

1989

## Impact of Four Industrial Developments on a Rural Community: The Case of Lakeville, Massachusetts

Christopher Robert Curry  
*University of Rhode Island*

Follow this and additional works at: <https://digitalcommons.uri.edu/theses>

Terms of Use

All rights reserved under copyright.

---

### Recommended Citation

Curry, Christopher Robert, "Impact of Four Industrial Developments on a Rural Community: The Case of Lakeville, Massachusetts" (1989). *Open Access Master's Theses*. Paper 663.  
<https://digitalcommons.uri.edu/theses/663>

This Thesis is brought to you by the University of Rhode Island. It has been accepted for inclusion in Open Access Master's Theses by an authorized administrator of DigitalCommons@URI. For more information, please contact [digitalcommons-group@uri.edu](mailto:digitalcommons-group@uri.edu). For permission to reuse copyrighted content, contact the author directly.

IMPACT OF FOUR INDUSTRIAL DEVELOPMENTS  
ON A RURAL COMMUNITY: THE CASE OF  
LAKEVILLE, MASSACHUSETTS.

BY

CHRISTOPHER ROBERT CURRY

A RESEARCH PROJECT SUBMITTED IN  
PARTIAL FULFILLMENT OF THE REQUIREMENTS  
FOR THE DEGREE OF MASTER OF  
COMMUNITY PLANNING

UNIVERSITY OF RHODE ISLAND

1989

MASTER OF COMMUNITY PLANNING  
RESEARCH PROJECT  
OF  
CHRISTOPHER ROBERT CURRY

Approved:

Major Professor

  
\_\_\_\_\_  
Dr. Farhad Atash

Acknowledged:  
Director

  
\_\_\_\_\_  
Dr. Howard H. Foster Jr.

## ACKNOWLEDGEMENTS

The success of this project is directly contributed to the staff of Southern Regional Planning and Economic Development District and I would like to thank them very much. I would particularly like to thank Thomas Pisaturo, Rachel Tedesco and William Napolitano for their contributions and guidance.

Thanks are also extended to my fellow "SRPEDDO" and URI graduate Greg Guimond for giving me the opportunity to work him on this and other projects, and for volunteering to be my outside reader.

Finally, within the Department of Community Planning and Area Development at the University of Rhode Island, I must thank Farhad Atash for his constant support and words of motivation and Howard Foster for his input and guidance.

Thank you,

CRC

TABLE OF CONTENTS

	Page
I. INTRODUCTION	
A. Introduction To Study.....	2
B. Organization Of Research.....	3
II. A PROFILE OF LAKEVILLE	
A. Lakeville Population	
1. Regional Setting.....	6
2. Early Settlement.....	8
3. Population Characteristics.....	9
a. Age Distribution.....	10
b. Income.....	10
c. Household Status.....	11
d. Housing Characteristics.....	11
B. Land Use and Transportation	
1. Land Use.....	12
2. Transportation Network.....	13
a. Roadways.....	13
b. Rail Service.....	14
C. Environmental Characteristics	
1. Soils.....	15
2. Water Resources.....	16
3. Vegetation.....	17
4. Wildlife.....	17
D. Site Specific Analysis	
1. Lakeport Park.....	19
a. Land Use and Infrastructure.....	19
b. Soil Profile.....	22
c. Wetlands Profile.....	24
2. Ocean Spray Corporate Headquarters.....	26
a. Land Use and Infrastructure.....	26
b. Soil Profile.....	27
c. Wetlands Profile.....	31
3. Great Ponds Industrial Park.....	32
a. Land Use and Infrastructure.....	32
b. Soil Profile.....	35
c. Wetlands Profile.....	37
4. Riverside Park.....	38
a. Land Use and Infrastructure.....	38
b. Soil Profile.....	40
c. Wetlands Profile.....	42

