the ultimate population to be housed at one family per acre, whereas the Future Land Use Plan calls for about 55 percent of the ultimate population to be housed on this size lot. The other major change is the proposal to place 10 percent of the ultimate population in "Garden Apartments".

A brief verbal description of the residential portions of the Future Land Use Plan has been included in the "Overview", at the end of this sub-report.

V. COMMERCIAL DEVELOPMENT

Commercial development, as it exists in Sudbury today, and its potential for the future are discussed in some detail in the "Economic Base" and "Economic Development" portions of the Master Plan Study.

The specific challenge accepted by the Future Land Use Plan is to select the best sites for the development potential as detailed by these studies.

Business development in Sudbury today includes approximately 14 intensively developed acres. However, over 60 undeveloped acres adjoining these business sites are owned by business interests. It has been determined that between 55 and 60 intensively developed business acres would be needed at ultimate development. The Future Land Use Plan proposes three areas for new business developments:

(1) North Sudbury: at or near the junction of Haynes and North Roads to serve all of North Sudbury and portions of Maynard and Concord. This area should be a "Neighborhood Shopping Center", of between 5 and 10 acres, with a super-market.

(2) West Sudbury: at or near the Junction of Fairbank and Hudson Roads to serve the area generally bounded by Willis Road to the north, the N.Y., N.H. & H. Railroad to the east, the B. & M. Railroad to the south, and the Town Line to the west. This is suggested as a "Neighborhood Shopping Center of between 5 and 10 acres, with a super-market.

(3) South Sudbury: the land between Route 20 and the Water District land between Nobscot and Raymond Roads. This area would be an addition to the South Business District and is the one area that can provide Sudbury with a comprehensive community shopping area that can compete with nearby towns.

The total land area indicated for business use on the Plan includes these areas plus all the land presently used for business that by location and character seem best suited to continue indefinitely in such use. The total acreage represented amounts to approximately 100 acres which is 40 percent above the estimated need for intensive business development. The 40 percent excess has been included to allow maximum flexibility of development, protective landscaping, and because of the extreme desirability of each of the three new sites described above.

PLATE 2

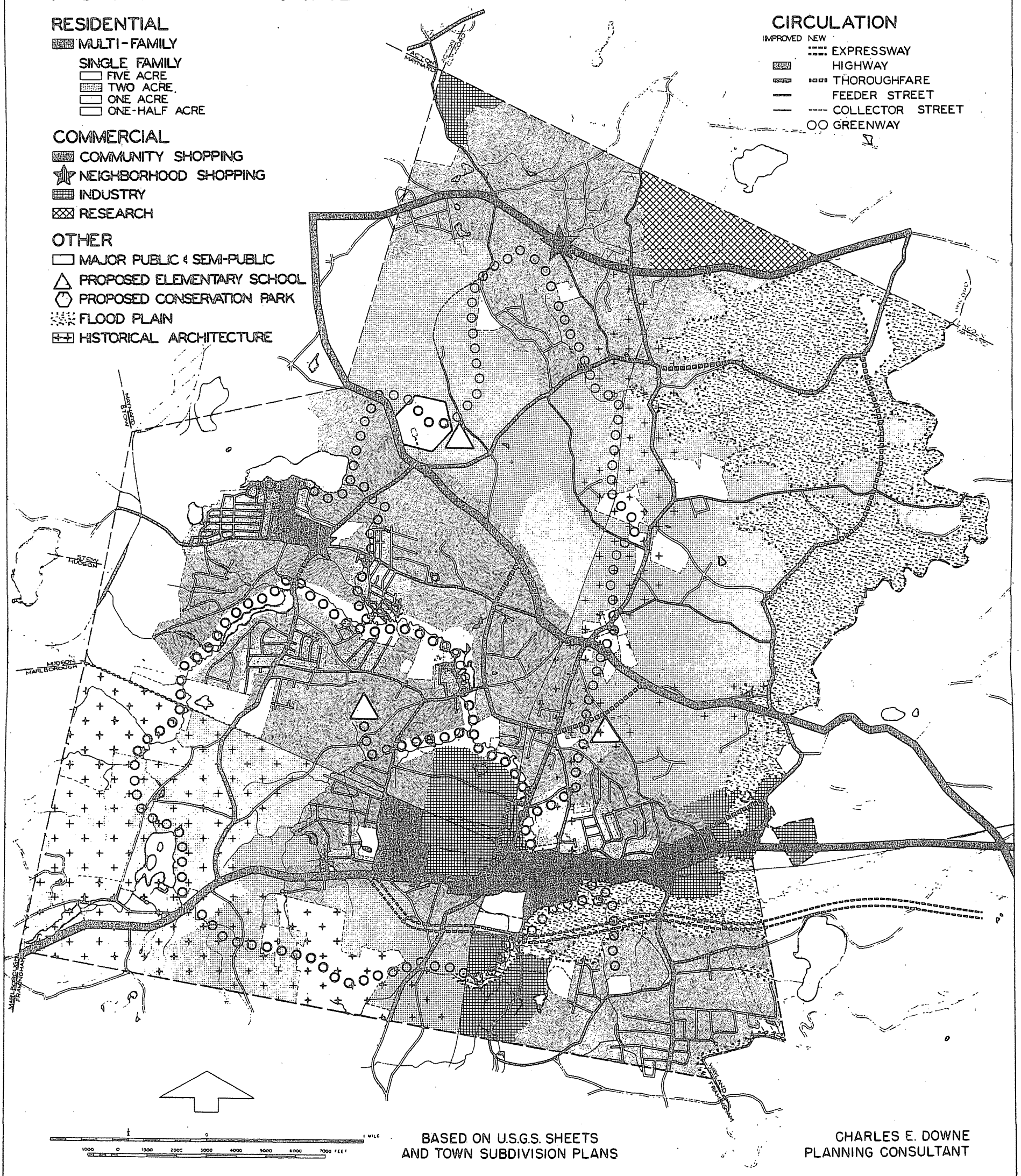
FUTURE LAND USE PLAN

RESIDENTIAL
- MULTI-FAMILY
- SINGLE FAMILY
  - FIVE ACRE
  - TWO ACRE
  - ONE ACRE
  - ONE-HALF ACRE

COMMERCIAL
- COMMUNITY SHOPPING
- NEIGHBORHOOD SHOPPING
- INDUSTRY
- RESEARCH

OTHER
- MAJOR PUBLIC & SEMI-PUBLIC
- PROPOSED ELEMENTARY SCHOOL
- PROPOSED CONSERVATION PARK
- FLOOD PLAIN
- HISTORICAL ARCHITECTURE

CIRCULATION
IMPROVED NEW
- EXPRESSWAY
- HIGHWAY
- THOROUGHFARE
- FEEDER STREET
- COLLECTOR STREET
- GREENWAY



1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

BASED ON U.S.G.S. SHEETS
AND TOWN SUBDIVISION PLANS

CHARLES E. DOWNE
PLANNING CONSULTANT

PLANNING BOARD SUDBURY, MASSACHUSETTS

Industrial development in Sudbury today covers about 180 acres, including the very generous sites of Raytheon and Sperry Rand. The Future Land Use Plan indicates 900 acres for Limited Industry, General Industry and Research use or 720 acres for new development not including expansion of existing plants. This suggested increase would allow five times as many acres to be developed for industry as are presently so used. More intense future development, which is probable, would result in over five times as much industry in Town. The new areas proposed include:

(1) A 65-acre limited industrial area in the extreme Northwest corner of Town. Land in all three abutting communities is presently zoned for such use and the most direct access to a major highway is through two of these Towns.

(2) An extension of the Research District between North Road and the Concord Town Line. Since most of the present district is already developed for research use and the adjoining land is undeveloped, an extension appears reasonable.

(3) The extension of the Limited Industrial District north of Raytheon from Codjer Lane to Hop Brook. To leave this area in a residential use would promote a 800 ft. corridor of homes facing industry with access on the same road as industrial traffic and an extensive swamp at their backs.

(4) The expansion of the present industrial area on the easterly side of town to include all land in Sudbury on Sand Hill and northward from Old County Road. This proposal is intended to be a joint effort with Wayland to develop an extensive "Industrial Park".

(5) A new limited Industrial area is proposed on Raymond Road east of the N.Y., N.H., & H. Railroad and between the Water District Land on Raymond Road and the southern Town Line. This area is similarly situated as was area (1) above, since it is isolated from existing or proposed residential development and has access to Route 20 and/or the proposed Route 20 by-pass without passing through any residential area.

The business and industrial areas described above have been selected to provide adequate space for such development in Sudbury consistent with projected ultimate growth. If such areas were ever built up for residential use desirable commercial development would be extremely unlikely. Therefore, zoning requirements should be adopted immediately to reserve these lands exclusively for the intended uses. The sites selected are those that appear decidedly superior to any others in Town. Great caution should be exercised to prevent business and industrial development in less desirable locations although, temporarily, other sites might be more expeditious.

VI. SPECIAL STUDIES

A. HISTORIC DISTRICT

Sudbury is not, and probably will not be, a cohesive community in terms of physical development. East Sudbury below Wash Brook is relatively isolated. North Sudbury for many reasons will probably continue to be relatively isolated. West Sudbury because of topography and past development has quite a different character from Sudbury Center. At present one of the identifying characteristics of Sudbury is its "period architecture" which is particularly evident at the Centre but also exists in South Sudbury, in the Wayside Inn area and to a lesser degree in North Sudbury. As the Town continues to develop, this "character-giving" architecture will become a lesser portion of the whole and consequently less effective in identifying the Town.

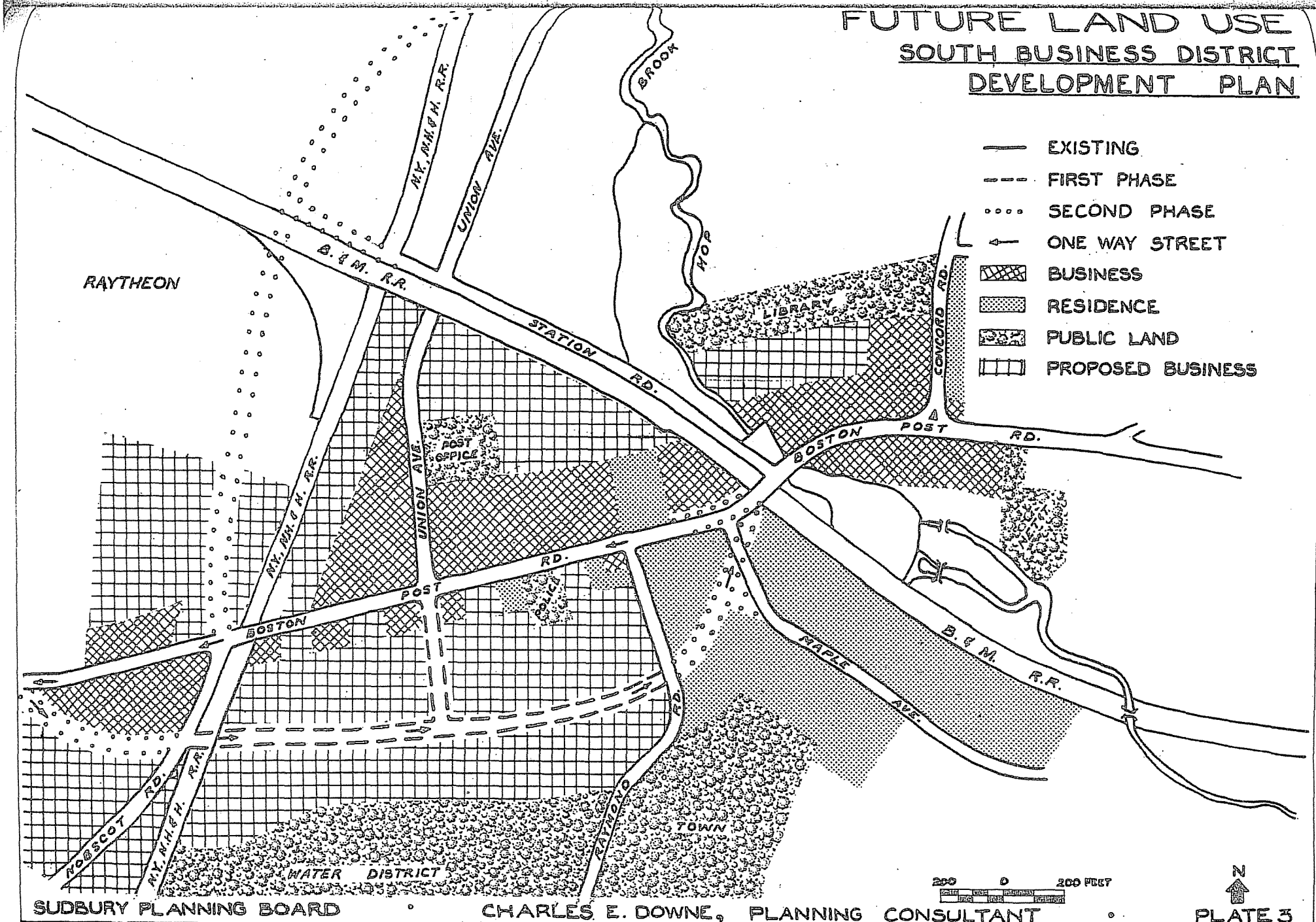
It would seem to be good planning to suggest that relatively liberal controls be established in the areas of Town that presently have "period architecture" so that the unique quality that they add to the Town can be continued. With this thought in mind a survey was made of the Town to identify areas that presently included predominantly pre-20th century attractive architecture or good copies. The two areas designated "Historical-Architecture" on the Future Land Use Plan are the result of this survey. One includes the Wayside Inn area that already requires architecture to be a reproduction of a historical style. The other ties South and North Sudbury to Sudbury Centre and the river meadows. The area can be principally defined as being within eyesight of Old Sudbury, Concord, and Pantry Roads. In South Sudbury it is anchored by the site of the Old Grist Mill and the Goodnow Library; in North Sudbury by the Old North Cemetery and several "period" residences; and in East Sudbury by the Haynes Garrison House, adjacent to the Sudbury River; all three focus on Sudbury Centre with its many historical places.

It appears that this "T-shaped" area, if limited to "period architecture", will do more than any other to continue the unique character of Sudbury for residents and visitors. It does not seem that restrictions need be as stringent as those presently in force in more built-up Historic Districts where any minor deviation from historic norms would be more apparent. However, controls should include landscape features particularly ancient trees and front yard plantings or fixtures.

B. SOUTH BUSINESS DISTRICT

The South Business District of Sudbury is in a state of rapid change. The actions taken during the next few years may determine for all time its size and type of development and its effectiveness and convenience to Sudbury residents. As is indicated in the Economic

FUTURE LAND USE
SOUTH BUSINESS DISTRICT
DEVELOPMENT PLAN



SUDBURY PLANNING BOARD • CHARLES E. DOWNE, PLANNING CONSULTANT • PLATE 3

Base and Economic Development studies, the future of the South Business District lies in serving Sudbury residents primarily and not many persons from outside the Town.

The most acute problem facing this area, like many others throughout the country, is the tendency for business establishments to string out along the main travelled way. This type of "strip" development reduces the potential for shoppers to visit several shops in one trip and adds unnecessarily to congestion on the highway. Because of these and other circumstances, such districts are having great difficulty in competing with so-called "planned shopping centers".

The open area between Route 20, the Water District land and Nobscot and Raymond Roads, about 30 acres, offers Sudbury a unique opportunity to achieve a comprehensive commercial core and to ameliorate a considerable traffic problem.

Plate 3 indicates in sketch form a development plan for the South Business District. The key proposal of this plan is to carry a new street from Nobscot Road to Raymond Road about 350 feet south of Route 20, bisecting the block thus formed by an extension of Union Avenue to form two blacks of about 350 by 700 feet each. These blocks would be of sufficient size to allow ample opportunity for interior parking and a pedestrian mall with business frontage on both sides of the four streets involved. In addition to opening up new land for business development, this key proposal, by the simple expedient of disallowing left turns onto Union Avenue during rush hours, would considerably reduce traffic congestion.

A second proposal of the development plan includes the extension of Nobscot Road northward to connect to Union Avenue between Station Road and Codger Lane and the extension of Station Road to connect to this new street. This proposal would provide access to prime industrial land and would allow north-south traffic to flow past the business district without interference. A driveway to this Nobscot Road extension from the Raytheon parking lot would considerably relieve rush hour congestion as most employees of this plant live either north or south of this point.

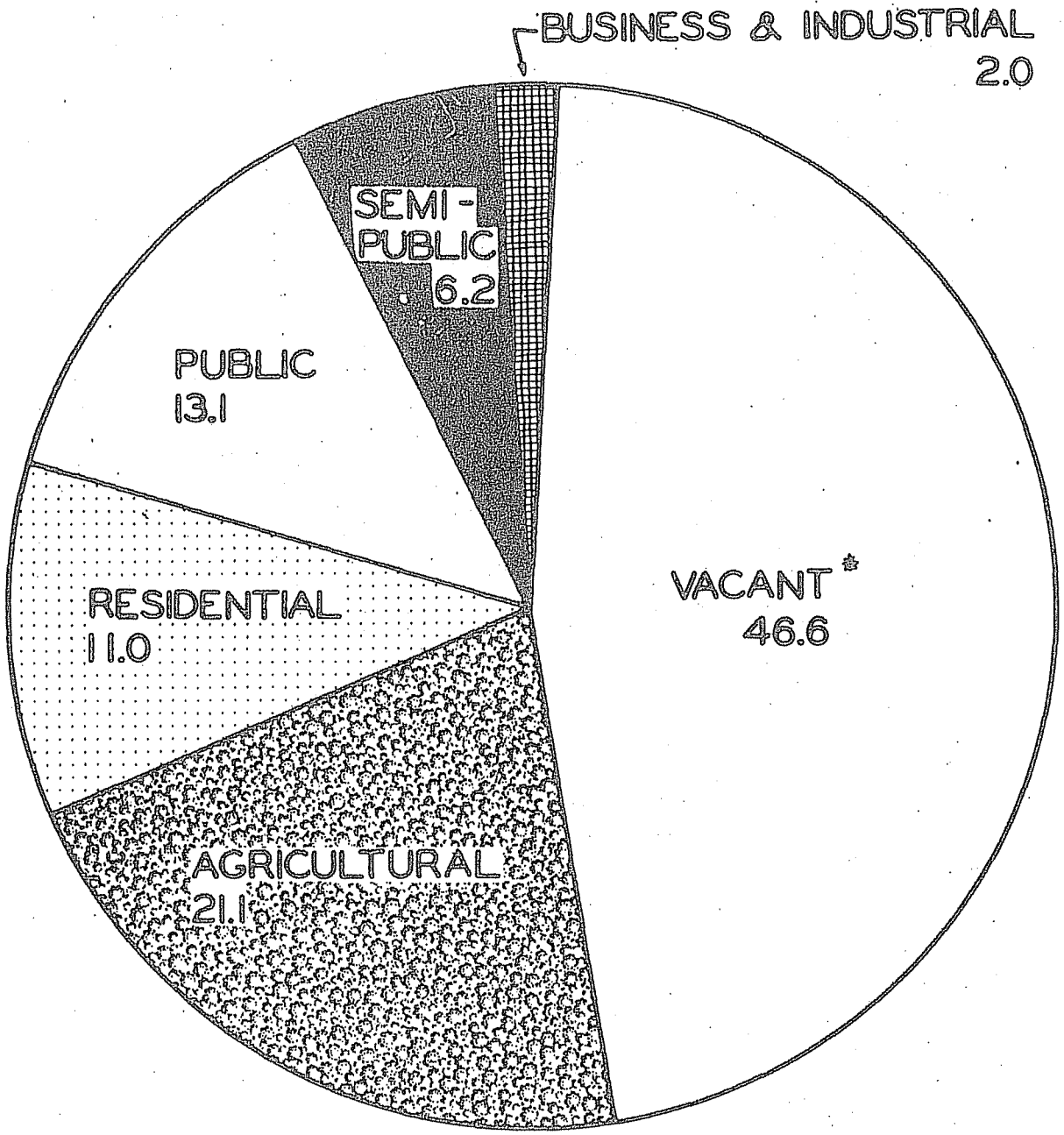
The third major proposal of the plan would be the extension of the new street between Nobscot and Raymond Roads to reconnect to Route 20. This would provide some additional business frontage and more significantly could create a one-way traffic pattern through the entire expanded business area, thus eliminating all left turn conflicts. Only one or possibly two residences would have to be moved to carry out this proposal.

The accomplishment of this development plan need not be either expensive or difficult. Almost all of the slightly over one mile of new streets would provide new commercial frontage and could either be built by a developer or be financed in part through betterments.

PLATE 4

FUTURE LAND USE

EXISTING DISTRIBUTION BY PERCENT

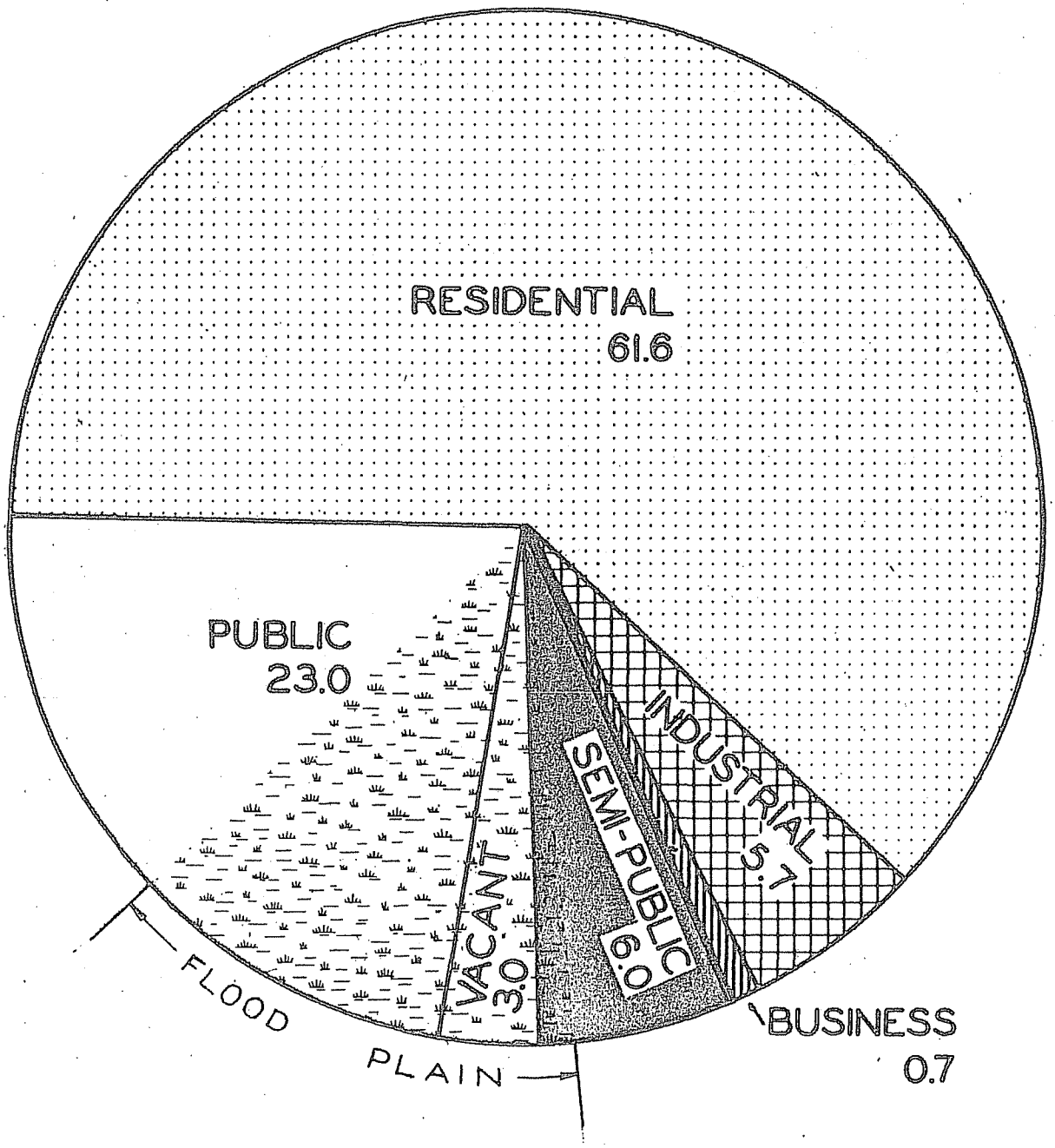


* INCLUDES FLOOD PLAIN NOT IN PUBLIC OR SEMI-PUBLIC USE

SUDBURY PLANNING BOARD • CHARLES E. DOWNE, PLANNING CONSULTANT

FUTURE LAND USE

PROPOSED DISTRIBUTION BY PERCENT



SUDBURY PLANNING BOARD • CHARLES E. DOWNE, PLANNING CONSULTANT

The one-way loop re-routing of the Boston Post Road might be paid for in part by the Commonwealth since its approval would be necessary. The construction of the much-delayed Route 20 by-pass would not eliminate the need or justification for the proposals above. Depending upon the final location of the by-pass, these proposals would vary only in relative importance.

The principal function of the "South Business District Development Plan" is to serve prime commercial land and local residents. Its other function of serving through traffic would not be entirely eliminated by a by-pass. This is only a sketch proposal. A detailed layout should be made before additional commercial development is carried out in Sudbury.

VII. OVERVIEW OF THE FUTURE LAND USE PLAN

There is no particular design principle that can describe the future appearance of Sudbury as indicated by the Plan. In form the developable portion of Sudbury is a rectangle, between the Sudbury River Flood Plain to the east and a series of public lands and lands restricted from normal development by a five-acre per residence covenant to the West. The distribution of Future Land uses has been determined by the character of the topography and soils and by earlier development. Sudbury has and will continue to have two principal centers, — a civic center at Sudbury Centre and a business center in South Sudbury on Route 20. Although the following discussion will confine itself to Sudbury, the Future Land Use Plan is coordinated with the plans of abutting communities at the Town Line.

To a very slight degree the northern part of Sudbury as planned has more cohesiveness within itself then with the entire town. The area that lies generally north of Pantry Brook is proposed to include about 1450 acres of single family homes on one acre plots and about 500 acres of two acre plots. This area could include a population of about 6,500 persons. It would be served by the present Haynes and proposed Willis elementary schools, a proposed "neighborhood shopping center" at or near the junction of Haynes and North Roads, a pedestrian "access greenway" to South Sudbury and several new and improved streets as indicated. A portion of this part of town would be included in an Historical-Architecture District. Generous sites have been laid out for light industry and research. As has been indicated in the Utilities Study this area might possibly have its own sewer district. Much of the land in this part of town is in the flood plain and such open space development as a wild life preservation area, a golf course, and a rod and gun club.

The area lying generally west of Peakham and Maynard Roads is a somewhat different character than the rest of town, both by nature and development. Within this area are proposed three residential types; one acre single family, predominating; half acre single family, mostly existing; and garden apartments fronting on Willis Pond and Hudson Roads. The Ultimate population of this area would be about 8,000 persons. They would be served by the existing Fairbank School, a new elementary school between Peakham and Pratts Mill Roads, an extensive strip park or "Greenway" along Hop Brook, the proposed North-east to South-west thoroughfare, a neighborhood shopping center at or near the junction of Fairbank and Hudson Roads, and Town sewers. There are no industrial uses proposed within the area and the principal public uses would be the Ordinance Depot and the Sudbury Rod and Country Club.

The south-west corner of Sudbury, (the Wayside Inn area), generally delimited by the town bounds, the Boy Scout reservations and Dudley Brook is indeed a unique part of Sudbury. The only development proposed is single family homes on 5 acre plots and a continuation of the present extensive public uses. All of the area would continue to be developed with Historical-Architecture controls.

The south-east corner of town generally delimited by the Town Line and Wash Brook is isolated from the rest of town by the Flood Plain. All residential development in this area is proposed to consist of one acre single family plots, generating a population of slightly over 3,000. A large, new "light industrial park" on Raymond Road would be the only commercial use in the area. Elements of the Plan that would serve this area include, a large park on a portion of the Raymond land, a small neighborhood park across from the Israel Loring school, and improvement of Landham Road.

South Sudbury, which would be generally bounded and described as follows,

northerly - Dudley Brook, Old Lancaster and Goodman's Hill Roads

easterly - Flood Plain and Wayland Town Line

southerly - Wash Brook and Boy Scout Reservation

westerly - Dudley Brook and Wayside Inn Area,

would have about half of its population living in "garden apartments", the remainder of the population would live in single family homes on one-half and one acre plots giving a total population of about 4,000 persons. This most densely developed part of town would include the main business district and most of the industry in town, all on or near Route 20. It would be served by the Horse Pond School, a new

TABLE NO. 2 - FUTURE LAND USE PLAN ANALYSIS

Use	Gross Acres		Percent of Town Area	
	1960	Proposed	1960	Proposed
Residential				
1/2 acre		500		3.2
1 acre		4200		27.0
2 acres		3060		19.6
5 acres		1600		10.3
Multi-family		240		1.5
Sub-total	1,700	9,600*	10.9	61.6
Commercial				
General Industry		125		0.8
Light Industry		505		3.2
Research		270		1.7
Business		100		0.7
Sub-total	195	1,000*	1.2	6.4
Flood Plain, Public and Semi-Public	4,350	5,000	27.9	32.0
Totals	6,245	15,600	40.0	100.0

*Residential and commercial proposals include about 1400 acres of land unsuitable for development – about 9 percent of the Town area. The greater proportion is in the residential category.

elementary school between Goodman's Hill and Old Lancaster Roads, the improved South Business District, several new and improved streets, the Hop Brook and the north-south "Greenways" and Town sewers. It would include a portion of the main Historical-Architecture District.

Sudbury Centre, which is generally bounded as follows;

northerly - Pantry Brook

easterly - the Flood Plain and Wayland Town Line

southerly - Goodman Hill and Old Lancaster Road

westerly - Old Lancaster Road and Maynard Road,

would be principally developed by single family homes on two acre lots with a small area of one acre lots in the southwest. The ultimate population would probably be about 2,000 persons. No business or industrial development is proposed. The facilities existing and proposed that would serve the area include the "civic center" with its several new buildings, the north-south "Access Greenway", the Centre "Ring-Road", the "Concord-Saxonville thoroughfare", the major portion of an Historical-Architure District along Old Sudbury and Concord Roads, the existing Nixon elementary school, the Centre School, the Regional High School and Featherland Park.

The foregoing description of the Future Land Use Plan in six parts should serve to underline the intent of the Plan to provide a realistic variety of development in Sudbury. Unity or the "oneness" of the Town should be provided in large part by the Historical-Architecture District, the various community facilities, the circulation system, and particularly the "Greenway" Park system.

Table No. 2 presents a brief summation of the statistical impact of the Plan in terms of acreage distribution of the major uses. Plates 4 and 5 show graphically the statistical change from the present to ultimate development. Perhaps the most significant part of the data is the fact that the total acreage assigned to the Flood Plain, public and semi-public lands, lands unsuitable for normal development and the 5-acre single residence district would be almost 50% of Sudbury's area. This is evidence that the Future Land Use Plan is intended to keep the development of the Town characteristically rural.

M A S T E R P L A N S T U D Y

REVIEW OF ZONING BY-LAW

Planning Board

S U D B U R Y - M A S S A C H U S E T T S

March 1962

Charles E. Downe, Planning Consultant

I. INTRODUCTION

Zoning is the principal tool available to a community to determine its future form and function. The principal purpose of zoning is to control land-use and the primary purpose of the proposed revisions that follow is to suggest legal implementation of the "Future Land Use Plan." Sudbury has lived for a long time with a comprehensive zoning by-law and none of the proposed modifications that follow differ in kind from the present by-law.

In the process of reviewing and analyzing the present by-law, with the intent of adding the revisions necessary to implement the Future Land Use Plan, it was found that Sudbury's zoning by-law, like many others, had grown like "Topsy" and it was exceedingly difficult for the administrators, let alone the layman, to conveniently find pertinent requirements. It became apparent that it was absolutely essential to codify the existing by-law before any reasonable revision could be carried out.

The "codification" which has been prepared does not include any substantive changes. It is a reorganization into a convenient, orderly pattern to serve as an efficient legal tool. The major change in the appearance of the by-law is the elimination of "metes and bounds" descriptions in favor of the more efficient reference to a Zoning Map to describe the various districts. Such practice has a long history of acceptance by the courts and allows for a more logical distribution of land uses.

The codification of the Zoning By-Law brought out several inconsistencies or deficiencies, such as, single family homes not being allowed in single family residence districts, signs not being allowed in industrial districts, controls over educational uses which are not allowed by the state enabling statute and no rear yards required in business districts (where in fact they are most essential).

Because of urgent pressures, two special zoning memoranda were prepared during 1960 and 1961. They were concerned with site plan approval and the establishment of a flood plain. Since the town has already taken action upon both of these memoranda, any further discussion at this time would be redundant.

Only two major revisions are suggested in the following review, namely, the establishment of new controls for off-street parking and the establishment of a multi-family district. The need for these revisions has been discussed in the Circulation Plan and the Future Land Use Plan respectively. Other lesser revisions have also been suggested in the review.

II. CODIFICATION OF THE 1961 SUDBURY ZONING BY-LAW

As indicated in the introduction a comprehensive codification was prepared and modified after several conferences. The codification did not make any substantive changes in the by-law. Therefore, it has been omitted from this Master Plan Report. The codification itself is a useful document since it rearranged the various sections logically and made the by-law more readable and understandable. It is suitable for Town meeting action and served as the framework for the substantive suggestions which are outlined in Section III following. Copies of the codification have been submitted to the Planning Board.

PLA

ZONING

PROPOSED ZONING MAP

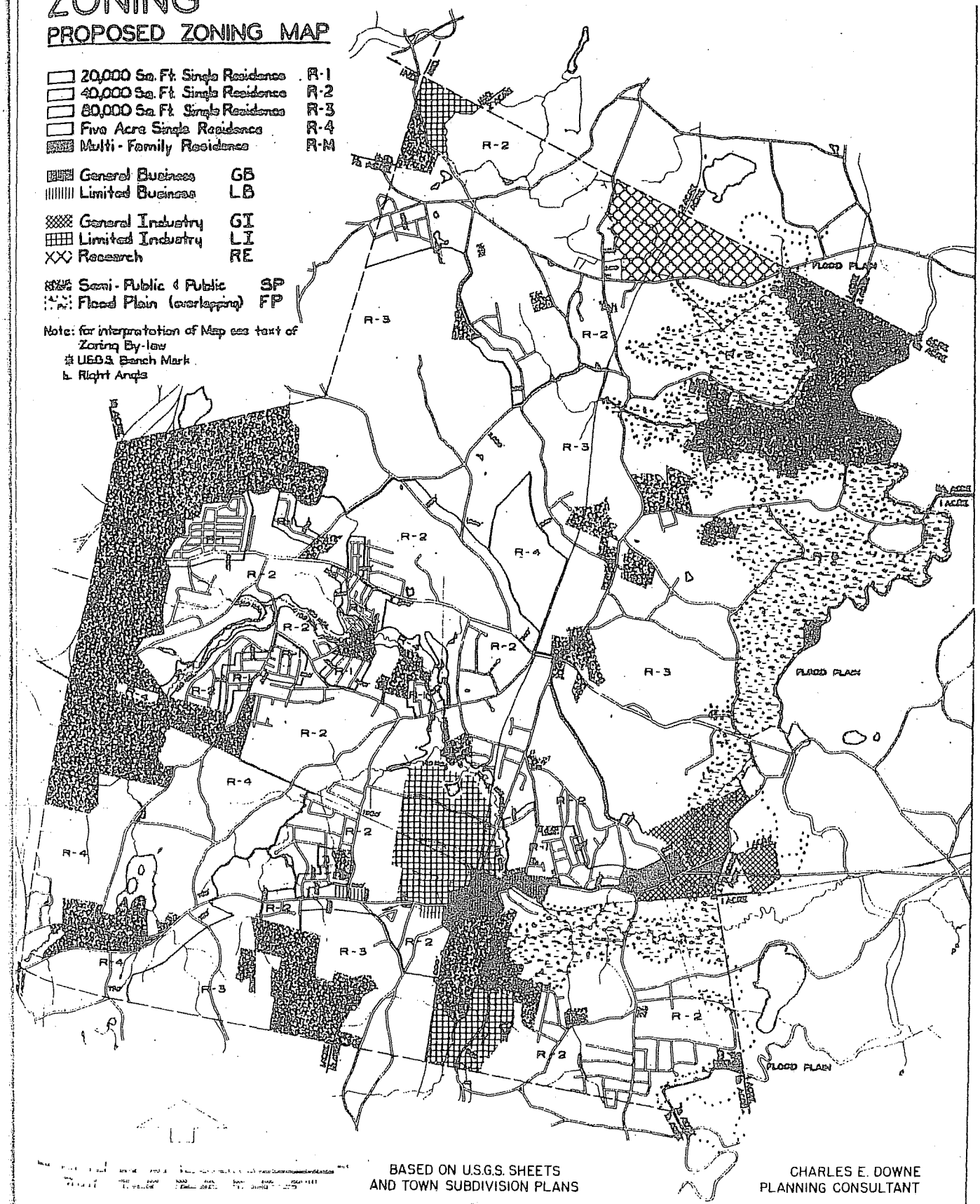
- 20,000 Sq. Ft. Single Residence . R-1
- 40,000 Sq. Ft. Single Residence R-2
- 80,000 Sq. Ft. Single Residence R-3
- Five Acre Single Residence R-4
- Multi-Family Residence R-M

- General Business GB
- Limited Business LB

- General Industry GI
- Limited Industry LI
- Research RE

- Semi-Public & Public SP
- Flood Plain (overlapping) FP

Note: for interpretation of Map see text of Zoning By-law
U.S.G.S. Bench Mark
L Right Angle



BASED ON U.S.G.S. SHEETS
AND TOWN SUBDIVISION PLANS

CHARLES E. DOWNE
PLANNING CONSULTANT

PLANNING BOARD SUDBURY, MASSACHUSETTS

III. REVIEW OF THE ZONING BY-LAW AND SUGGESTED REVISIONS

The following review and suggested revisions follow the organization of the codification prepared previously.

I. GENERAL

A. PURPOSE

It is suggested that the phrase: "to lessen the danger from fire"

be changed to read: "to lessen the danger from fire, flood, congestion and confusion."

and that the phrase: "to achieve the aims of the Master Plan" be added.