### III. IMPACTS OF DEVELOPMENT

A.	Tax Revenue And Primary Employment.....	49
1.	Methodolgy.....	49
2.	Analysis.....	50
B.	Secondary Employment.....	53
1.	Comparative Analysis.....	59
C.	Fiscal Impacts.....	62
D.	Housing and Population Increase.....	65
1.	Baseline.....	65
2.	Region Of Influence.....	67
3.	Induced Housing Demand & Population Increase....	70
E.	Land Use Impacts.....	73
1.	Direct Impacts.....	73
2.	Land Consumed Related to Secondary Housing.....	74
3.	Secondary Employment Impacts.....	76
F.	Housing Affordability.....	79
G.	Impacts on Community Facilities.....	84
1.	Existing Conditions Of Lakeville Facilities.....	84
a.	Police Protection.....	84
b.	Fire Protection.....	86
c.	Public Water And Sewer .....	88
2.	Projected Direct Impacts.....	89
a.	Police Protection.....	89
b.	Fire Protection.....	90
c.	Water Services.....	91
d.	Sewage Generation.....	92
3.	Projected Impacts Of Induced Population.....	92
a.	Police And Fire Protection.....	93
b.	Water Use And Sewage Generation.....	94
c.	Solid Waste Generation.....	94
d.	Educational Facilities.....	96
e.	Recreational Facilities.....	100
H.	Assignment of Transportation Impacts.....	102
1.	Methodology.....	102
2.	Study Area.....	103
3.	Trip Generation.....	105
4.	Trip Distribution.....	105
5.	Volumne/Capacity Analysis.....	115
6.	Summary.....	119

### IV. RECOMMENDATIONS AND ZONING REVISIONS

A.	Introduction.....	121
B.	Recommendations.....	121
1.	Land Use And Housing Affordability.....	121
2.	Community Facilities.....	122
3.	Traffic.....	123
B.	Growth Policies.....	125
1.	Protective By-Law.....	125
1a.	Recodification.....	125
1b.	Definitions.....	127
1c.	Language.....	130

2.	Subdivision Regulations.....	132
2a.	Section 1.....	132
2b.	Section 3.....	133
3.	Board of Health Regulations.....	136
3a.	Package Treatment Plant Regulation.....	136
3b.	Summer Cottage Conversion Regulation.....	136
4.	Other Appropriate Regulations.....	137
4a.	Zoning Board of Appeals.....	137

#### V. APPENDICES

A.	Population Projections.....	A-1
1.	Methodology.....	A-1
2.	Projections.....	A-3
B.	Multipliers Used In Employment Projections.....	A-4
C.	Description of Soil Types.....	A-5
D.	Special Permit Regulations.....	A-6
1.	Site Plan Review.....	A-6
2.	Aquifer Protection By-law.....	A-9
3.	Residential Cluster Development.....	A-13
4.	Inclusionary Housing.....	A-16
5.	Accessory Apartments.....	A-18
E.	Board of Health Regulations.....	A-20
1.	Sewage Disposal Regulations Cottage Conversion..	A-20
2.	Private Waste Water Treatment Facility.....	A-23

LIST OF TABLES

<u>TABLE NUMBER</u>		<u>PAGE</u>
1	Lakeville Growth In Population & Employment.....	8
2	Development Assumptions.....	51
3	Lakeville Industrial Parks 5 Year Projections...	52
4	Employment Increase 5 Year Summary.....	55
5	Employment & Income Projections, Ocean Spray....	56
6	Employment & Income Projections, Lakeport Park..	56
7	Employment & Income Projections, Great Ponds....	57
8	Employment & Income Projections, Riverside Park.	58
9	Comparative Analysis, Socio-Economic.....	61
10	Projected Expenditures, Employment Anticipation.	63
11	Estimated Housing Impacts, National Averages....	66
12	Estimated Housing Impacts, Massachusetts.....	72
13	Alternative Zoning Scenarios.....	75
14	Occupations, Plymouth County By Percentages.....	77
15	Projected Secondary Employment By Occupation....	77
16	Cumulative Land Use Impact Of Secondary Emp.....	77
17	Lakeville Housing List Price.....	80
18	Income From Direct Employment Vs Income Range...	83
19	Existing Facilities.....	88
20	Projected Police & Fire Protection Needs.....	93
21	Projected Residential Solid Waste Generation....	95
22	Projected School Age Children.....	98
23	Estimated Grade Breakdown Of Net Growth.....	99
24	Projected School Expenditures.....	99
25	Vehicle Trips - Peak Hour.....	100