Since Sudbury adopted a Flood Plain District, the intent of protecting the Town from floods should be included in the "Purpose". Since the avoidance of congestion and confusion is frequently interpreted by the courts as justifying acreage zoning, a statement covering this should be put in the Purpose. Referring to the Master Plan can also add considerably to the Court's interpretation of the intent of the Zoning By-Law.

B. BASIC REQUIREMENTS
No change suggested.

C. NON-CONFORMING BUILDING AND USES
No change suggested.

D. SALE OF FARM PRODUCTS
This activity should be restricted to the sale of items principally produced in the Town and/or on the land of the proprietor or company operating such farm stand.

E. CERTAIN OPEN SPACE AND EDUCATIONAL USES
The state enabling act does not allow restrictions on educational uses and the phrase, "for educational purposes or recreation field", should be deleted.

F. SINGLE DWELLING PER LOT
No change suggested.

It is suggested that the following additional items be added to this section for greater clarity.

(1) MUNICIPAL, EDUCATIONAL, RELIGIOUS AND CONSERVATION USES
"Nothing in this By-Law shall prohibit development of any land in any district for municipal, educational, religious or conservation uses. Such uses shall not be exempt from the general or specific regulations of the By-Law other than those related to Permitted Uses."

(2) LOTS IN TWO DISTRICTS
"When a district boundary line divides a lot in one ownership of record at the time this By-Law is adopted or amended, the regulations for the less restricted portion of such lot shall extend not over 30 feet into the more restricted portion provided that the lot has street frontage in the less restricted district."

(3) PROHIBITED USES
"In any district no use will be permitted which will produce; a nuisance or hazard from fire or explosion, toxic or corrosive fumes, gas, smoke, odors, obnoxious dust or vapor, harmful radioactivity, offensive noise or vibration, flashes, objectionable effluent or electrical interference which may adversely affect or impair the normal use and peaceful enjoyment of any property, structure or dwelling in the neighborhood or contamination of ground water or the pollution of streams or the atmosphere beyond the lot on which such use is included."

This proposal to apply a nuisance provision to all districts would not appear in any way more restrictive than the present by-law, would be more reasonable than limiting it to certain districts and would add clarity to the by-law by placing such requirement at the beginning. It would also shorten the by-law by eliminating its repetition. It would be particularly effective in controlling new uses in existing non-conforming buildings.

II. ESTABLISHMENT OF DISTRICTS

A. TYPES OF DISTRICTS
If all of the new districts are adopted as indicated on the accompanying Proposed Zoning Map, the list under the heading should read as follows:

(1) Residence Districts

20,000 sq. ft. Single Family Residence District	R-1
40,000 sq. ft. " " " "	R-2
80,000 Sq. ft. " " " "	R-3
5 acre " " " "	R-4
Multi-family Residence District	R-M

(2) Business Districts

Limited Business Districts	LB
General Business Districts	GB
Shopping Center Districts	SC

(3) Industrial Districts

Limited Industrial District	LI
General Industrial District	GI
Research District	RE

(4) Special Districts

Flood Plain District	FP
Semi-Public and Public District	SP

The procedure of numbering each new area as a separate district should be discontinued when an Official Zoning Map is accepted.

B. LOCATION OF DISTRICTS OR ZONES

This section might well be expanded to include the following points for clarity in enforcing the By-Law.

(1) Where a District Boundary is shown as following a street, railroad, utility easement or water course, the boundary shall coincide with the centerline therefore, or an extension of such centerline, as it existed at the date of the Zoning Map.

(2) Where a district boundary is shown as generally parallel to a street, railroad, utility easement, or watercourse, the boundary shall be deemed parallel to the nearer right-of-way sideline or high water line, or an extension of such line. The numerical figure placed between said line and the district boundary shall be the distance in feet between them as measured along a perpendicular line to said line or extension thereof.

(3) Where a district boundary is indicated as generally coinciding with a city, town or property line, it shall so coincide.

(4) Where a District boundary is indicated as generally perpendicular to any right-of-way line, itemized above, or any city, town or property line, it shall be deemed to be perpendicular.

(5) Where a district boundary is indicated as generally parallel to any city, town or property line, it shall be deemed parallel. The numerical figure placed between two such lines shall be the distance in feet between them as measured along a line perpendicular to the latter.

(6) The location of the boundary of the Flood Plain should be inserted at this point, when it is accepted by the Attorney General, with the addition of the following sentence. "Where the location of the boundary line of the Flood Plain district is uncertain, the Board of Selectmen may require the submission of sufficient topographic, drainage, ground water and flooding data to establish the precise location of said boundary."

(7) Where a district boundary shall include a numerical figure followed by the letters (M.S.L.) it is at the number of feet, in such figure above, Mean Sea Level. The basic source for determining the line thus indicated, shall be United States **Geological Survey Data as interpreted by the Town Engineer.**

(8) Where the location of a district boundary is otherwise uncertain, the Town Engineer shall determine its location in accordance with the distance in feet from other bounds as given on the Zoning Map and good engineering practice.

(9) The property of new semi-public or public uses should be added to the Zoning Map before the next Town Meeting. The proposed semi-public and public District for these purposes would help to clarify and identify existing areas and to permit new locations and sites to be established.

It might be well to add the Historic District to the Zoning Map although it would not be a part of the Zoning by-Law. It would add Clarity to the intent of the Map because the Historic District is **in effect Architectural Zoning. If it is so included on the Zoning Map, a note might be placed at the end of this section and on the map defining its significance and giving its legal reference.**

111. PERMITTED USES

A. RESIDENCE DISTRICTS

1. Single Residence Districts

The first permitted use should be broken into two parts separating "Agricultural" uses from "Board and Rooming House" uses. It would not seem advisable to allow agricultural uses in the 20,000 sq. ft. district. A new item should be included to permit single family residences.

2. Multi-family District

It is suggested that this new sub-section be added and that only single-family residences and multi-family residences be permitted uses, with no agricultural uses. Home occupations might be limited to the ground floor of apartment buildings.

B. BUSINESS DISTRICTS

It is suggested that "Trailer Camps or Parks" are incompatible with the intent of a Business District and should therefore be deleted.

Trailer camps or parks are a residential use and similar only to multi-family residence. Since only a small area is proposed for multi-family residence, it is suggested that trailer camps or parks should not be permitted in Sudbury at this time.

C. INDUSTRIAL DISTRICTS

1. Limited Industrial District

It is suggested that Limited Industrial Districts be restricted to fabrication and assembly in terms of manufacturing and that the work "processing" be deleted. If the nuisance provision is included within the general provisions, it should be deleted here. It would appear reasonable to allow any uses permitted in the Research District in the Limited Industrial District by reference.

It is suggested that items b, c, e and i be deleted as being either incompatible to the intent of a Limited Industrial District at the proposed locations or redundant to provisions elsewhere in the By-Law. Spotlighted signs should logically be allowed in this district with a proper setback.

2. Industrial District

This District should allow wholesale, storage, lumber yards, industrial or manufacturing uses (including processing, fabrication and assembly), automobile filling stations, garages, research uses and spotlighted signs, and such similar uses as permitted by the Board of Appeals. The development in the proposed district in East Sudbury of trailer camps or parks, hotels, motels and overnight cabins, would not be compatible with the intent of this District.

All of the special provisions applying to individual Industrial Districts can be deleted at this time as they are now either obsolete or redundant.

D. RESEARCH DISTRICT

The wording of the uses presently permitted in this District is rather ambiguous and open to a wide range of interpretation. Such words as "Development" and "Engineering" are not very definitive. The possibility of "manufacture" incidental to "engineering" or "tests" incidental to "development" might well be interpreted to include testing a new product on a world-wide basis for an extensive period of time. The term, "any other use accessory to a permitted use", certainly when referenced to such broad terms as "development" and "engineering" does not seem to be in keeping with the Town's intent in establishing a Research District.

It is suggested that the use regulations for this District be the subject of a comprehensive review with Sperry-Rand and other knowledgeable sources, such as A. D. Little, who presently have research parks.

The following should be accepted as preliminary suggestions:

(1) "Research" appears to be a reasonable term.

(2) "Development" should be more precisely defined. i. e. "product development but not including market testing".

(3) "Engineering" should be limited to such engineering as is necessary to the preceding permitted uses.

(4) "Manufacture" should clearly not be permitted.

(5) "Assembly, treatment, inspection and testing" may be reasonable as a necessary extension of specifically permitted uses. Such extension of permitted uses might be subject to Board of Appeals review.

(6) "Any other accessory uses" should clearly be subject to Board of Appeals review.

The listing of "prohibited uses" in this district is neither necessary nor proper since this is not done in any other District. The uses are automatically prohibited in that they are not permitted. The nuisance clause should be included here only if it is not inserted under I. GENERAL

Spotlighted signs should logically be allowed in this district with a proper setback.

E. FLOOD PLAIN (Suggested new heading)

The statement as to permitted uses as included in the establishing article **should be inserted here. Examples of permitted uses might also be included for clarity, namely, agriculture, conservation, non-profit outdoor recreation, off-street parking and so forth.**

F. SEMI-PUBLIC AND PUBLIC DISTRICT (suggested new heading)

Since a large percent of Sudbury's land area is taken up by the above uses, it would appear reasonable to include them in a separate district for clarity and reasonableness. At such time as any such land is sold, the Town Meeting would have an ppportunity to consider the re-use and zoning of such land.

Uses that might be permitted should include the following: "schools, churches, libraries, non-profit recreation, municipal, conservation, historic preservation, hospitals, and such other special uses as may be deemed proper by the Board of Appeals."

G. REFERENCE TO OTHER MUNICIPAL REGULATIONS AND BY-LAWS, (suggested new heading)

A reference could well be made at this point to the fact that the land in the several districts may be subject also to Subdivision Regulations, the Earth Removal By-Law, the regulations of the Historic District, among others.

IV. INTENSITY REGULATIONS

A. GENERAL REQUIREMENTS

1. Applicability
No change suggested

2. Recorded Lots - Replace this phrase; "and that there shall be a full compliance with all provisions of these Zoning By-laws relative to set-backs and yards",

with the following; "and that at the time of building, such lot has an area of over five thousand square feet, a frontage of fifty feet or more and is in full compliance with all the provisions of this Zoning By-Law relative to set-backs and required yards; and that at the time of the adoption of such requirements and/or later increased requirements such lot was held in ownership separate from that of adjoining land."

3. Projections
No change suggested

4. Height Limitations
It is suggested that "tanks, penthouses and other accessory and structural parts of such buildings" be deleted.

B. SCHEDULE OF INTENSITY REQUIREMENTS

If all of the suggestions on the Proposed Zoning Map were adopted, this schedule should read as follows:

B. SCHEDULE OF INTENSITY REQUIREMENTS

(all dimensions in feet - unless otherwise specified)

District Designations		Minimum Lot Dimensions		Maximum Building Coverage*
		Area (in sq.ft.)	Frontage (street or way)	(percent of lot)
Single Residence	R-1	20,000	115	20
Single Residence	R-2	40,000	180	15
Single Residence	R-3	80,000	225	10
Single Residence	R-4	5 acres	350	5
Multi-Residence	R-M	60,000	200	30
Limited Business	LB	60,000	200	30
General Business	GB	15,000	100	60
Shopping Center	SC	60,000	200	30
Limited Industry	LI	60,000	200	30
General Industry	GI	20,000	115	60
Research	RE	25 acres	500	15
Flood Plain	FP	as per District overlapped		none
Semi-Public and Public	SP	60,000	200	30

* Including principal and accessory buildings
** As measured perpendicular to nearest street or way line
*** Vertical distance to ridge or highest point of roof
**** unless abutting railroad right-of-way.

Minimum Required Yard Dimensions			Minimum Required Set Back Distance		Maximum Allowable Building Heights***	
Front** (Depth)	Side (Width)	Rear (Depth)	from Street Centerline	from Residence District Bound	Stories	Feet
35	15	30	65	none	$2\frac{1}{2}$	35
35	20	30	65	none	$2\frac{1}{2}$	35
50	30	50	80	none	$2\frac{1}{2}$	35
50	50	70	80	none	$2\frac{1}{2}$	35
50	50	50	80	none	$2\frac{1}{2}$	35
75	30****	30****	125	50	2	25
50	15	15	100	50	2	25
100	75	75	125	100	2	25
75	50****	50****	125	50	2	35
50	30****	30****	100	30	2	35
200	100****	100****	250	150	2	35
as per District overlapped			as per District overlapped		none	none
75	30	30	100	none	$2\frac{1}{2}$	35

C. MODIFICATIONS AND EXCEPTIONS

1. Building Coverage and Open Space

a. It is suggested that this paragraph be deleted.

b. No change suggested

c. No change suggested

(1) Suggested new paragraph)
"In all districts 2,000 square feet of lot area shall be required for each guest room, in a boarding or lodging house as permitted. This requirement shall be in addition to the area requirements of the district for any other use existing or proposed on a lot."

(2) (Suggested new paragraph)
"In the Multi-Family District R-M, 15,000 square feet of lot area shall be required for each of the first four dwelling units and 10,000 square feet for each dwelling unit thereafter."

(3) (Suggested new paragraph)
"Within or in addition to the preceding area requirements for multi-family uses, there shall be provided useable open space of at least 500 square feet for dwelling units with one or less bedrooms and 1,000 square feet for dwelling units with two or more bedrooms.

Such space shall have one minimum dimension of 40 feet and shall not include parking space, laundry drying space or such similar spaces but shall be designed for active and passive recreation."

(4) In all Industrial Districts no lot shall be considered adequate unless it includes at least 4,356 square feet per proposed or projected employee.

2. Minimum Required Yards

a. No change suggested
b. Redundant if new intensity table is accepted
c. No suggested change
d. Delete reference to size of required side yard if new intensity table is accepted
e. Since dwellings are not presently or proposed to be allowed in Business (or General Business) districts, this requirement is in error and should be deleted.

A substitution might require that residences in Limited Business districts be subject to all of the area requirements of the residence district which adjoins the lot in question for the greatest distance.

3. Set Backs

a. through d. - No changes suggested

4. Maximum Building Heights

No change suggested

V. SPECIAL REQUIREMENTS

A. SITE PLAN APPROVAL

This requirement should apply to certain other specialized types of uses such as apartment buildings.

B. OFF-STREET PARKING

The need for a revision of this requirement has been discussed in the "Circulation Studies and Plan". It is suggested that this section be introduced by a statement such as the following:

"In any district the development or redevelopment of any lots for any purpose shall include provision for the off-street parking of all automobiles and other vehicles of residents, employees, customers, guests, clients, students and other users of the lot. Such parking shall be separated from any property line by a landscaped buffer of not less than ten feet and shall be in conformance with the following minimum standards."

(1) Dwelling Units: Two spaces for each dwelling unit in a single family district and one and one-half spaces for any dwelling unit in a multi-family district. (In single family districts driveways might be so used providing that the parking of cars in such driveway will not extend closer than ten feet to the adjacent public right-of-way. Board of Appeals permits for home occupations in these districts should be conditioned upon the continued provision of adequate off-street parking.)

(2) Retail stores and service establishments: one space for each 100 square feet of gross floor area..

(3) Drive-in food establishments; one space for each 15 square feet of gross floor area.

(4) Bowling alleys; 5 spaces for each alley.

(5) Filling stations; 4 spaces plus 2 additional for each service bay.

(6) Furniture store, appliance store, auto sales, and kennels; one parking space for each 300 square feet of gross floor area.

(7) Wholesale establishments, lumber stores, and commercial greenhouses; one parking space for each 600 square feet of gross floor area.

(8) Professional and general offices, whether a separate building or part of another building; a minimum of 3 spaces but one space for each 200 square feet of gross floor area.

(9) Restaurants, cafes, and similar uses; one space for each 75 square feet of gross floor area.

(10) Hotels, motels, and other places offering accomodations to guests; one and one-quarter spaces per guest-room.

(11) Theatres, meeting halls and similar places of assembly; one space for each two and one-half seats.

(12) Industries; one space for each two employees in addition to adequate space for guests.

Parking should not be permitted in any required front or side yard. Such required yards might be reduced to not less than 10 feet upon application to the Board of Appeals or as a part of a conditional approval, subject to full compliance with the vehicular access provisions of the by-law and effective screening from public ways.

For the purpose of analysis a single parking space can be estimated as requiring 300 square feet including the stall and necessary access drives and lanes. Space should be set aside in accordance with the foregoing standards for full legal development of the lot frontage with the type of building proposed for the initial phase. The parking space required for the proposed initial construction should be paved and if for more than 5 vehicles marked into stalls and lanes.

Much of the off-street parking along Route 20 is presently within the proposed required front and side yards and would become a non-conforming use upon the adoption of the foregoing proposals. Much of this parking could be made conforming if an application were made for a reduction of the required yards to 10 feet as provided for above. However, some could not and should not be allowed to continue.

It is suggested that at the time that new off-street parking requirements are adopted that an article similar to the following also be presented.
"Any lawful non-conforming use of required yards not involving a structure, including, but not limited to, off-street parking, may be continued for a period of twenty-four (24) months after the effective data of the proposed zoning by-law amendment whereupon such non-conforming use shall cease."

Such a requirement would in all fairness have to be applied in all districts. The allowance of two years to comply seems a reasonable time period to make the necessary adjustments.

With this period, the financial hardship would in no single instance appear overwhelming, even along Route 20 where future development needs this type of control more than any other section in Town both for the benefit of abutting property, the safety of the motoring public and the creation of sound taxable resources. Though the parking of cars on unpaved surfaces would become non-conforming at the end of the two-year period, reasonable paving requirements would appear to be enforceable.

C. VEHICULAR ACCESS

This provision should probably be applicable to all uses in Town rather than to commercial uses alone. The "congestion and confusion" caused by poor access drives is not affected by the nature of the use. The requirements would not be at all restrictive to present residential development and would be very desirable for any future apartments, churches, clubs and other similar uses.

D. TRAILERS

Trailer parks or camps are not suitable in terms of the Future Land use Plan or compatible with the present development of Sudbury. It is suggested that the portion of this provision preceding the semi-colon be deleted.

E. ENCLOSURE OF USES

1 through 5 - No changes suggested.

6. Since filling stations are presently allowed in Industrial Districts, this requirement is in error and should be corrected.

7. The location of parking areas should be included under the appropriate heading above.

8. See changes recommended under permitted uses for the Research District.

F. EXCAVATIONS ABUTTING ROADS

This provision should logically be in the Earth Removal By-Law.

G. RAISING OF CERTAIN ANIMALS

The permits mentioned here should be for a fixed time period. Riding horses might well be added to the list of animals under this heading.

H. LOCATION OF AUTOMOBILE SERVICES

The inclusion of "an automobile parking area with more than ten (10) spaces "does not seem appropriate under this heading and probably should be deleted.

I. EXTERIOR LIGHTS

No changes suggested.

J. EXTERIOR SIGNS

No changes suggested.

K. SCREENING OF OPEN USES

No changes suggested.

L. LIVING SPACE

(Suggested new provision)

In order to avoid the detrimental effects that accompany overcrowded housing, a minimum standard for living space such as the following might well be adopted.

"Any structure hereinafter constructed, reconstructed, converted or altered, and intended for human habitation, shall provide the following minumum floor area of living space. (Living space should be interpreted as not to include any area with less than a $7\frac{1}{2}$ foot ceiling, any basement area, any storage area, any room without an outside window, any

utility room, bathroom, office, hallway, or staircase but living rooms, family rooms, dining rooms, bedrooms and similar spaces)

Dwelling unit without a separate bedroom	400 sq. ft.
Dwelling unit with one bedroom	580 sq. ft.
Dwelling unit with two or more bedrooms	760 sq. ft.