LIST OF MAPS

<u>MAP NUMBER</u>		<u>PAGE</u>
1	Lakeville Regional Setting.....	7
2	Project Locations.....	20
3	Lakeport Park Site Configuration.....	21
4	Lakeport Park Soils Map.....	23
5	Lakeport Park Flood Map.....	25
6	Ocean Spray Site Configuration.....	28
7	Ocean Spray Soils Map.....	29
8	Great Ponds Site Configuration.....	33
9	Great Ponds Soils Map.....	36
10	Riverside Park Site Configuration.....	39
11	Riverside Park Soils Map.....	41
12	Riverside Park Encroachment Into Recharge Area.....	43
13	Riverside Park Flood Map.....	45
14	Area Map Of 20 Minutes Travel Time To Work.....	68
15	Lakeville Community Facilities.....	85
16	Trip Distribution Raynham Woods.....	108
17	Trip Distribution Lakeport Park.....	109
18	Trip Distribution Ocean Spray Headquarters.....	110
19	Trip Distribution Middleborough Development District.....	111
20	Trip Distribution Great Ponds Industrial Park.....	112
21	Trip Distribution Riverside Business Park.....	113
22	Trip Distribution MBTA Train Station.....	114

CHAPTER I  
INTRODUCTION

## INTRODUCTION

The following report is based upon a study produced by the author for the town of Lakeville under the direct supervision of the Southeastern Regional Planning and Economic Development District (SRPEDD) in Massachusetts. The project, a growth study as part of a new Master Plan for the Town, was funded by a Massachusetts Strategic Grant Award, made by the Executive Office of Communities and Development.

The significance of this report is the way in which a rural community views industrial development. Lakeville, like a great many other exurban communities, is experiencing pressures of growth resulting from the Boston expansion. And as many other communities have done, Lakeville looked toward industrial development as its tax base savior without consideration of the associated impacts. Thus, for the first time in the Southeastern Regional District a broader view of industrial growth has been taken, not only that of the increased tax base but also the resulting negative impacts.

Therefore, the significance of this study is not so much that of the impacts of the developments in Lakeville, because for the most part it is too late to change these projects, but the way other communities can use the expertise gained by SRPEDD to analyze future industrial development proposals.

The objective of this research is to project the type of development which would occur within the four development projects and from those projections, estimate the resulting impacts. Primarily, the important impacts to be analyzed are those directly related to the new Master Plan; they are housing and population increase. The other impacts that are analyzed were spinoffs of the primary impacts.

### Organization of Research

The study is divided into three sections. The first section (Chapter 2) begins with a brief background sketch of Lakeville, which discusses the Town in its regional setting and early settlement, the population characteristics, the land use and transportation network, and the environmental characteristics. The next level of analysis is that which is site specific to the four developments. This includes the land use and infrastructure of the sites, as well as the soil profile and the wetlands profile.

The second section (Chapter 3) is the analysis of impacts. It contains direct and secondary employment projections, projections for housing and population increase, general analysis of municipal costs and revenues, land use impacts, housing affordability projections, impacts on community facilities, and the transportation impacts generated by the four developments. The methodology employed to develop the

impact assessments are discussed at the onset of each subsection.

The third and final section (Chapter 4) of the study is the recommendations of the preceding analysis, and the analysis of the existing growth policies. This section delves into the current zoning policies, subdivision regulations, Board of Health regulations, and the requirements of the Zoning Board of Appeal and analyzes them as to their ability to control the projected population increases.