No living space shall in any case be allowed in any basement area (a basement being defined as an area with a floor level below that of the average ground level surrounding any building)."

M. ACCESS THROUGH FLOOD PLAIN
(Suggested new provision)
The reference to the construction of driveways through the Flood Plain to buildings on contiguous land should be included here, more or less in the words of the article as adopted.

VI. ADMINISTRATION

A. ENFORCEMENT
No change suggested

At this point a requirement for an Occupancy Permit might be inserted, such a permit being revocable for any violation of the provisions of the Zoning By-Law. Thus, if at any point in time, a particular use violates the nuisance, off-street parking, screening of open uses or other provisions, the occupancy permit would be remoked and any continued occupancy or use of the premises would become unlawful unless compliance with the applicable provisions of the By-Law is made.

C. BOARD OF APPEALS
The present provision in regard to the Board of Appeals is very comprehensive in terms of explaining the procedures to be followed by the Board and the appellant. It does not, however, state the powers of such Board clearly. It is suggested that the second paragraph under 2. Procedures and section 3. Appeals be deleted and that the following be substituted under new headings.

3. Powers
The Board of Appeals shall have the following powers and duties in accordance with Chapter 40A of the General Laws.

a. Appeals
To hear and decide appeals for interpretation where it is alleged that there is an error in the enforcement of this by-law or Section 8 of the Building Code.

An appeal may be taken to the Board by any person for interpretation of a decision of any administrator of the Building Code or Zoning By-Law, by filing a copy of such appeal with the Town Clerk and the Planning Board within fifteen days after receiving written notice from said administrator(s).

Any person aggrieved by a decision of any administrator of the Zoning By-Law allegedly in violation of said By-Law, who was not a party to the original proceedings, shall have twenty days to complete the procedure detailed in the preceding paragraph.

b. Special Permits

To hear and decide applications for special permits for certain uses as required in the Zoning By-Law. A Special Permit is a permit to use property for the purpose specified and shall not waive, vary or relax any other provision of the By-Law applicable thereto. In acting upon a Special Permit the Board shall consider the intent of the Master Plan and the Purpose of the Zoning By-Law, and may accordingly impose such conditions and safeguards as are deemed necessary.

c. Variances

To authorize upon appeal or petition with respect to a particular parcel of land a variance from the terms of this By-Law. Such variance shall be granted only for reasons of practical difficulty and demonstrable and substantial hardship to the appellant and only when the Board finds that:

(1) there are special circumstances or conditions applying to the land or building for which the variance is sought, which circumstances or conditions are peculiar for such land or building but not affecting generally the zoning district or portions thereof in which it is located and where application of the requirements of the By-Law would deprive the appellant of any reasonable use of the property; and

(2) the granting of a variance will be in harmony with the intent of the Master Plan and the Purposes of the Zoning By-Law; and

(3) the specific variance as granted by the Board is the minimum variance that will allow a reasonable relief to the owner.

In approving a variance, the Board may attach such conditions and safeguards as are deemed necessary to protect the neighborhood and may set limits of time and of use, and a continuance of the use permitted by such variance may be conditional upon compliance therewith.

Applications for Special Permits or variances may be taken to the Board of Appeals at any regular meeting of such Board by appointment and within two days of taking such appeal a copy thereof shall be filed with the Town Clerk and the Planning Board.

D. PENALTY
No change suggested.

E. INVALIDITY
No change suggested.

F. EFFECTIVE DATE
No change suggested.

IV. OVERVIEW OF THE PROPOSED ZONING MAP

The proposed Zoning Map, as indicated on Plate No. 1, is intended to reflect as clearly as practicable the existing use of the land in Sudbury and the intentions of the Future Land Use Plan. It is suggested that the inclusion of the flood plain district, a semi-public and public district and a five-acre district in those areas that are in fact allocated to such uses on the Zoning Map will make the map a more definitive statement of the Town's existing and intended land use pattern.

The proposed map has retained, to the largest degree possible, features of the existing Zoning Map. It is however, considerably more descriptive since it includes numerical figures to establish exact boundary lines without reference to a legal written description.

Most of the new proposals have been discussed at some length in the sub-report on the "Future Land Use Plan". The major differences between the two maps are:

(1) The inclusion of certain business areas on the Proposed Zoning Map even though they are not on the Future Land Use Plan, until the development of the South Business District can be studied further and initiated; and the inclusion on Future Land Use Plan of two neighborhood shopping centers that would not be appropriate until the population of the town has about doubled its present size.

(2) Only one multi-family district is shown on the proposed Zoning Map at this time. It is in the location in town that has the best access and can be the most readily provided with possible future public sewer. Allowing multi-family units in only one location, provides the Town with an opportunity to decide the merits of this type of housing for Sudbury.

M A S T E R P L A N S T U D Y

REVIEW OF SUBDIVISION REGULATIONS

Planning Board

S U D B U R Y, M A S S A C H U S E T T S

March 1962

Charles E. Downe, Planning Consultant

I. INTRODUCTION

The Sudbury Subdivision Regulations as adopted and administered by the Planning Board are generally in good order and are performing an adequate job for the Town. It is largely the function of these Regulations to supervise the establishment of new developments in a municipality to establish standards for street and utility construction and to assure that the public interest is not ignored in new privately constructed subdivisions.

It is particularly important that Subdivision Regulations be up-dated at the time of adopting a Master Plan because the Plan calls for concrete objectives in future Town development which can be carried out by good subdivision control. The Master Plan proposals that are most pertinent are those related to Circulation, Utilities, Recreation, Conservation and Drainage. Proposals are included in the following discussion to make clearer and more comprehensive the subdivision controls over these factors in the Town's growth.

The administration of Subdivision Regulations entails a great deal of time and energy. Proposals are included below to make this administration more efficient. (1) It is proposed that the Preliminary Plan include more information, so that less review of the Definitive Plan will be necessary and a better plan can be achieved by considering more factors in the early stages of design. (2) It is suggested that the preliminary plan and any pertinent problems be discussed with knowledgeable Town officers and boards before review by the Planning Board. (3) It is proposed that the Definitive Plan requirements be made more explicit so that complete supervision of construction may be simplified. (4) It is proposed that an "Inspection Check List" be adopted to clarify and speed up the final acceptance of new subdivisions.

Only minor changes are suggested in regard to required improvements as these are already at a high standard. Most proposals as regards improvements are with the intent of achieving greater clarity and to integrate the Regulations with the Master Plan. Reviews of the type included here should be carried out periodically every two to five years to keep up with the rapidly changing conditions.

II. "SUBDIVISION REGULATIONS ADOPTED UNDER SECTIONS 81K THROUGH 81GG OF CHAPTER 41 OF THE GENERAL LAWS AS AMENDED."

SECTION I - PROCEDURE

A. General

Should refer to "Sections 81K through 81GG or any amendments thereto".

B. Filing Petition

(a) No changes suggested.

(b) The Preliminary Plan should include the following:

(1) The subdivision name, boundaries, north point, date, scale, legend, and the title "Preliminary Plan".

(2) The names of the owner of record, the applicant, and the designer, engineer or surveyor.

(3) The names of all abutters, as determined from the most recent local tax list.

(4) The existing and proposed lines of streets, ways, easements, and any public areas within the subdivision in general manner.

(5) The proposed system of drainage - including enclosed and adjacent existing natural waterways, in a general manner.

(6) The approximate boundary lines of all proposed lots, with approximate areas and dimensions.

(7) The names, approximate location and widths of adjacent streets

(8) The general topography of the land, preferably from U.S.G.S. data.

(c) This fee should be on file with the Planning Board before any consideration is given the petition.

(d) No changes suggested.

(e) Suggested new paragraph:
No petition should be discussed by the Board except at a scheduled meeting time and place arranged through the clerk or the chairman and upon notification to either of the above that the preliminary plan has been discussed with the Town Engineer, the Fire Department, the Water District and the Highway Surveyor. (This suggested procedure can in no way inhibit the submission of a plan to the Planning Board only its discussion)

C. Public Hearing

No changes suggested.

D. Procedure Following Hearing

"Definitive Plan" should be used in place of "final plan" in accordance with the Subdivision Control Law-Chapter 41, Section 81K - 81GG G.L.

E. Final approval

All references should be to "Definitive Plan". In the event of a conditional approval agreement, either the conditions should be spelled out on the plan or their existence noted by reference to an attached sheet and a notation of the book and page where such conditions are recorded.

SECTION II - FINAL PLAN SPECIFICATIONS

Title should be "Definitive Plan Specifications"

A. Final Plan

Title should be "Definitive Plan". In view of the fact that the Record Plat does not legally exist and as used in Sudbury's regulations is actually a copy of the approved Definitive Plan, it is suggested that the contents of the Record Plat, as presently outlined on page 3, be included under this heading in addition to the requirements already listed.

In addition, the following requirements might be included:

1. Proposed location of street trees:

2. All natural objects and surfaces such as waterways swampy areas, drainage courses, large boulders, stone walls, and rock ridges and outcroppings:

3. Proposed lots in conformance with zoning requirements:

4. Building set back lines from all proposed streets:

5. Sufficient data to determine the location, direction, and length of every street and way line, lot line and boundary line, and to establish these lines on the ground:

6. Proposed layout of all utilities above and below ground as approved by the various boards and agencies concerned:

7. A property line traverse with an error of closure of not over 1 in 8000 before adjustment.

8. Street numbers as approved by the Town Engineer.

9. A Key or Locus map indicating the relationship of the proposed subdivision to existing and proposed community facilities, utilities, streets and generalized major land uses.

10. Any conformance or non-conformance with the Master Plan or any part thereof.

It is also suggested that in order to cover the cost of the advertising notices and other costs that a check for 25 dollars plus 3 dollars per acre or fraction thereof be deposited with the Planning Board before any consideration is given the Definitive Plan.

It should be spelled out that no consideration of the Definitive Plan will be given by the Planning Board except by appointment and upon the Board's written receipt of approval of the plan by the Board of Health, Fire Department, Tree Warden and others.

The approved Definitive Plan and any supplementary documentation should be recorded by the Planning Board or its representative. All recording fees shall be paid by the subdivider.

The approved Definitive Plan should in addition contain suitable space to record the action of the Planning Board, Board of Health, Fire Department, Highway Surveyor and Town Engineer. The following is a suggested form:

"Statement of Conditions of Approval
Subject to the Subdivision Control Law

Town of Sudbury-Planning Board

The undersigned, being a majority of the Planning Board of Sudbury, certify that they have approved a subdivision plan entitled
dated 19 subject to (1) its subdivision regulations, as amended to the above date, (2) letters of approval recorded herewith from the Sudbury Board of Health, Sudbury Fire Department, Sudbury Highway Surveyor, and the Sudbury Town Engineer, and (3) the conditions set forth below.

Conditions - Either one of three alternatives might be used here

a. (recorded herewith Book No. . . . Page No. . .
b. (none)
c. (or if brief to be spelled out)

Signatures

. . . . . .
. . . . . .
. . . . . .

date. . . . . .19. . . ."

A separate space should be allowed on the approved Definitive Plan for a suitable endorsement by the Town Clerk.

SECTION III - SUITABILITY OF LAND

(b) Change 120.00 to 125.00

SECTION IV - PUBLIC OPEN SPACES AND PROTECTION OF NATURAL FEATURES

Large trees can be identified as 10-inch caliper. Large boulders, rocks, and rock outcroppings are also Natural Features. In addition to the 12-foot height requirement, a $2\frac{1}{4}$-inch caliper requirement should be included. All matters concerning trees should be subject to the approval of the Tree Warden.

SECTION V - SANCTIONS TO ENFORCE CONSTRUCTION OF PROPOSED IMPROVEMENTS

A. Requirement of Bonds

The required, certified check (made out to the Town Treasurer) should be filed with the Planning Board for approval. The amount should be sufficient to cover (1) the cost of improvements specified, (2) the maintenance of such improvements until the next scheduled Town Meeting or for the two-year period specified, and (3) a 10 percent contingency factor.

Written evidence should also be required from the Board of Health as regards conformance with the "Master Sewer Plan" and from the Tree Warden in respect to all natural features as itemized in IV above.

B. Conditional Approval

The present condition is only one of the conditions that the Board may attach to an approval certification. The section should indicate that other conditions may be applied according to the Subdivision Control Law.

SECTION VI - IMPROVEMENT REQUIREMENTS

A. through I.

No changes suggested.

The following improvement items could be added:

1. Drainage

   At present drainage requirements are set under street improvements. They might be mentioned here also and possibly expanded.

2. Sewerage

   In accordance with the Master Sewer Plan.

3. Easements

   (a) Utilities: usually centered on rear or side lot lines, and designed to connect efficiently to future sub-divisions. Provision should also be made for extensions at end of dead-end streets.

   (b) Drainage: at least 20 feet wide, or of adequate width to conform substantially to the existing lines and direction of any water course, drainage way, channel or stream and to allow for proper maintenance. In connection with major drainage channels and easements, access should be provided either through adjoining streets or other rights-of-way.

4. Open Spaces

   The Board may require the (preliminary and Definitive) Plan to show suitable parks and/or playgrounds. As a part of a conditional approval, the Board may disallow construction on such sites for three years. In general, such sites should not exceed 10% of the subdivision.

5. Reference

   For matters not covered by the Regulations reference should be made to Chapter 41, Sections 81K - 81GG of the General Laws, the "Standard Specifications for Highways and Bridges", Massachusetts Department of Public Works, and "Suggested Land Subdivision Regulations", H.H.F.A.

SECTION VII - SPECIFICATIONS FOR LAYOUT OF NEW STREETS IN THE TOWN OF SUDBURY

A. Layout, Location and Alignment

1. Suggested change:

   "The proposed streets should conform in width and alignment to any appropriate ones shown in the Master Plan unless other widths and alignments may be shown to the satisfaction of the Board to serve better the general area of the subdivision and the Town."

2. Suggested change:

   "The proposed streets shall provide a convenient system to insure free circulation of traffic with a minimum number of intersections with existing or proposed principal streets. Sreets shall be continuous, of uniform width and in alignment with existing streets wherever reasonable."

3. No changes suggested.

4. No changes suggested.

5. Suggested change:

   "Dead-end streets are not permissible except in unusual circumstances. Dead-end streets whether temporary or permanent shall be no longer than 500 feet and shall be provided at the closed end with a turn-around having an outside roadway diameter of at least 80 feet and a street property line diameter of at least 100 feet. Any easement obtained for turn-around purposes at the end of a temporary dead-end street shall terminate upon construction of an extension. Dead-end streets shall in no case have any horizontal curvature which would prevent visual surveillance of the end of the street from its intersection."

The following items might well be added to this section:

1. Where a subdivision abuts or contains an existing or proposed highway or feeder street, the Board may require marginal access streets with screen plantings or other treatment as may be necessary for the protection of residential properties and for the separation of local and through traffic.

2. Street jogs with center-line offsets of less than 150 feet shall be avoided.

3. Block length shall not exceed 2000 feet nor be less than 500 feet.

4. Pedestrian ways or bridal paths of not less than 15 feet in width shall be required where deemed necessary, such as through blocks of over 800 feet or along extensive drainageways, to provide circulation, or access to schools, parks, shops, transportation, churches, open spaces and other community facilities.

5. Streets will ordinarily be required adjacent to parks, schools, forests and other public open spaces for public access and to provide for effective formal and informal policing, fire protection, and maintenance.

6. Streets shall be laid out so as to intersect as nearly as possible at right angles and no street shall intersect any other street at less than 60 degrees.

B. Width

1. Suggested changes:

Minimum width of street rights-of-way shall be as follows:

Residential Streets	50 feet
Collector Streets	50 feet
Feeder Streets	60 feet
Thoroughfares	70 feet
Highways	80 feet

2. No changes suggested.

3. No changes suggested.

C. Grade

Suggested change:

"Grade of all streets shall be at a reasonable minimum, but not less than 1.0 percent and not more than 7.0 percent for residential streets, 6.0 percent for collector streets, 5.0 percent for feeder streets and 4.0 percent for all others."

D. Construction

1. No changes suggested.

A. No changes suggested.

B. Suggested change:

Each street shall be constructed on the center-line of the layout with a roadway having a type of surface approved by the Board of the following widths:

Residential Streets	20 feet
Collector Streets	28 feet
Feeder Streets	32 feet
Thoroughfares	38 feet
Highways	48 feet

C. No changes suggested.

D. Suggested new section

"All streets not yet accepted by the Town shall be so designated by a sign acceptable to the Highway Surveyor, stating:

'Not An Accepted Street - SUDBURY SELECTMEN'

Said sign shall be posted from the time of rough grading until acceptance of the street by the Town."

E. Clearing and Grubbing

1. No changes suggested

F. Sub-Grade

1. Distance from the center line should be equal to the widths specified under VII B.

2. through 5. No changes suggested

G. Gravel

No changes suggested

H. Shoulders and Banks

1. Width of improved shoulders should be:

Residential Streets	6 feet-(or curb)
Collector Streets	6 feet-(or curb)
Feeder Streets	8 feet
Thoroughfares	8 feet
Highways	10 feet

2. No changes suggested

3. No changes suggested

I. Surface Treatment

Standards should be adopted that will vary the requirements according to the use and density of the proposed subdivision. Thus one standard might apply for commercial uses, another for multi-family and a half acre lots, a third for one and two acre lots and a fourth for 5-acre lots. These variations should apply only to residential streets. A schedule that would be useful in this regard can be found on pages 28 and 29 of Suggested Land Subdivision Regulations - Housing and Home Finance Agency.

1. No changes suggested.

2. No changes suggested.

J. Weather

No changes suggested.

K. Drainage

No changes suggested, except as indicated earlier.

L. Sidewalks

1. Sidewalks should be installed according to the Master Plan as amended and adopted by the Planning Board in whole or in part and/or upon advice of the School Committee and the Park and Recreation Commission.

2. and 3. Sidewalks should be constructed of 5 inches of portland cement concrete on a suitable base.

4. Change existing highways to all streets other than residential streets.

M. Curbs

No changes suggested

N. Traffic Guides

No changes suggested

O. Guard Rail

No changes suggested.

SECTION VIII - NUMBER OF DWELLINGS PER LOT

No change suggested.

SECTION IX - INSPECTION

Suggested new section

An inspector, reporting to and designated by the Planning Board, but paid by the Subdivider should be required. A schedule should be established as to the stages at which inspection will normally be required. An "Inspection Check-List" should be made up to cover all factors to be inspected by the inspector and the various other boards and agencies mentioned in the regulations. No consideration should be given acceptance of a Subdivision except upon the receipt of a completed "Inspection Check-List".

SECTION X - LEGAL AND ENGINEERING COSTS

Suggested new section

Several legal and engineering costs that might be incurred by the Planning Board, over and beyond that already mentioned specifically, may be billed by the Board to the subdivider. Such costs might include checking of definitive plans by a professional and preparation of restrictive agreements.