There is also an appendix included at the end of the report which contains the specific multipliers employed in Chapter 3 as well as model by-laws that would help Lakeville maintain an orderly growth pattern.

CHAPTER II  
A PROFILE OF LAKEVILLE

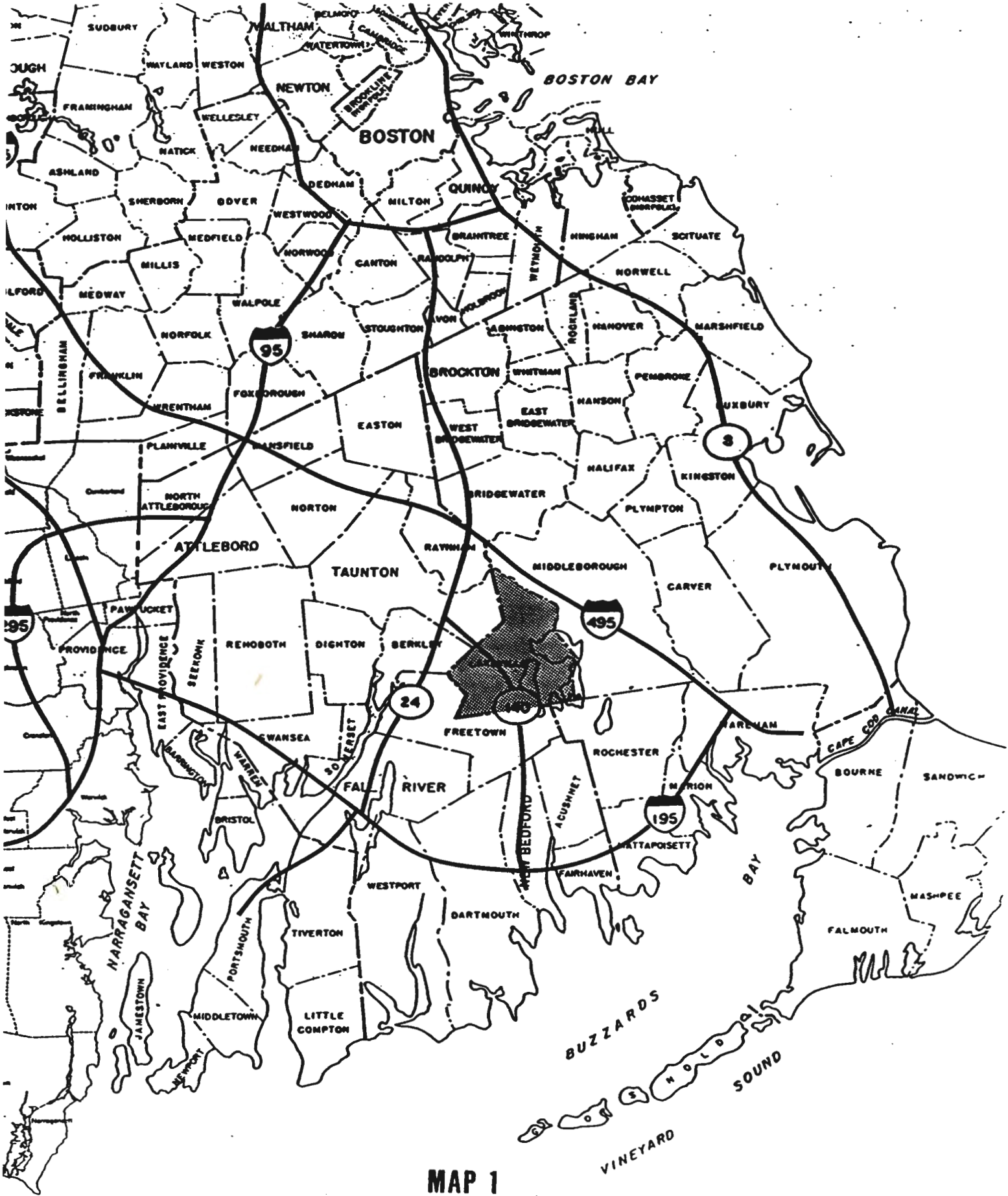
## INTRODUCTION TO LAKEVILLE

### 1. Regional Setting

Located in the southwestern corner of Plymouth County, Lakeville borders on Berkley, Taunton, Raynham, Middleborough, Rochester, and Freetown. Lakeville lies approximately 40 miles south of Boston, approximately 20 miles northwest of Cape Cod, and 25 miles northeast of Providence, Rhode Island (see Map 1).