M A S T E R P L A N S T U D Y

CAPITAL BUDGET PROGRAM

Planning Board

S U D B U R Y, M A S S A C H U S E T T S

April 1962

Charles E. Downe, Planning Consultant

I. INTRODUCTION

A. PURPOSE, FUNCTION, AND DEFINITION

It has been stated earlier in this study that the Master Plan in a sense can be divided into an action plan and a directive plan. The "directive plan" is made up of those proposals that can be effectuated by the municipality acting as a policing power through its ordinances such as the zoning by-law, subdivision regulations, building code and so forth. The "action plan" consists of those proposals which the Town can effectuate through the investment of money for purchase of or easements on land and construction of improvements. This portion of the plan can principally be carried out through a Capital Improvements Program and the means of financing determined by a Capital Budget Program.

The several inventory and planning studies of the Master Plan have determined the major capital outlay requirements of the Town. The capital budget program will schedule the orderly effectuation of these needs for the next six years.

The capital budget process is a combined planning-financial operation that can and should be a part of the total budgeting operation. It is primarily concerned with that part of the total budget that deals with non-recurring expenses of a community. The other equally important part is the operating budget which provides for all of the recurring expenses of the daily municipal services provided by local government.

There is nothing new added to a municipal budget by the adoption of a Capital Budget Program. Capital improvements have always been thoroughly studied and their financing carefully considered. A major advantage of a Capital Budget is that it allows the community to analyze all major capital improvements in relationship to each other in terms of cost, type, urgency and time. It can serve to schedule major improvements in such a way that expenditures for capital improvements can be relatively evenly distributed from year to year, which in turn helps to promote a stable tax rate. The financing of capital improvements can also be decided upon a more objective basis frequently resulting in savings and in most cases presenting a clearer picture to the town meeting of the impact of a particular article dealing with capital improvement.

A capital budget program normally has two specific, but interrelated parts, namely:

(1) a schedule of capital projects and

(2) a financial analysis

The schedule of projects is made through (1) information supplied by each town official or Board as to needed capital improvements, normally on 'forms', examples of which follow, and (2) non-duplicated projects spelled out in the Master Plan.

The financial analysis consists of two steps:

(a) a historical summary (normally for the past decade) and

(b) a forecast or estimate of future trends

Chapters II and III of this report serve as an illustration and a foundation for future "Capital Projects Schedules" and "Financial Analyses".

The Capital Budget Program is normally prepared by either the Planning Board or the Finance Committee. Since the programming procedure is a combination of planning and finance operation, it will undoubtedly be a coordinated effort of both boards with one or the other having final responsibility. A Capital Budget Program can only be successful if there is understanding and cooperation among all town agencies with responsibility for capital improvements.

B. METHOD

1. Financial Analysis

The financial analysis should normally cover the preceeding ten year period and provide a projection of the next 6 years and should include the following information:

(a) GENERAL STATISTICS

(1) Population
(2) Dwelling units
(3) School enrollments

(b) VALUATIONS

(1) Land and improvements (by land use)
(2) Personal property
(3) Motor vehicles

(c) TAXES

(1) Local tax levy (net amount to be raised)
(2) Non-local taxes
(3) Taxes per capita and per assessed "person"

(d) DEBT STATISTICS

(1) Total (by purposes)
(2) Debt limit
(3) Debt (inside and outside limit)
(4) Direct state aid for capital improvements
(5) Principal and interest payments

(e) REVENUES OTHER THAN LOCAL TAXES

(f) EXPENDITURES

(1) Total Town expenditures
(2) Individual departmental expenditures
(3) Operating costs

The summary and forecasts of revenues and expenditures should normally be made in some detail as the result of the type of careful review presently carried out by the finance committee. Such a procedure objectively carried out annually can, over a period of a few years, enable the town to predict with some accuracy its future costs and tax rate.

2. Capital Projects Schedule

It is suggested that the Capital Projects Schedule be prepared by the Planning Board and/or the Finance Committee principally based upon information gathered from the various town agencies through the use of forms, such as those appended, interrelated with proposals of the Master Plan.

(1) Covering letter
(2) Instruction Sheet
(3) Project Report
(4) Schedule of Proposed Projects

Chapter III can serve as an outline for the actual preparation of a Capital Projects Schedule.

There will undoubtedly be a great many queries during the initial year of the Capital Budget Program, however after the first year most towns have found that the process is neither difficult nor particularly time-consuming.

The Capital Budget Program that follows is unavoidably brief, because of the lack of much specific data concerning specific projects. It is however, comprehensive and complete in terms of content. It is designed to be flexible and should be the subject of considerable review prior to the final preparation of a Capital Budget Program. It should be accepted as an integral part of the Community Facilities, Circulation and Utilities Plans and programs of the Master Plan.

II. FINANCIAL ANALYSIS

A. OPERATING COSTS

Operating costs, as they are referred to in this chapter, include, wages, maintenance, short-lived equipment and supplies, though the predominant expense is for wages. Table No. 1 indicates the trends of operating costs during the past 12 years for seven town departments. For these departments, costs, mainly wages, have increased eight and one-half times while the population grew two and one-quarter times. Not unexpectedly, seventy-seven (77) cents of each dollar of this increase was spent for the education of Sudbury's youth. Of the remaining twenty-three cent increase, six cents were spent for general government, eleven cents for protection of persons and property, two and one-half cents for street maintenance, and three and one-half cents for Health, Library, Parks and Recreation.

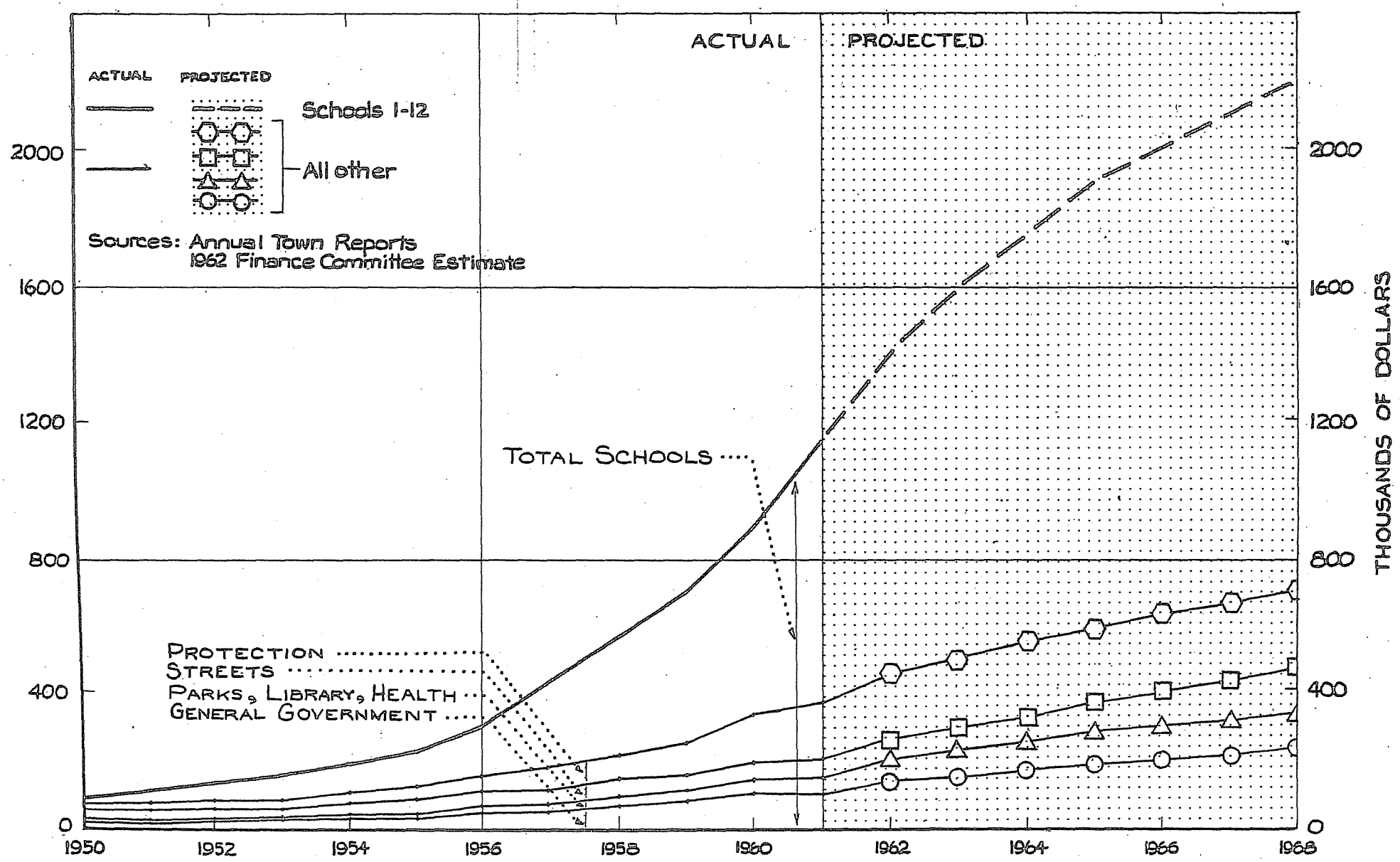
It would appear from the figures in this table that the General Government personnel and the streets of Sudbury have been overworked particularly since 1956 and are in need of considerably higher annual appropriations.

Plate No. 1 shows in graphic form the data included in this table and in addition, projects the annual expenditures for these departments to 1968. In this projection it is anticipated that the increases in expenditures for streets, general government, and health, library and parks will be greater (percentagewise) than schools and protection. The reduced rate of increase in school expenditures has been discussed at considerable length in the report on schools. All of the projections of operating expenditures as summarized on Plate No. 1 are based upon an assumed average annual building rate of 175 dwelling units per year and represent a non-inflationary dollar. The total operating costs of these departments are projected from 1961 to 1968, and result in a 93% increase, about double for the seven-year period.

The above assumption (for projection purposes) of a 175 dwelling per year building rate is not a prediction. A greater or lesser building rate is equally likely. However, in view of past experience, the availability of good residential land and other growth factors, it appears reasonable at this time. Should a higher annual home building rate be experienced, operating costs would obviously increase more rapidly than indicated on Plate No. 1. However, the greater increase in costs would lag somewhat behind the numerical increase in housing starts, for all but school expenses, for the first year or two of the projection period. Should a lower annual home building rate be experienced, operating costs would climb less rapidly than the projection on Plate No. 1. However, the lesser increase in costs would not adjust quickly to the numerical increase in housing starts, in all categories, for the first year or two of the projection period, since many of the operating costs would tend to continue at present rates.

CAPITAL BUDGET PROGRAM

TRENDS & PROJECTIONS OF THE OPERATING BUDGET · 1950-1968



SUDBURY PLANNING BOARD · CHARLES E. DOWNE, PLANNING CONSULTANT · PLATE 1

TABLE NO. 1 - OPERATING EXPENDITURES FOR SEVERAL TOWN DEPARTMENTS FROM 1950 to 1961 (in thousands of dollars)

	Schools*	General Gov't**	Protection**	Streets***	Parks Health and Library**	Total
1950	$ 91	$ 18	$ 17	$ 23	$ 7	$ 156
1955	233	28	37	40	10	348
$ Increase '50-55	142	10	20	17	3	192
% Increase '50-55	156	56	118	74	43	123
1956	$ 296	$ 36	$ 48	$ 57	$ 12	$ 449
1961	1,135	100	163	57	46	1,501
$ Increase '56-61	839	64	115	0	34	1,052
% Increase '56-61	282	178	240	0	283	236
$ Increase '50-61	1,044	82	146	34	39	1,345
% Increase '50-61	1,150	453	860	148	557	863

*excludes non-educational use of schools.
**from Finance Committee reports.
***town funds only, not including capital improvements.

Source: Annual Town Reports

Thus, total town operating costs would adjust slightly to changing building rates from year to year, the rate and amount of adjustment depending upon the variations from the assumed rate of 175 dwellings per year. In general, it is probable that a higher building rate than assumed would at this point of the town's growth result in a higher tax rate and a higher per capita cost of local government, and a lower building rate would result in a lower tax rate and lower per capita cost of government than that determined herein.

The subtilities of these relationships and ultimate tax responsibilities to meet operating costs require continued and annual appraisal of not only the statistical analysis provided by this study, but the more significant changes of Town attitudes and policies which determine the standards and qualities of the services represented by the costs.

B. ASSESSED VALUATIONS

Table No. 13 in the Economic Base Analysis indicates that there was a 388 percent increase in total valuations between 1950 and 1960. This increase took place while the population increased by 186 percent and the local tax levy increased by 650 percent.

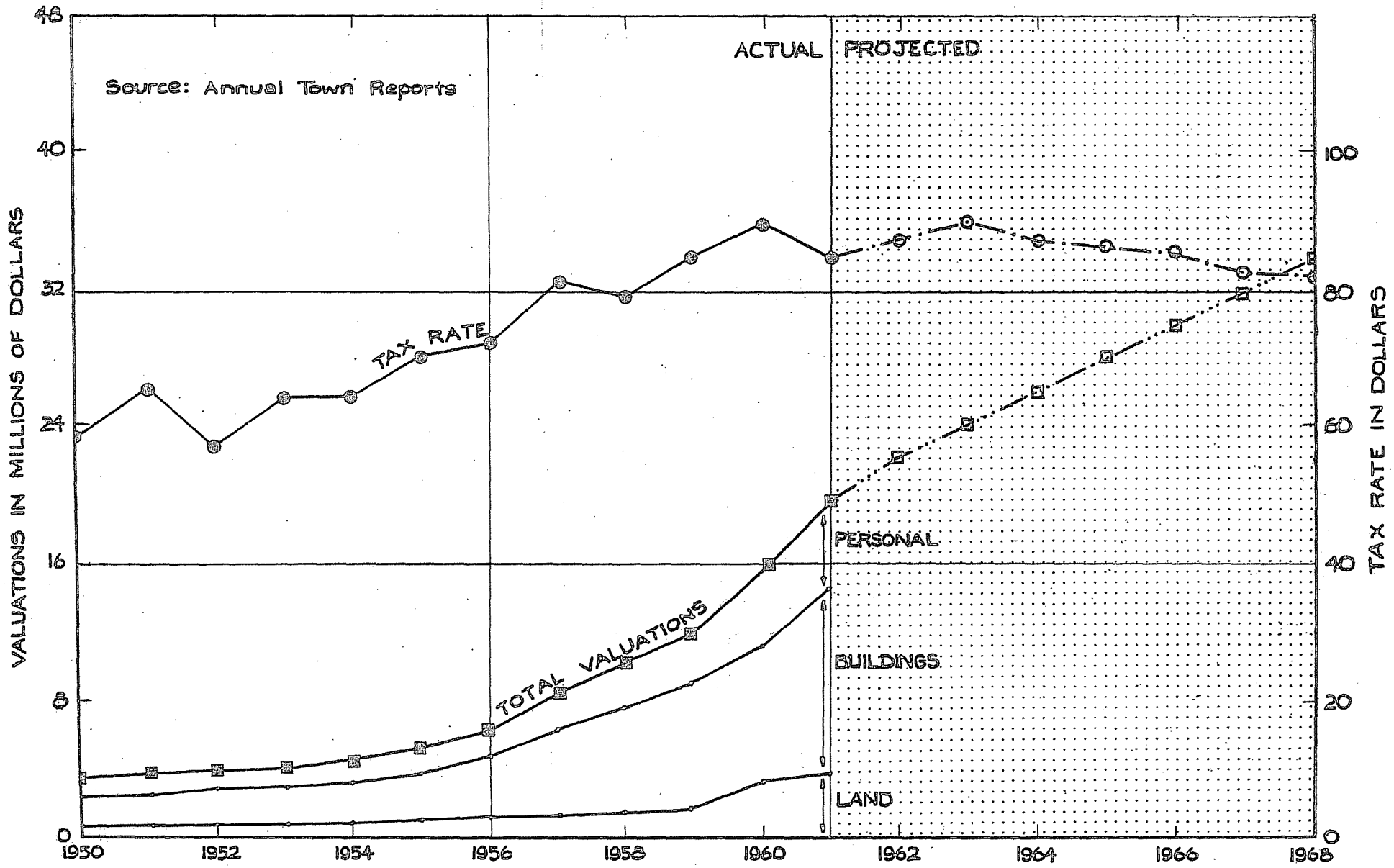
This increase in valuations was not evenly distributed throughout the decade. From 1950 to 1955 the average annual increase was $350,000, from 1955 to 1960 the average annual increase was $2,120,000, with the largest increases occurring at the end of the decade. The increase for the year 1961 over 1960 amounted to $3,776,683 and it is anticipated that the 1962 figure will be about $2,700,000 over 1961. A considerable portion of the valuation increase in 1960, 1961, and 1962 is due to industrial growth.

Plate No. 2 indicates graphically the trend described above and projects the growth of valuations to 1968. The projection indicated does not anticipate a continuation of the rapid valuation increase of the past three years. Sudbury's high tax rate and the general leveling of single family housing starts, in the Boston area, should act to slow down the rate of growth during the next six years. Despite high taxes, growth is anticipated to continue at a dollar volume similar to the 1955 to 1960 period however, due largely to Sudbury's excellent location, good available land, and the excellence of town services, especially schools.

The projection of assessed valuations to 1968 at the constant rate of $2,000,000 per year is linked to the assumed home building rate of 175 dwellings per year used in other phases of this study. For the period 1953 through 1959 (before completion of Raytheon and Sperry Rand) new valuations due to home building averaged about 65 percent of the total new valuations. Although more non-residential construction is anticipated between 1961 and 1968 than was completed from 1953 to 1959, the projection on Plate No. 2 assumes that two-thirds of all valuation in-

CAPITAL BUDGET PROGRAM

TRENDS & PROJECTIONS OF TOTAL VALUATIONS & TAX RATE · 1950 - 1968



SUDBURY PLANNING BOARD · CHARLES E. DOWNE, PLANNING CONSULTANT · PLATE 2

TABLE NO. 2 - VALUATIONS AND TAXES BY LAND USE, 1959 and 1960

(in the thousands of dollars)

	Assessed Value		Local Taxes		Percent of Total	
	1959	1960	1959	1960	1959	1960
Manufacturing	$ 283	$1,544	$ 24	$139	2.4	10.0
Business	476	669	40	60	4.0	4.3
Utilities	1,148	1,229	98	111	9.9	7.9
Greenhouses, Gravel Pits & Mink Farms	293	276	25	25	2.5	1.8
Residence, Agriculture & Vacant	9,443	11,797	803	1,061	81.2	76.0
Totals	11,643	15,515	990	1,396	100.0	100.0

Source: Sudbury League of Women Voters 1959
Assessors Annual Report 1960
Unpublished Assessors Records 1960

creases, for the ensuing six years, will be due to home construction. The projection seems to be a conservative one in terms of commercial and industrial development. Obviously, changes in the home building rate will have the greater effect on the valuation trend line.

The importance of the valuation trend in determining future tax rates is eminently clear. The combination of assumptions contained herein regarding operating costs and revenues (valuation trend) indicates the possibility of a leveling tax rate in the next six years. Whether this becomes an actuality depends upon (1) the extent of variations from the assumptions, (2) growth rates and (3) town policy regarding the level of local governmental expenditures.

Table No. 14 in the Economic Base Report and Table No. 2 herein indicate the distribution of assessed valuations by five general land use categories. No trends can be defined upon only a two-year analysis. If such a record is kept from year to year, future assessment and land use policies can be more firmly based upon economic reality. The Future Land Use Plan and the proposed revisions to the Zoning By-law have taken the statistics of these tables into consideration and their aim, in part, is to help establish a broader tax base.