As a result of this central location and the completion of Route 495, this region has begun to feel increasing growth pressures. Table 1 displays the growth in population and employment from 1970 to 1980 and from 1980 to 1985. Though the growth in population has been large, the growth in employment is even greater. This has been a result of the availability of land and the ample supply of labor and improved access.

The area covered by Southeastern Regional Planning and Economic Development District's (SRPEDD) boundaries registered an unemployment rate of 5.8 percent in 1986. The increase in the industrial base of Lakeville will help reduce this rate and strengthen the tax base.



**MAP 1**  
**LAKEVILLE IN A REGIONAL SETTING**



TABLE 1  
 LAKEVILLE GROWTH IN POPULATION AND EMPLOYMENT  
 1970-1980 AND 1980-1985

	1970-1980 % change Population	1970-1980 % change Employment	1980-1985 % change Population	1980-1985 % change Employment
Lakeville	35.5%	31.2%	14.4%	193.9%
Berkley	34.7%	53.9%	15.9%	278.3%
Freetown	65.3%	86.6%	9.8%	65.2%
Middleborough	20.6%	50.2%	2.5%	39.8%
Raynham	35.5%	58.0%	-3.2%	99.7%
Rochester	81.1%	19.0%	7.2%	279.0%
Taunton	2.9%	30.9%	-6.3%	32.8%

Source: U.S. Census 1970, 1980. Massachusetts State Census 1985.

## 2. Early Settlement of Lakeville

It was believed settlers of European descent came to the Beechwood portion of what was then Middleborough, in about 1709. Until the year 1853, Lakeville comprised about 1/3 of the western portion of Middleborough. In 1717 the first white man settled in Assawompsett Neck.

Like many rural communities, Lakeville was home of many diverse industries including tack-making factories, blacksmith shops, shoe manufacturers, soap makers, sawmills, tanneries, and shepherding.

Over the years, Lakeville has seen little change and today the Town is still primarily a residential town with many of the services and features associated with a rural community.

### 3. Population Characteristics

As displayed in Table 1, over the period from 1970 to 1980, the population of Lakeville grew by 35.53 percent raising the total population to 5,931 in 1980. It is estimated that from 1980 to 1985, the population grew by 14.4 percent to 6,785. Although the percentage growth has been high, the town still maintains the image of an open, rural community. The density of population for Lakeville is the fifth lowest in the SRPEDD district at 165.82 persons per square mile. The four towns with fewer persons per square mile are Rochester, Plympton, Berkley, and Carver, respectively.

According to the 1980 U.S. Census, the population of Lakeville was predominantly white. Of the 5,931 people in 1980, there was only 42 non-whites (0.8%) and 30 persons of Spanish origin (0.5%). Although there was a slight increase in the minority population from 1970 to 1980, their percentage of the whole population decreased over the same period.

Lakeville's median-school-years completed rates in the middle of SRPEDD's communities with 12.5. Marion has the highest with 13 years of school and Fall River the lowest with 9.3 school years completed.

a. Age Distribution

Lakeville's population is relatively young with 39 percent of the population aged 24 or younger and only 11 percent aged 65 or older. As with most New England communities, the population of Lakeville has aged since 1970 when 44% of the population was 24 or younger. Thirty percent of the population was between the ages of 25 and 44 in 1980 as compared to 24 percent in 1970. However, the percent of population for the town has remained the same for 65 and older from 1970 through 1980.

b. Income

The per capita income for Lakeville was \$6,603 in 1979. This was above the per capita income for Bristol County (\$6,252) but below the per capita income for Plymouth County (\$6,978) and the per capita income for Massachusetts as a whole at \$7,458.