C. REVENUE

1. Local and other sources

The money to pay for the several services provided by the Town of Sudbury, as best illustrated by the foregoing analysis of the operating budget, is principally derived from two sources.

(1) Aids from larger area governments, principally the State

(2) Local taxation, principally the property tax

Table No. 15 in the Economic Base Report and Plate No. 3 herein indicate the past trend in dollars supplied by these sources per year. From 1950 to 1961 there was a total increase in revenues of $1,862,000. Of this total increase $1,457,000 came from local taxation and only $405,000 came from other sources. In percentage figures there was a 780% increase in local taxation from 1950 to 1961 and only a 287% increase in aid from larger governments. The change in the policies of the Commonwealth of Massachusetts between 1950 and 1961 of paying about one-half of Sudbury's municipal costs in 1950 to about one-quarter in 1961 has been largely responsible for the mushrooming increase in the local tax levy. Plate No. 3 indicates a projection of revenues from these two sources to 1968. Since no indication has been given by the present State administration of assigning more revenue for the municipalities, the projection has been made at the 1960 rates.

The source by generalized land uses through local taxation is indicated in Table No. 2. It is anticipated that the relationship of three-quarters being paid by residential uses and one-quarter by all other uses is expected to be about average until 1968. Quite probably, non-residential uses will pay more than 25 percent in the first years of the projection period and less during the latter years, due to the addition of Sperry Rand to the tax rolls in 1962 and 1963.

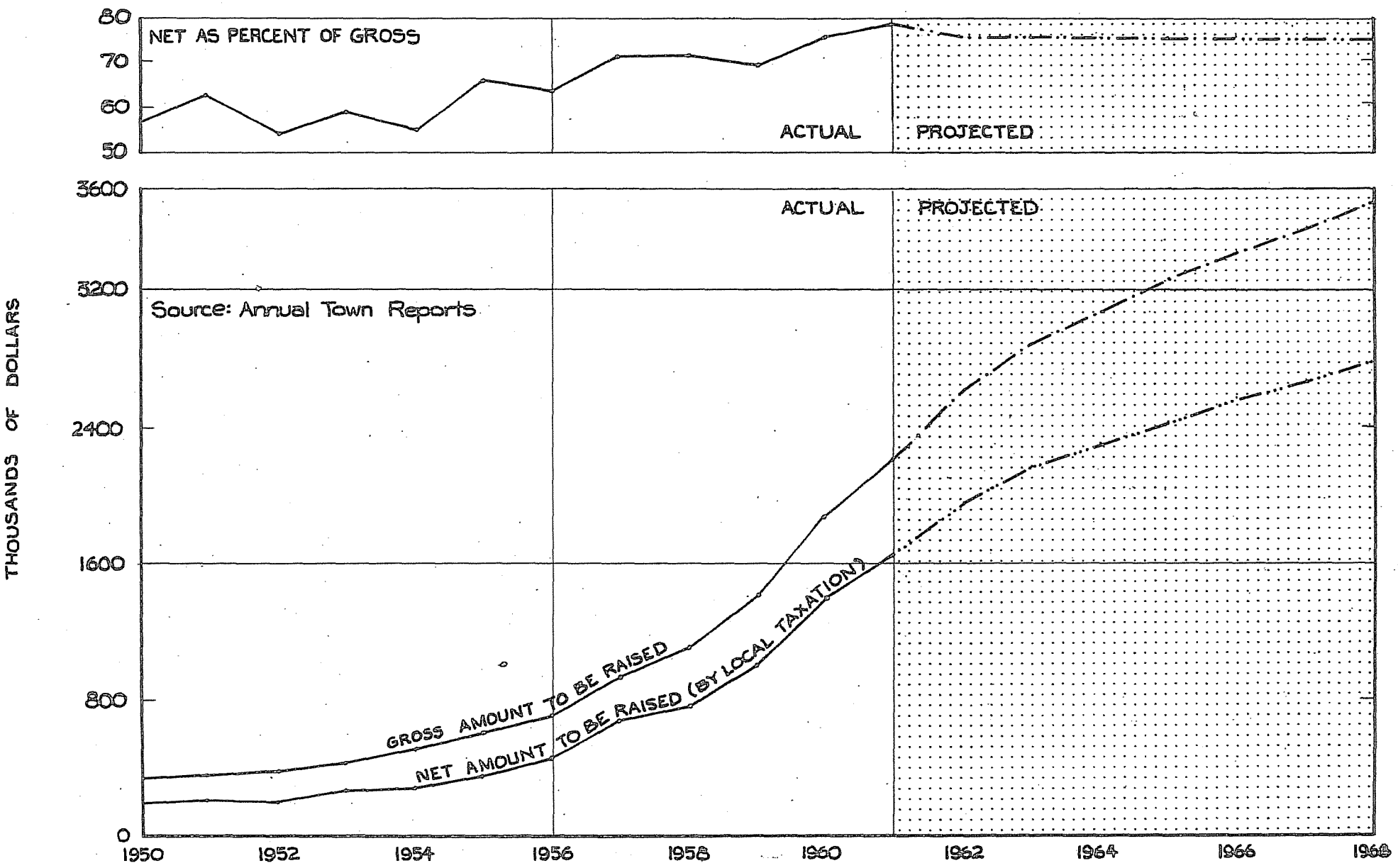
2. Gross Amount to be Raised

The "Gross Amount to be Raised" as indicated on Plate No. 3 represents the total cost of "running" the town. The figures for 1950 to 1961 are copied from the Annual Assessors' Reports and the 1962 figure is based upon the Finance Committee's estimate. The projection from 1963 to 1968 is the result of adding the following factors.

(1) The projected operating budget as discussed under Section II-A in this report.

(2) The total debt service costs including past debt and all of the bonding proposed by the Master Plan for the projection period as discussed under Section III following.

TRENDS & PROJECTIONS OF REVENUES · 1950-1968



SUDBURY PLANNING BOARD · CHARLES E. DOWNE, PLANNING CONSULTANT · PLATE 3

(3) The cost of capital improvements to be paid by the tax rate as proposed in Section III, Capital Projects Schedule.

Although the estimated costs of projects in (2) and (3) above are crude, since above 85 percent of the gross amount to be raised is for operating costs, this projection is probably not unreasonable.

3. Net Amount to be Raised

The "Net Amount to be Raised" on Plate No. 3 is the annual tax levy of the Town and is projected as 75% of the gross amount. It is anticipated, if State assistance remains stable, that the local tax levy will increase by approximately the same amount from 1962 to 1968 as it did from 1955 to 1961. Since, however, the town is considerably larger today than in 1955, the rate of increase will be considerably less.

Plate No. 2 indicates the history of Sudbury's tax rate since 1950 and establishes a projected tax rate to 1968. This projected tax rate is based upon:

(1) the projected costs of government as spelled out above and in the analysis of the operating budget and the capital projects program,

(2) the continuation of state and other aid at a constant ratio of 25% of the gross amount to be raised,

(3) the projected annual increment to total valuation as spelled out in II B above, and

(4) the continuation of a stable assessment policy.

If each of these factors behave generally as predicted, the Sudbury tax rate could possibly be stabilized over the next 5 to 6 years. It is somewhat hazardous to indicate such a possibility in the light of prevailing trends and the many variables involved, but the study does provide a rational basis upon which this projection can be made with certain assurances and hopes for accomplishment.

4. Synthesis

Between 70 and 80 percent of local revenue is needed to pay for education. The indicated minor decrease in the tax rate during the next six years is closely linked to the prediction contained in the "Schools" chapter of the Community Facilities Plan and Program. This prediction is based on an average building rate of 175 homes per year and anticipates that the rate of increase in demand for school rooms and teachers will be less in the sixties than it was in the late fifties.

The early 1960's may well be a turning point in the recent trends in local taxation. The possibility of Federal aid to schools, the recent Supreme Court decision requiring proportional assessments and the rising "hue and cry" by the general public for new state taxation policies may well alter the trends projected by this study which is based on past experience rather than speculation of future political changes.

D. DEBT ANALYSIS

Only ten of the items included in the following capital projects schedule are suggested to be financed by bonding and these with substantial down payments. Although pay-as-you-go financing is not possible for Sudbury in the foreseeable future, the prolific borrowing of the recent past cannot continue indefinitely and a more reasonable policy of bonding only major improvements of long-life is suggested.

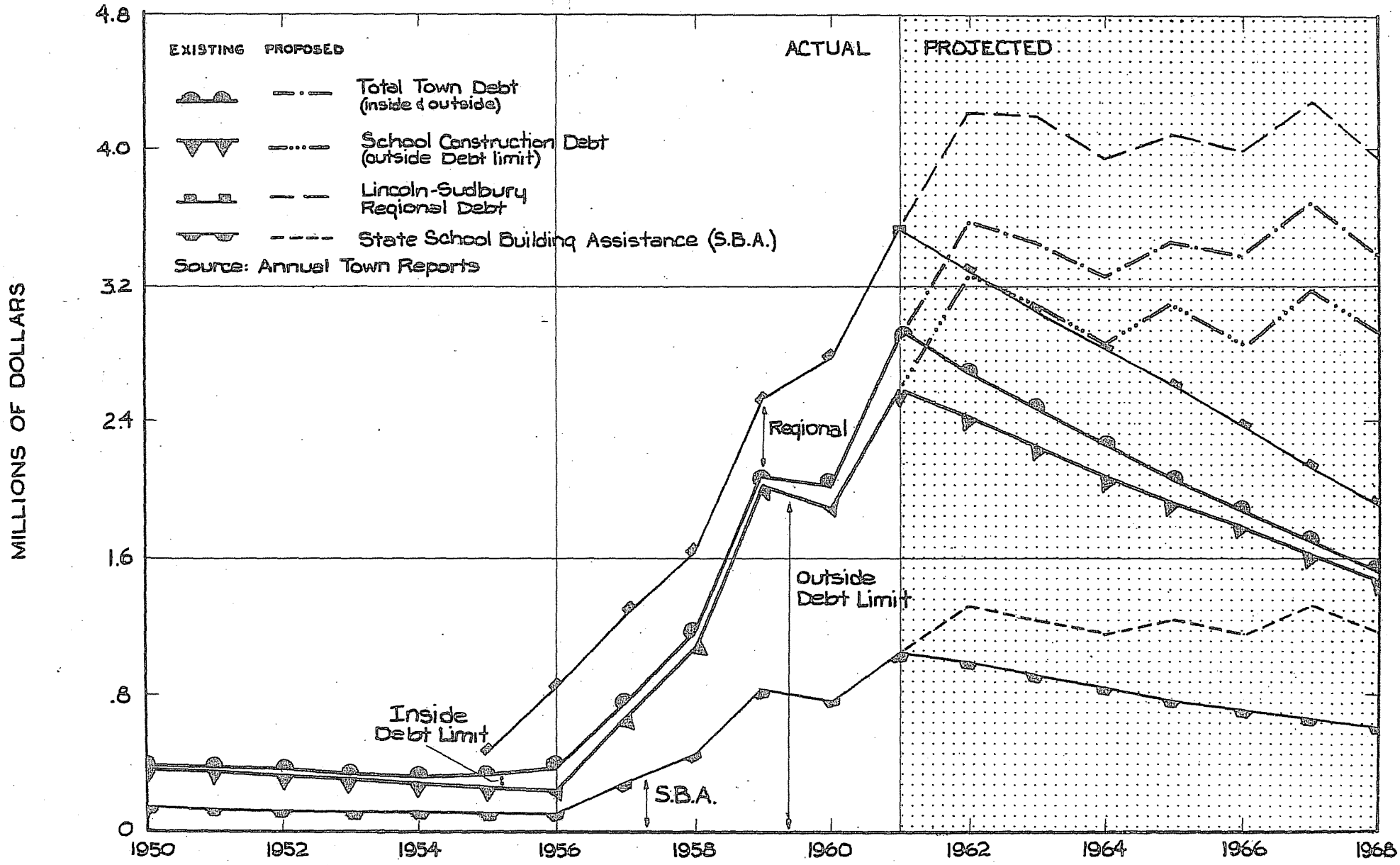
Plate Nos. 4 and 5 illustrate graphically Sudbury's history of indebtedness. Between 1950 and 1961, the outstanding debt, not including the regional school, increased by 705 percent while the population increased 223 percent and assessed valuations increased by 527 percent. The ratio of debt to valuations, which was ten percent in 1951, had increased to 15 percent in 1961, although it dropped to $5\frac{1}{2}$ percent in 1956. If the Sudbury portion of the Lincoln-Sudbury Regional High School debt were added to the town debt, the ratio of total debt to total valuations would be about 18.5 percent or $425 per person in 1961. In 1950 about one-fifth of the total debt service cost was assignable to interest charges, whereas by 1961 interest made up fully one-third of debt service payments.

An average of 90 percent of Sudbury's annual outstanding debt during the analysis period has been for town schools, grades one through eight. The Commonwealth via the School Building Assistance Program has committed itself to making principal payments on a portion of this school debt-estimated at 40 percent as shown on plates 4 and 5.

One of the major advantages of a Capital Budget Program is the opportunity it affords the Town to look ahead a few years at future expenses. Plate No. 5 is a good illustration of the kind of programing that can result from the capital budget process.

CAPITAL BUDGET PROGRAM

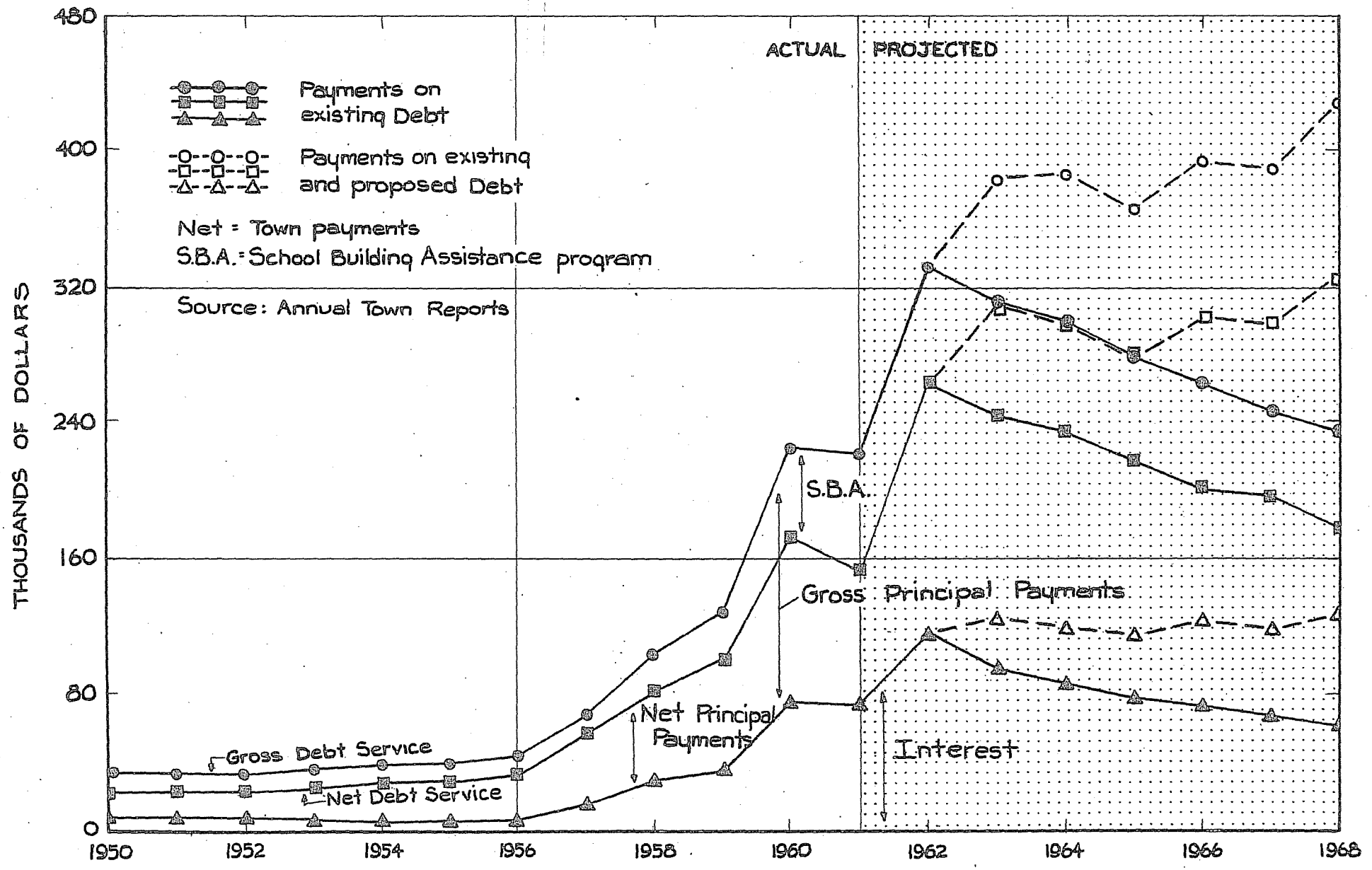
OUTSTANDING DEBT TRENDS & PROJECTION · 1950 - 1968



SUDBURY PLANNING BOARD · CHARLES E. DOWNE, PLANNING CONSULTANT · PLATE 4

CAPITAL BUDGET PROGRAM

DEBT SERVICE TRENDS & PROJECTIONS · 1950-1968



SUDBURY PLANNING BOARD · CHARLES E. DOWNE, PLANNING CONSULTANT · PLATE 5

By programming needed capital improvements in relationship to one another, it should be possible in the next six years to stabilize the outstanding debt, to limit debt service payments to a 10 percent increase and to decrease the debt to valuation ratio from 15 percent to 10 percent. This stabilization is not due to a minimal program as it includes close to 2 million dollars for a new junior high school in two phases, new town offices, a health clinic and offices, a new elementary school, a new library, a highway garage addition and two fire stations. It is due to foresighted programming, including the elimination of short term borrowing for minor capital improvements. As has been indicated earlier, this can be accomplished without increasing the tax rate.

All of the new bonding indicated on Plate Nos. 4 and 5 are estimated 20-year issues at 3.5 percent interest. The State School Building Assistance payments have been continued throughout at 40 percent of the total principal payments for existing and proposed pertinent new debt.

In spite of the several proposed capital improvements not related to education during the six-year period, it is anticipated that the portion of the debt assignable to schools will be about 85 percent of the whole, or only a 5 percent reduction from the average of 90 percent of the debt held by schools from 1950 to 1961. These figures do not include either the Regional School or school site acquisition which would make school borrowing an even higher percentage of the total town debt.

III. CAPITAL PROJECTS SCHEDULE

Many of the proposals of the Community Facilities, Circulation and utilities portions of the Master Plan require substantial expenditures of town funds for capital improvements. Those that would need to be financed during the next six years have been included in the following "Capital Projects Schedule". A rough overall cost has been estimated and a preferred method of financing is suggested for each project. If a capital budget program is adopted by the Town, as it should, the project schedule would include all of the projects as submitted by the various departments in addition to those of the Master Plan, obviously eliminating duplications. The estimated costs and methods of financing consequently could be more specific.

The project schedule as proposed is a realistic attempt to fulfill all of the many needs brought out by other portions of the Master Plan Report in the most economical manner without pushing the property tax burden any higher. It is felt that the projects proposed are absolutely essential to serve the population of Sudbury, according to its needs and demands, and to attract the type of residential and commercial development which is defined as desirable in other portions of this study.