According to the 1986 data, Lakeville's estimated per capita income was \$11,205. This was again in between the figures for Bristol County at \$9,961 and Plymouth County at \$11,817.

c. Household Status

Of the 1,901 households in Lakeville in 1980, 1,570 were family households. Seven percent or 107 of the family households were headed by a single parent of which 19 were male-headed and 88 were female-headed.

d. Housing Characteristics

In 1980 there were a total of 2,426 housing units in Lakeville. 1,980 housing units were designated year round with 1,891 of these units occupied, 89 units vacant and the remaining 446 units occupied on a seasonal basis. Of the 1,891 year round occupied units, 1,707 or about 90.27% were owner occupied and 184 or 9.73% were renter occupied units. Ninety-six percent of the 1,891 housing units were single-family detached structures. By 1980, 26% of all housing units had been built prior to 1930. While housing conditions in Lakeville are generally good, there are some substandard units in the town. These are concentrated in the Buena Vista Shores area. Buena Vista Shores is an area where seasonal homes located on small lots with poor soil conditions have been converted to year-round use.

## LAND USE AND TRANSPORTATION

### 1. Land Use

The most recent comprehensive land use survey of Lakeville was undertaken in 1971 by Professor William MacConnell of the University of Massachusetts at Amherst. The results of the MacConnell Survey were as follows: Urban land 1,650 acres, 7 percent of the total land area, Mining 216 acres, 1 percent of the land, Recreation 307 acres, 1 percent of the land, Agriculture 3,164 acres, 13 percent of the total land, Wetlands 4,513 acres, 18 percent of the land, and Forest Land at 14,096 acres, or 60 percent of the total land.

The Urban land use category includes industrial, commercial, residential, transportation and open/public. In 1971 there were 0 acres of the land in industrial use, 112 acres in commercial use, 1,229 acres in residential use, 158 acres in transportation use and 151 acres of land classified as urban open/public. The agriculture land use includes farmlands, and cranberry bogs.

A great deal of change has taken place since 1971. Although a comprehensive land survey is well beyond the scope of this study, an easy method for comparison would be the growth in new residential and industrial development. As stated earlier, in 1970 there were 1,318 housing units in Lakeville,

compared with units in 1985, an increase of 86 percent. Furthermore, according to the MacConnell land use survey, there was no land in industrial use in 1971, and today this report is studying four industrial sites totaling 585 acres.

## 2. Transportation Network

### a. Roadways

The Town of Lakeville is served by a number of state highways and major collector roads. Route 140 provides north-south access to Taunton and Fall River via a limited access highway connecting to Routes 24 and 195. Route 18 provides north-south access to Middleborough and Freetown. Route 44, though only crossing a short section of north Lakeville, offers east-west access to Plymouth and Providence, Rhode Island.

Other significant traffic routes are the secondary, arterials and collector roadways throughout the town. These include Route 79, a northeast-southwest access to Fall River and Middleborough, which is presently undergoing upgrading. Route 105 is another north-south route which links Marion to Halifax. Other collector roads include, County Road, Taunton Street, Southworth-Leonard Streets, Clear Pond Road, Vaughan Street, Bridge Street, Precinct Street, Pickens Street, Pierce Avenue, Howland Road, Freetown Street, and Long Point Road.

An important aspect of the road network of Lakeville which has not been mentioned is Route I-495. Although this route does not pass through Lakeville, its close proximity to the north-east portion of the town is the driving factor in the industrial growth which the town is facing. With interchanges at Routes 44, 18 and 105, Lakeville is a perfect location for distribution facilities servicing the Greater Boston as well as northeast regional centers.

b. Rail Service

Lakeville is presently being considered for a rail station by the MBTA for its restored commuter service to the Middleborough line. The site under consideration for the terminal is that of Riverside Park. The Riverside Park site would be the final terminus for the commuter trains and would be served by approximately 25 train trips per day. Although several sites in Middleborough are being investigated by the MBTA for the terminal, they are leaning toward the Riverside Park site for a possible opening date in the next five years. Presently, the rail serves Conrail freight traffic as well as two passenger services, a summer line service from Braintree to Hyannis (the Cape Cod & Hyannis line) and an Amtrak service from New York to Cape Cod.