1. Highway Department

This department indicates the greatest need to catch up with needs and to prepare for the greater needs of tomorrow. It was estimated that at present the Highway Department is spending about 20,000 dollars a year for "Capital Improvements". For the next six years it is proposed that $70,000 a year be spent for the capital improvements spelled out in the schedule. All of these capital improvements would be paid for from the tax rate, and betterments, except an addition to the garage scheduled for 1965, which would be bonded for 20 years.

2. Planning Board

It is suggested that the Planning Board be made responsible, with the Town Engineer, for carrying out a continuing program of improving surface drainage in the town. At present the Planning Board, the Town Engineer and the Highway Department are attempting to deal with the problems of drainage with no continuing funds.

3. Board of Health

Three major capital improvements can be foreseen in the future of the Board of Health; an incinerator or dump; a clinic and offices, and sanitary sewers. The last does not appear to be needed in the next six years, the others are scheduled for 1964 and 1965.

4. Park and Recreation Commission

It is suggested that 15,000 dollars a year be set up as a revolving fund for this Board to begin a continuing program of site acquisition and improvements. Bonding might very well be resorted to for such improvements as a swimming pool that can be supported, at least in part, by use fees.

5. Conservation Commission

The 10,000 dollars a year proposed for this agency is a continuation of a present policy, reflecting anticipated increased valuations.

6. School Committee

The proposals herein are a reflection of the 1970 School Building Program included in the "Schools" chapter of the Community Facilities Plan and Program.

7. Police Department

Only the replacement of cruisers has been included since a new headquarters has just been completed.

8. Fire Department

Both the North and Centre station are scheduled in the next six years in addition to much new equipment. The new stations are suggested to be bonded for 20 years.

9. Library Committee

A new library is proposed to be bonded in 1963.

10. Cemeteries

As 50 additional acres of cemeteries and some major improvements are needed it is proposed that a 5,000 dollars yaar fund be established.

11. Civil Defense

The need for fallout shelters has only recently been recognized, the time to provide them obviously is now but no data is available on where or what or how much.

12. General Government

Additional Town offices cannot be long delayed, a new site is proposed to be acquired after a "Civic Center" Study has been completed in 1963 and construction scheduled for 1968 pending further study.

PROPOSED SCHEDULE OF CAPITAL PROJECTS, 1963 - 1968

($ indicates year approved)

Proposed Projects	Estimated Total Cost	'63	'64	'65	'66	'67	'68	Method of Financing
A. HIGHWAY DEPARTMENT								
1. Acquisition of New R.'s O. W. (continuing program)	-	$	$	$	$	$	$	Tax Rate
2. Improvement of intersections (continuing program)	-	$	$	$	$	$	$	State Aid Tax Rate
3. Concord-Marlboro "Thorofare" (5-year program)	-	$	$	$	$	$	$	State Aid Betterments Tax Rate
4. Landham Rd. (& bridge) to "Thorofare" Standard	-	$						State Aid Betterments Tax Rate
5. Horse Pond & Peakham Road (part) improve to "Feeder" Standard	-		$					Betterments Tax Rate
6. "Ring Road" - (Old Lancaster) extend to Maynard Road	-			$				State Aid Betterments Tax Rate
7. Morse Road - improve to "Collector" Standard	-			$				Betterments Tax Rate
8. Connect Nobscot and Raymond Rds. and extend Union Avenue	-				$			State Aid Betterments Tax Rate
9. Sidewalks (continuing program)	-					$	$	Betterments Tax Rate
10. Pantry Road - improve to "Thorofare" Standard	-					$		Betterments Tax Rate
11. Pratts Mill and Willow Road - improve to "Collector" Standard and extend to Dutton Road	-					$		Betterments Tax Rate
12. Powder Mill Road-improve to "Feeder" Standard	-						$	State Aid Betterments Tax Rate

Proposed Projects	Estimated Total Cost	'63	'64	'65	'66	'67	'68	Financing
13. Lincoln Road-improve to "Feeder" Standard	-						$	State Aid Betterments Tax Rate
14. Addition to Garage	-			$				Bond Issue Tax Rate
15. Equipment (continuing Program)	-	$	$	$	$	$	$	Tax Rate
B. PLANNING BOARD								
1. Drainage Studies and improvements (continuing program)	-	$	$	$	$	$	$	Federal Loan Tax Rate
C. BOARD OF HEALTH								
1. Incinerator (Dump) Site Acquisition & Improvement	-			$				Tax Rate
2. Clinic and Offices	-		$					Bond Issue Federal Aid Tax Rate
D. PARK AND RECREATION COMMISSION								
1. Acquisition and development of sites (continuing program)	-	$	$	$	$	$	$	Bond Issue Tax Rate Use Fees
E. CONSERVATION COMMISSION								
1. Acquisition and development of sites (continuing program)	-	$	$	$	$	$	$	State Aid Tax Rate

Proposed Projects	Estimated Total Cost	'63	'64	'65	'66	'67	'68	Method of Financing
F. SCHOOL COMMITTEE								
1. New Junior High School (420 pupils) (Bonds to be approved in 1962)	-							Bond Issue State Aid Tax Rate
2. Expansion of Regional School (400 pupils)	-	$						Bond Issue State Aid Tax Rate
3. New Elementary School (406 pupils)	-			$				Bond Issue State Aid Tax Rate
4. Expansion Regional School (300 pupils)	-			$				Bond Issue State Aid Tax Rate
5. Expansion Junior High (420 pupils)	-					$		Bond Issue State Aid Tax Rate
6. Site Acquisition (3 Elementary Sites)	-	$						Tax Rate
G. POLICE DEPARTMENT								
1. Equipment (continuing program)	-	$		$		$		Tax Rate
H. FIRE DEPARTMENT								
1. Equipment (continuing program)	-		$		$		$	Tax Rate
2. Hydrants and Alarms (continuing program)	-	$	$	$	$	$	$	Tax Rate
3. "North" Fire Station	-		$					Bond Issue Tax Rate
4. "Centre" Fire Station	-						$	Bond Issue Tax Rate

	Proposed Projects	Estimated Total Cost	'63	'64	'65	'66	'67	'68	Method of Financing
I.	LIBRARY COMMITTEE								
	1. New Library	-	$						Bond Issue
J.	CEMETERY SUPERINTENDENT								
	1. Site Acquisition and Development (continuing program)	-	$	$	$	$	$	$	Tax Rate
K.	CIVIL DEFENSE								
	1. Fallout Shelters	-							Tax Rate
L.	GENERAL GOVERNMENT								
	1. Site Acquisition	-	$						Tax Rate
	2. Office Building	-					$		Bond Issue

TABLE NO. 3 - ESTIMATED COSTS OF PROPOSED CAPITAL IMPROVEMENTS BY PURPOSE
1963 - 1968

(in the thousands of dollars)

	1963	1964	1965	1966	1967	1968
Highway	70	70	110	70	70	70
Planning Board	10	10	10	10	10	10
Board of Health	-	70	-	-	-	-
Recreation Commission	15	15	15	15	15	15
Conservation Commission	10	10	10	10	10	10
Schools	-	-	600	-	700	-
Police	5	-	5	-	5	-
Fire	53	3	3	18	63	3
Library	125	-	-	-	-	-
Cemetery	5	5	5	5	5	5
General Government	40	-	-	200	-	-
Totals	333	183	758	328	878	113
Regional 35% of Gross	168			126		
Gross Totals	501	183	758	454	878	113

The projects in the "Project Schedule" are reflected on Plate Nos. 3, 4, and 5 as a part of the "Gross amount to be raised," "Debt Service Costs," and"Outstanding Debt". It appears on the basis of these projections that the proposed projects, which are considerably greater than those carried out in the recent past excepting schools, can be carried out without substantially increasing the annual debt service cost to the town from 1962 to 1968 and substantially reducing the ratio of Debt to valuations during the projection period.

IV. SUMMARY AND CONCLUSIONS

This report briefly reviews the patterns of Sudbury's recent fiscal history. The fiscal trend reflects the change of a community in one decade from a basically rural town to an urban community. The more rapid increase of municipal spending, in almost every category, than the growth of population or assessed valuations is attributable to the changing character of the town, more so than the mere growth in numbers. The type and amount of municipal spending that has been carried out during the past decade has brought Sudbury to the status, where it has one of the 2 or 3 highest per capita tax rates in the Boston Metropolitan Area.

From the analysis presented it has become clear that a Capital Budget Program would be desirable, within an overall municipal budgeting program. The method of initiating and carrying out a Capital Budget Program is described and an outline provided of such a program for the next six years. The primary advantage, illustrated by the outline program, as with most planning studies, is not to make decisions but to provide a foundation for more intelligent decisions by the responsible town officials and the voters concerning capital improvements within the foreseeable future.

The substance of the Capital Budget Program is to effectuate the several proposals of the Community Facilities, Circulation and Utilities studies of the Master Plan. The primary result can be to stablize the outstanding debt and the annual debt service costs of the town. This possibility of leveling the rising cost of capital improvements in combination with intelligent management of the operating budget can result in a modest reduction of the tax rate in each but the first year of the six-year budget period.

APPENDIX NO. 1

PROPOSED INSTRUCTIONS

A. INTRODUCTION:

The Planning Board is preparing this year a Capital Budget Program. This program is being carried out with the complete endorsement and cooperation of the Board of Selectmen and the Finance Committee.

The capital budget programming procedure will permit the town to have at budget time and the annual town meeting a better concept and longer-range picture of its future capital needs, their estimated costs, and the town's projected ability to pay for them in relation to the expenses of continuing services provided by town government operations.

The growth of the town over the past five to ten years has brought with it many problems not the least of which is the need for new, expanded and improved services and for new public improvements requiring sizeable capital outlays. The degree to which this need is to be satisfied - both in terms of the quality and the quantity of services and projects - is a town decision which is made by its citizens and which is ultimately reflected in the total tax bill of the town.

The Capital Budget program is designed to give general direction and guidance in determining the relative needs of the Town and welds together the future planning of the Town with a sound schedule of continuous capital expenditures consistent with the Town's financial resources.

Therefore, this program is being undertaken by the Planning Board to assist Sudbury citizens in looking at the future of the town and evaluating its needs. The cooperation of all town departments, agencies and committees is being solicited to make this program effective and meaningful.

B. OBJECTIVES:

Among the many objectives of a capital budget program are the following principal ones:

(1) To anticipate and schedule capital improvements over a period of years according to priority of need and consistent with the town's fiscal procedures and ability to pay.

(2) To forecast necessary borrowings and their probable impact on the operating budget and tax rate of the town as a stimulant to good growth and as a stabilizing influence on present investments.

(3) To build and maintain the Town of Sudbury through a sound capital program as a residential community properly balanced with business, industrial and civic uses to serve the needs of its people.

C. CHARACTERISTICS:

A capital improvement program may be described in many ways, but fundamentally has the following primary characteristics:

(1) Does not commit the Town or its officials, but simply gives factual information and an authoritative study as a basis for the decision-making process of town government.

(2) Is prepared for a six-year period which is considered reasonable for accurate, long-range forecasting and programming.

(3) Includes all capital improvement needs to be arranged in order of relative priority based on financial structure of town and comprehensive planning activities.

(4) Permits annual revision for flexibility in adjusting for changes in project needs, financial conditions and community attitudes and desires.

D. DEFINITION - CAPITAL PROJECT:

A capital improvement project is a physical betterment or item of equipment having a substantial, useful life and the total cost of which exceeds $2,500.

Specifically, a capital project would be

(a) an expenditure, financed in whole or in part by Town funds, for the construction, reconstruction, replacement, major repair, extension or other improvement of a public building, highway, sidewalk, storm drain, sewerage installation, shore facility, bridge, playground, parks or like public works, or for a facility, structure or utility appurtenant to any of them.

(b) an expenditure, similarly financed, for the purchase of land an item of equipment, buildings or structures.

E. INFORMATION REQUIRED FOR EACH PROJECT:

In order to prepare a complete program with meaning and substance, it is necessary to obtain information for each project that may be proposed for the next fiscal year and that may be anticipated in at least the next five years. Two forms are provided on which pertinent information can be recorded.

FORM A: This form is for recording all the pertinent and detailed information for each capital project submitted by a town department or agency. Descriptions and reasons should be complete, but as brief as possible. All data and cost estimates for projects to be scheduled in the earlier years of the program should obviously be more complete and accurate than those scheduled for the latter part of the six-year program or beyond.

FORM B: This form is for recording the projected expenditures for all projects scheduled according to the estimated relative need of the project in each individual department or agency over the six years of the program or in later schedule if beyond that immediate period. This permits each town department or agency an opportunity to express an opinion as to the relative importance of the projects submitted for inclusion in the program.

Copies of Forms A and B are available as required in the Town Clerk's Office.

Please note that each project is to be submitted on a separate Form A, ? copies each. However, all projects for each department or agency can be tabulated on one sheet of Form B, therefore requiring, in total, less Forms B than Forms A.

F. PROJECT REVIEW:

In the analysis of the projects and their recommended scheduling in the program, considerations of priority will be based upon the facts presented by each department and agency; upon the relationship of the project to other projects, and to the planning program in progress; and upon the indicated financial ability of the town to undertake projects over the first six years of the program.

G. TIME SCHEDULE:

It is proposed to follow the schedule outlined below, so the program will be available in printed form in the Warrant for the 1963 Annual Town Meeting.

August 1962	Mailing of introductory letter, instructions, forms and time schedule to department heads, officials, committee chairman and town spending agencies.
October 1962	Deadline date for submission of capital budget requests.
October 1962	Deadline date for submission of operating budgets.
October 1962 to December 1962	Review of capital requests by Planning Board and Finance Committee.
January 1963 to February 1963	Final review of special articles and preparation of final capital budget report and recommendations.
February 1963	Printing deadline of capital budget report.
March 1963	Town election.
March 1963	Annual Town Meeting.

Please return completed forms no later than October 1962. Cooperation in submitting them earlier will facilitate their review and the preparation of the report.

Kindly refer all questions to the chairman of the Planning Board,

APPENDIX NO. 2

CAPITAL BUDGET PROGRAM 196 - 196

PLANNING BOARD, _____ Dept.

PROPOSED PROJECT REPORT — FORM A

Prepare copies. Submit copies to Planning Board and retain 1 copy for your use.

1. Title and description:

2. Location:

3. Need for project (explain fully):

4. Status of project and plans:

5. Estimated useful life:

6. Estimated cost:
   a. Plans _____ $
   b. Acquisition of land _____
   c. Site development _____
   d. Construction (and inspection) _____
   e. Equipment _____
   f. _____ _____
   Total _____ $

7. Proposed method of financing (by amounts): Tax rate _____ bond issue _____
   betterment _____ state aid _____

8. Will project be revenue-producing? yes ( ) no ( )
   If yes, estimate of annual revenue is _____.

9. Estimated annual cost (or saving) of operation and maintenance:
   a. Salaries and wages _____ b. Expenses _____

   Explain any additional personnel required:

10. Will project remove taxable property from list? yes ( ) no ( )
    Land _____ Buildings _____

11. Relation to other projects or a long-range program:

12. Remarks:

Use Additional Sheets If Necessary

APPENDIX NO. 3

CAPITAL BUDGET PROGRAM 196 - 196

PLANNING BOARD, _____ Dept.

SCHEDULE OF PROPOSED PROJECTS — FORM B

Prepare copies. Submit copies to Planning Board and retain 1 copy for your use.

PROJECT	ESTIMATED TOTAL COST	SUGGESTED SCHEDULE OF PROJECT COSTS BY YEARS						
		196	196	196	196	196	196	LATER

M A S T E R P L A N S T U D Y

ECONOMIC DEVELOPMENT PROGRAM

Planning Board

S U D B U R Y, M A S S A C H U S E T T S

May 1962

Charles E. Downe, Planning Consultant

I. INTRODUCTION

A. NEED FOR A POLICY AND PROGRAM OF ECONOMIC DEVELOPMENT

Any community large or small that is economically healthy will inevitably by able to cope with any normal problems it may have to face. On the other hand, any community that does not have economic health will probably at one time or another be faced with an insurmountable problem. Communities like any other forms of life either thrive or degenerate; it is impossible for them to stand still. The economic health of a community consists of the composite economic health of each of its residents, corporations, agencies and institutions. An Economic Development Program must, therefore, be as concerned with the economic health of each component of the local economy, as it is with the economic health of the local government that serves each such component.

Any community that has;

(1) objectively analyzed its economic structure,

(2) established a long-range goal for its future economic character,

(3) determined a set of reasonable policies as to how it will attain such a goal, and

(4) formulated an action program for the foreseeable future to initiate the achievement of the stated goal,

will inevitably be in a better position to make the best of opportunities and to minimize the deleterious effects of misfortune.

Sudbury has recently experienced a very rapid pace of economic development in most portions of its economic structure. During this time it has rather painfully been developing goals, policies, and the rudiments of a program for economic development. It is the intention of this report to incorporate the present goals, policies, and program with some additional suggestions to form a more definitive statement.

B. RELATIONSHIP OF THE ECONOMIC DEVELOPMENT PROGRAM TO THE MASTER PLAN

Each of the planning phases of the Master Plan Study, (i.e. community facilities, circulation, utilities, future land use) contains proposals for physical development. The Capital Budget, Subdivision Regulations and Zoning By-law are designed to carry out these proposals in an orderly and "economic" manner. All assume the continuation of the dynamic economic development of the town. Without the drive, provided by a healthy expanding economy, the Master Plan would have to be drastically altered to a much less desirable ultimate community. It would seem reasonable to state that the combined studies of the Economic Base Analysis and the Economic Development Program provide the Master Plan with a firm foundation of financial reality.

C. STATEMENT OF SUGGESTED GOALS AND POLICIES FOR ECONOMIC DEVELOPMENT

The overall goal for the future development of Sudbury has been to continue as, and become even more so, an above average residential community, to be an integral part of the Boston Metropolitan region and to provide a variety of high-quality housing for medium and high income families and individuals. The identity of an "above average" residential community has been interpreted as including the provision of urban conveniences in a setting of rural amenities.

Thus, Sudbury in the future will have the characteristically urban conveniences of neighborhood schools, comprehensive library system, convenient shopping, and other well-developed community services with the rural amenity of about one-third of the town area being maintained as open space for conservation, recreation and agricultural activities.

It would appear reasonable that all other goals that might be set for Sudbury should be subsidiary and contributory to this overall goal. The following are suggested goals directly related to the economic health of the town;

(1) The continuation of high value-added agriculture; (i.e. truck farming rather than dairying) horticulture and floriculture as essential economic activities in the suburban portion of a Metropolitan Region.

(2) The provision of convenience shopping facilities such as food and drug stores, dry cleaning, and beauty and barber shops within two miles of each house in town.

(3) The provision, at the most accessible point in town, of a comprehensive community shopping complex including a small department store, food stores, many specialty shops, and professional and semi-professional offices.

(4) The continuation and increase of a high dollar investment per resident in housing.

(5) The establishment of selected medium (100 to 500 employees) and large (over 500 employees) light industrial and research facilities in locations that will be compatible with the intended residential character of the town but not exceeding in total employees - in combination with other job sources in Town - the number of employable persons in the local population.

(6) The establishment of a reasonable number of non-profit institutions, such as private schools, hospitals, housing for the aged, and recreation clubs to serve Sudbury's share of the need for such institutions in the Framingham and Concord subregions of the Boston Metropolitan region.

The establishment of the six goals suggested above can be fraught with rather complicated problems in development, although no one appears particularly problematical when taken separately. For instance, the continued establishment of industry in the Town can act to encourage a reduction in the dollar investment per resident in housing; the establishment of tax-exempt institutions can act to erode the real property tax base particularly if such establishment involves the conversion of existing structures; the premature establishment of a neighborhood convenience shopping facility could act to reduce the potential for a desirable community shopping center.

In reviewing the above problems of development, it appears essential that the Town adopt a firm policy of considering each development proposal in light of its contributions to the overall health of the local economy, primarily and only secondarily in light of its contribution to the annual real property tax. It would seem to be extremely difficult to state, except at a particular point in time and stage of development, that any of the above six goals were more important to the overall economic health of the town than any other. This suggests a town policy of not over-concentrating its effort upon the attraction of any one of the six types of development but, according to demands, giving each equal consideration.

Particularly in view of the recent State Supreme Court decision requiring all property in a Town to be assessed on a similar basis, it would appear reasonable for the Town to adopt a policy of providing reasonable rewards and sanctions to promote desirable economic development, similar to, but perhaps more sophisticated than, the rewards and sanctions effected by the present assessment policy. In order to achieve any of the above goals it would seem extremely desirable for the Town to adopt a firm policy of demanding from the General Court, revenues whether local or state, from other sources than the real property tax.

In the Areas of Influence Study and the Economic Base Analysis, Sudbury is identified as a part of the Greater Framingham Area and also having close liason with the Concord Sub-region. A policy might well be adopted by the Town to cooperate with these two areas and their constituent towns in all actions that involve their mutual economic development.

The foregoing goals and policies are, by intent, extremely general in order to allow essential flexibility. Each of them will be dealt with more specifically in the following portions of this report. The above suggestions by no means exhaust the desirable goals and policies that might be established. Hopefully, they can act as a guide to responsible Town officers and the body politic in shaping a long-range Economic Development Program for Sudbury.

II. APPRAISAL OF PROBLEMS AND POTENTIALS

A. COMMERCIAL

1. Agriculture, Horticulture and Floriculture

In 1959, the investment in the above activities in Sudbury were paying more local taxes than manufacturing although the Massachusetts Department of Employment Security listed only 14 employees in agriculture (which would normally include horticulture and floriculture) and 453 employees in manufacturing. In the crucial factor of investment per employee it is apparent that these activities are economically important to Sudbury.

It would appear desirable to continue these activities as a part of Sudbury's Economic Structure for several reasons;

(1) their proven stability over many generations,

(2) their high tax yield per employee,

(3) their contribution to the goal of a continuation of rural amenities

(4) their propensity for using, economically, land ill-suited to building,

(5) to protect the existing investment.

Probably the greatest threat to the demise of these economic activities in Metropolitan areas is the threat of land taxes based upon potential urban uses eliminating the possibility of a reasonable profit for rural uses. Two courses of action offer promise in this regard;

(1) deferrment of a portion of land taxes until land is put to another use,

(2) the purchase by the Town of building rights, insuring that the land will always remain open

The deferred land tax concept is being practiced in other parts of the United States presently. However, legislation would have to be passed in Massachusetts to allow it. A bill is presented annually to the General Court towards this end and Sudbury might well support it. The purchase of building, or development rights, is legal in Massachusetts and would appear to be a very desirable land use policy for Sudbury to adopt.

2. Business

From 1947 to 1959, years of extremely rapid growth, the ratio of retail employees to total population remained the same. Thus retail growth, in terms of employees, has just about paralleled population growth. An estimate based upon census data would place the 1950 median annual income for families and unrelated individuals at about $3,850.00, in comparison with the 1960 U.S. Census income figure of $8,538.00.

It would appear from the above, that, despite the stable ratio of retail employees to population, Sudbury's retail status has slipped in terms of retail employees to annual town income. The median income having gone up 122 percent in dollars or about 100 percent in 1950 dollars.

Table No. 1 presents a statistical analysis of where Sudbury residents carried on several common business transactions. It can normally be predicted that 65 to 80 percent of the activities listed, excepting the last three, will be carried out within four to five miles of a suburbanites home. It appears, from the data presented, that only in the categories of drugs and hardware is the Sudbury business community achieving its normal share of the income expended by its residents for the first nine items listed. This table presents clearly the problem and the potential of business development in Sudbury. Each of the retail services listed could reasonable aim at capturing half again as much of the market, and food sales, which normally make up 35 to 50 percent of the dollar volume of local retail goods sales, might well look to increase the 1961 pattern by 60 percent.

Two of Sudbury's major business activities were omitted from this survey, namely, restaurants and recreation. It is in these areas that the town provides retail services to residents of other towns. Neither of these businesses seem to have acute problems today and both appear to have an excellent potential for future expansion.

In an effort to determine the future needs of the community in terms of business areas, structures, and parking, a detailed analysis was carried out of all the commercial development on or near route 20. Some of the results of this study are reported in the future land use plan, circulation analysis and review of the zoning by-law. A summary of the findings of this study as regards floor area are presented in Table No. 2. Since the building coverage of lands used by business was found to be only three percent, the analysis of gross business acreage was not meaningful.

Table No. 2 indicates that 92 percent of all business floor area is presently located on or near Route 20, over half between Massasoit Avenue and Dudley Street. It further indicates that about 60 percent of Sudbury's business floor area is devoted to the provision of services, including restaurants, and less than 40 percent to the sale of goods. Assuming a 1961 population of 8,400, it can be determined that there existed in Sudbury about 16 square feet of business floor space per resident and, assuming 27 retail employees per thousand (see Economic Base Study), about 442 square feet per retail employee. In view of the study summarized in

TABLE NO. 1 - WHERE SUDBURY RESIDENTS SHOP FOR RETAIL GOODS AND SERVICES BY PERCENT - 1961

	Sudbury	Boston & Cambridge Area	Suburbs closer to Boston	Natick Concord Maynard Framingham & Misc.	No Answer
SERVICES					
Cleaning	57	6	13	23	1
Beauty-Barber	56	10	12	19	3
Dental	50	6	17	24	3
Banking	45	15	18	21	1
Medical	45	8	13	33	1
Automotive	44	10	18	26	2
Average	50	9	15	24	2
GOODS					
Drugs	80	2	4	13	1
Hardware	67	5	9	17	2
Food	45	2	15	37	1
Books & Records	31	19	6	35	9
Furniture & Major Appliances	15	29	15	29	12
Clothing	4	21	21	46	8
Average	40	13	12	30	5

Source: Sudbury League of Women Voters Survey
(based upon 20% sample, 434 households)

Table 1 it would appear that a good potential exists for increasing the business floor space per resident to 20 square feet or a little better. The ratio of floor space to each employee will probably increase towards 500 square feet, as the total floor area becomes less dominated by small stores and restaurants.

With a knowledge of the total retail floor space in town and the total number of off-street parking spaces, reported in the circulation study, it has been possible to determine that there are about 10 acres of land in Sudbury intensively developed for business. The projected increase of the population from 8,400 to 29,000 and the need for a more liberal parking ratio, plus the potential increase in retail floor space per person, would indicate an ultimate need for about 60 acres of totally developed land for such activities. It would seem appropriate to allow, over and above the land for buildings and parking, at least an additional 40 acres for appropriate landscaping and flexibility. A total of about 100 acres would seem to be a reasonable allotment to serve the ultimate retail business development of the town.

The foregoing discussion establishes, in terms of square feet and acres the existing situation and a potential at ultimate town development in accordance with the Master Plan. Between these two points in time there are many problems to be solved. The following list attempts to summarize the significant problems and potentials for the immediate future.

(1) Parking: a key factor in suburban shopping can at best be rated as "fair" in Sudbury today, i.e. not in a good position to compete with shopping facilities in neighboring towns.

(2) Buildings: the buildings in which business is being carried out in Sudbury today are generally in good condiltion and adaptable to or being used for first rate merchandizing with some notable exceptions.

(3) Location: although the general location of business activities on Route 20 is good, the specific location of one business as related to another is most characteristically an inefficient, "string-like", pattern and could best be rated as "fair".

(4) Appearance: with some notable exceptions, Sudbury's business development is not attractive. This lack of attractiveness is a deterrent to more rapid and desirable growth of the business community.

(5) Access: the main business area on Route 20 has primarily good access, but suffers from considerable congestion which should be ameliorated for the most desirable future development.

(6) Local Demand: reference to Table No. 1 indicates an excellent local demand for immediate growth.

TABLE NO. 2 - LOCATION OF BUSINESS FLOOR AREA BY SQUARE FEET, PERCENT AND TYPE OF USE - 1961

	Retail Goods		Retail Services		Prof. Services		Recreation			
	Sq.Ft. of Floor Area	% of Total	Sq.Ft. of Floor Area	% of Total	Sq.Ft. of Floor Area	% of Total	Sq.Ft. of Floor Area	% of Total	Totals	Percent of Town Total
ROUTE 20										
East*	8,265	15	9,956	17			20,000	94	38,221	27
Central**	34,733	63	34,658	58	5100	91	1,368	6	75,859	53
West***	6,931	12.5	9,468	16					16,399	12
ALL OTHER THAN ROUTE 20	5,208	9.5	5,778	9	500	9			11,486	8
TOWN TOTAL	55,137	100.	59,860	100	5600	100	21,368	100	141,965	100
PERCENT OF TOWN TOTAL	39		42		4		15		100	

*East of Massasoit
**Massasoit to Dudley
***Dudley to Wayside Motor Lodge

Source: Unpublished Assessors Data and Field Survey, Summer 1961

(7) Regional Demand: Sudbury's general qualifications on a basis of access, location, population density and existing development do not favor it as a retional business center based on the markets in other towns.

(8) Land: there is a good supply of suitable land available at excellent locations, requiring only minor improvements in the circulation system to provide the best access.

In summary although the demand is good, particularly for convenience and food facilities, the existing development is not well equipped to take advantage of this demand without specific improvements.

3. Industry and Research

Sudbury is and intends to continue as an above average residential community. It has, like many such communities, inherited a tradition of small industries. In recent years it has successfully endeavored to attract new industry, not to provide employment for local residents necessarily, but to abate the burgeoning load of the property tax. As long as the property tax is required to pay the major cost of local government, it would seem that the advantages of a broad property tax base would over-rule the disadvantages of having industry in a residential community. The following discussion of the problems and potentials of industrial development in Sudbury is presented within the confines of accepting industry in a Town where only five percent of the labor force is identified as "operatives" by the 1960 U. S. Census.

The potential for industrial development can be reasonably stated as being, Sudbury's share of the industrial development of the Boston Metropolitan Region and the Framingham and Concord Subregions, as identified in the Economic Base Analysis. These two subregions have been growing in employees four and ten times as fast, respectively, as the Metropolitan Region. This would indicate that Sudbury, as a part of a rapidly industrializing sector of a major metropolis, has a good potential for further industrial growth, all other factors being equal.

All other factors are, of course, never equal. The following list examines some of the more significant ones.

(1) Land: Sudbury has several extensive sites that have suitable slope and soil characteristics for industrial development and that are available at a reasonable price.

(2) Utilities:

(a) Sudbury does not have sufficient local water sources for a processing industry, however, a large water user could make arrangements to use M.D.C. water from a nearby aqueduct,

(b) there is a 115,000-volt substation in East Sudbury assuring plenty of electrical power,

(c) Sudbury has no public sewers,

(d) public gas is available and a major trunk line passes through the Town which would be available to a major user.

(3) Taxes: Sudbury's property taxes are higher than most of its neighbors, but may well be stabilized in the foreseeable future.

(4) Access: Sudbury has the poorest access to the major highways of any town in the subregion (Routes 9, 2, 495, and 128 and the Mass. Turnpike). However, a minor highway, Route 20, passes through the town. It is served by north-south and east-west minor rail lines and has reasonable access to airfields.

(5) Labor Force: Sudbury offers very little of a local labor force to industry, but has a very desirable labor force for research. A good labor force is available within reasonable commuting distance subject to the limitations of (4) above.

(6) Community Facilities: Sudbury has set a high standard of community services that will be attractive to a prestige industry:

(7) Existing Development: the character of existing industry is good and condusive to attracting more industry:

(8) Zoning: the industrial zoning policy in the past has been to wait until a firm offer is made before zoning land for industry. This attitude is discouraging to industry because of the time factor, the uncertainty of going before a town meeting, and the fact that a zoning approach of this type does not give the assurance that prestige industry demands of prohibiting undesirable development next door.

(9) Community Attitude: Sudbury is not wholeheartedly in favor of industrial development and is not likely at present to make concessinns or offer inducements to industry as some other communities might.

In summary, although the long-range potential for attracting industry is good, a location in Sudbury at present is less advantageous than in other nearby communities.

B. NON-COMMERCIAL DEVELOPMENT

Development not related to Agriculture, Business and Industry can contribute to the economic growth of a community. The example of a college town is a good illustration of this type of economic community support. The types of non-commercial development which may offer some promise to Sudbury would include a hospital, a golf course, outdoor recreation clubs, camps and a college. Each of the above has its own particular set of demands and offers its own unique benefits. Although none is as remunerative, under the present taxing policy, as good clean industry, they can be desirable additions to the economy and character of the Town.

The major and basic source of Sudbury's economic stability is the export of highly skilled and paid workers to other towns who bring back to Sudbury a portion of each paycheck. In 1960, twenty-seven percent or 685 of Sudbury's families had an income of over $10,000, the median family income being $8,538. This economic resource should be nurtured above all others.

The continuation of several programs that are directly aimed at making Sudbury a more desirable place to live in, is probably the best action the Town can take to assure a stable economic growth. To these purposes, there might well be added a program of attracting median and high income apartments and a further emphasis on encouraging high-priced, single-family homes in accordance with the economic concept of achieving a high investment per resident in housing.

III. OUTLINE OF AN ACTION PROGRAM FOR ECONOMIC DEVELOPMENT

A. WORKABLE PROGRAM

There are undeniably innumerable direct and indirect actions that may be taken by a Town to promote a healthy economic structure.

The following four general actions are suggested as the framework of an Economic Development Program. They are followed by some specific actions which appear desirable and practical as a result of the Master Plan Study.

1. Promotion

This activity should be carried out by both public and private organizations working separately, but in close coordination. A promotion campaign can logically be divided into three parts;

a. Inventory

Any long-range comprehensive promotion program should be based upon the broadest base of factual data possible. Such an inventory should include an analysis of each available commercial and industrial site in town in such a manner that each can be compared objectively to others in Sudbury and in other towns. A "Site Rating Sheet" in Appendix 1 might be used towards this end. Also, the compilation of a constant inventory of the economic base characteristics of the Town and the Framingham and Concord subregions is desirable. Such data can be gathered from local and larger government sources and questionaires. An inventory of this type is not only helpful in attracting economic development but also keeps the promoting agencies informed of community needs, potentials, problems and attitudes.

b. Plan and Program

The data gathered in the above inventory should be incorporated into a short and long-range plan and program for economic development, the preparation of which should include wide discussion in the Town, with neighboring Towns and with larger area agencies. Such a plan and program would normally include an integration of the local promotion effort with larger area promotions such as New England, Massachusetts and Greater Framingham.

c. Effectuation

The carrying out of an Economic Development Program should be a continuous process with a respectable annual appropriation. The benefits sought are extensive and worthy of a substantial investment of both public and private monies.

2. Legislation

Zoning, subdivision, and building regulations should be reviewed and updated with particular emphasis upon making land available to desirable economic activities according to the Future Land Use Plan.

3. Utilities and Roads

A community may extend utilities and roads to the site of a prospective economic activity, upon any cost basis that it may determine. Utility rates are frequently the subject of negotiation.

When the inventory phase of 1. (a). has been completed and land areas have been selected under 1. (b)., programs should be initiated to extend water mains, sewers, and access roads to these sites.

4. Town Improvements

Though good, reasonably-priced land is prime consideration, the next single greatest attraction to prestige corporations is an attractive, well-run Town. Overall Town improvement is the first line of attack in attaining a healthy economy. General and specific town improvements should be accelerated, including those spelled out in the Master Plan Study and Capital Budget.

Specific actions that might be carried out under the above headings should include:

(1) close cooperation with Wayland and the Massachusetts Department of Public Works to complete the Route 20 by-pass

(2) adopt the Zoning map and by-law revisions proposed in the Master Plan Study for business, industrial and research districts.

(3) construct and improve access roads to the sites recommended in the Future Land Use Plan.

(4) prepare a 'Master Sewer Plan' including early service to the sites above.

(5) arrange preliminary agreements with the Metropolitan District Commission and the Boston Gas Company as to the use of their utility services (water, gas, and sewers) by a major industrial user.

(6) "stabilize" the tax rate.

(7) improve Route 20 in general appearance and in service including proposals of the Master Plan Study.

B. STANDARDS

Certain "rules-of-thumb" or guidelines should be adopted by the responsible agencies both as goals and parameters. The following are suggested:

a. Neighborhood Shopping

One acre of neighborhood or convenience shopping should be provided for each 1,000 persons, within $1\frac{1}{2}$ miles to 2 miles of their residence. This type of facility should be divided: 25 percent in the north part of Town at or near the junction of Haynes and North Roads; 25 percent in the west part of town at or near the junction of Fairbank and Hudson Roads; and, 50 percent in South Sudbury in the main business district. A total of about 30 acres for shopping plus landscaping would give a gross total of about 40 acres. This standard would place the approximate size of the north and west convenience shopping areas at 10 acres, with about 75,000 square feet of gross floor area at each center.

b. Community Shopping

One acre of community shopping should be allowed for each 1,000 persons, within 5 miles of their residence. All of this type of shopping should be at or near the present south business district. This standard, in addition to the required convenience shops, would call for a business acreage at this location of about 45 acres. Adding landscaping and marginal use areas, a gross of about 60 acres, providing a gross floor area of about 450,000 square feet, would be necessary.

c. Industry

As long as Sudbury desires to remain principally a residential community, it should at no time provide more jobs than there are job holders living in the town. At such time as this standard is exceeded, it would become an employing rather than a residential town.

d. Locations

The location of business activities should be where they will best serve the local population. The location of industry and research should be where they will least conflict with the residential function of the Town. The location of all other economic activities should be where they will best compliment residence, business, industry, and research.

C. CONCLUSIONS

Sudbury today, except for the unfair burden of the property tax, over which it has little control, is in good economic health. Although its potential for developing greater economic strength is not as good the potential of some neighboring communities, it would appear that an energetic 'Economic Development Program' should improve its economy and its relative potential for further improvement. It would be unwise for Sudbury to emphasize industrial development to the detriment of developing other economic resources; acre by acre, business and apartment development can be more remunerative if well handled. It would seem that, with the resources of the Master Plan Study, today would be an excellent time to overhaul and accelerate the Town's Economic Development Program for the long-range future.

APPENDIX NO. 1 - PROPOSED INDUSTRIAL AND BUSINESS SITE SHEET

Name of Site	Location	Ind. or Bus.	Site No.	Natural Features						Transportation			Utilities				Total Points
				Ownership	Location	Area	Soil Condition	Ground Water	Slopes	Regional Hwy	Rail	Local Hwy.	Town Water	Electricity	Gas	Sewer	
				10	15	10	5	5	5	10	15	5	10	5	5	10	100
Sample	1000 Main St.	Ind.	00	4	7	2	3	5	5	0	0	5	0	5	0	0	36