## ENVIRONMENTAL CHARACTERISTICS

### 1. Soils

The general soils profile of the Town of Lakeville consists of four predominant soil associations: Essex-Gloucester-Scituate; Hinckley-Windsor-Merrimac; Peat-Muck-Norwell-freshwater marsh, and; Charlton complex. These soils vary considerably. They are level to steep, excessively drained and well-drained and very poorly drained. They were formed in sand and gravel, silt materials, glacial till and outwash, and organic materials.

Soils within a general soil group may possess some similarities or differ greatly in their properties. The deciding factors in their association is that they have generally formed in similar materials, and the dominant soils within the general soils area are the largest in extent in that area.

Suitability of a general soil area for a particular use is determined by the characteristics of the dominant soil therein. This type of information is contained within the scope of a soil survey. A soil survey can be used to point out various soil limitations for agriculture, septic system, residential, industrial, or other land uses. Limiting factors considered in such a survey includes: soil behavior



for selected uses, wetness, composition of soil, stability, slope and friability.

## 2. Water Resources and Wetlands

Lakeville has an abundance of water resources, including eleven ponds classified as Great Ponds by the Commonwealth of Massachusetts (this pond classification applies to ponds which in their natural state constitute more than ten acres). This pond system provides water resources for Taunton, New Bedford, and under Massachusetts State law, Fall River (although Fall River does not presently utilize its water option in Lakeville). The estimated safe yield of the Lakeville ponds is approximately 27.5 million gallons per day.

The surrounding wetlands help to maintain the overall water quality through the removal of silt, water-born nutriments, and pollutants. Another important function of a wetland is to serve as a groundwater recharge area and in surface water flow maintenance. All of these functions are now, more than ever, being predominantly recognized in Massachusetts wetland regulations. New provisions in the Wetlands Protection Act (MGL Ch. 131 Sec. 40) recognize wetlands and stream banks for their importance as rare and endangered wildlife species habitat.

### 3. Vegetation

The plant species occurring in Lakeville are quite like those occurring through the majority of the southeastern portion of Massachusetts. The vast forested areas of Lakeville consist primarily of oak (a high percentage of which is scrub oak), black oak, red oak, pine, pitch pine, maple and red maple. The forests are primarily a mix of hardwoods and soft woods with lesser areas of mostly hardwoods and areas of mostly conifers.

Mosses, grasses and herbaceous plant life common to regional wetlands and forests are scattered throughout Lakeville. Dense scrub and bushy under-growth including blueberries, blackberries, cartbrier and sumac, cranberries and laurel thickets also are found in scrub shrub swamp and bog areas.

### 4. Wildlife

The abundance of woodland, dense scrub growth and a vast supply of freshwater are all factors in the diversity of indigenous species of mammalian, amphibian, and reptilian life in the Lakeville area. Some of the more commonly observed species are: cottontail rabbit, various hares, chipmunk, grey squirrel, opossum, deer mouse, raccoon, woodchuck, deer, muskrat, otter, salamanders, mink, various toads, various frogs, various turtles, garter snake, and

black racer.

In addition to its woods and uplands, Lakeville's wetlands, cranberry bogs, streams, and ponds provide an ideal habitat for such indigenous and migratory wild fowl as: pheasant, blue jay, robin, black duck, wood duck, black-capped chickadee, quail, ruffed grouse, golden eyes, cardinal, crow, swallow, red-tailed hawk, osprey, blue bill, blue heron, sparrow, and wren.

## SITE SPECIFIC ANALYSIS

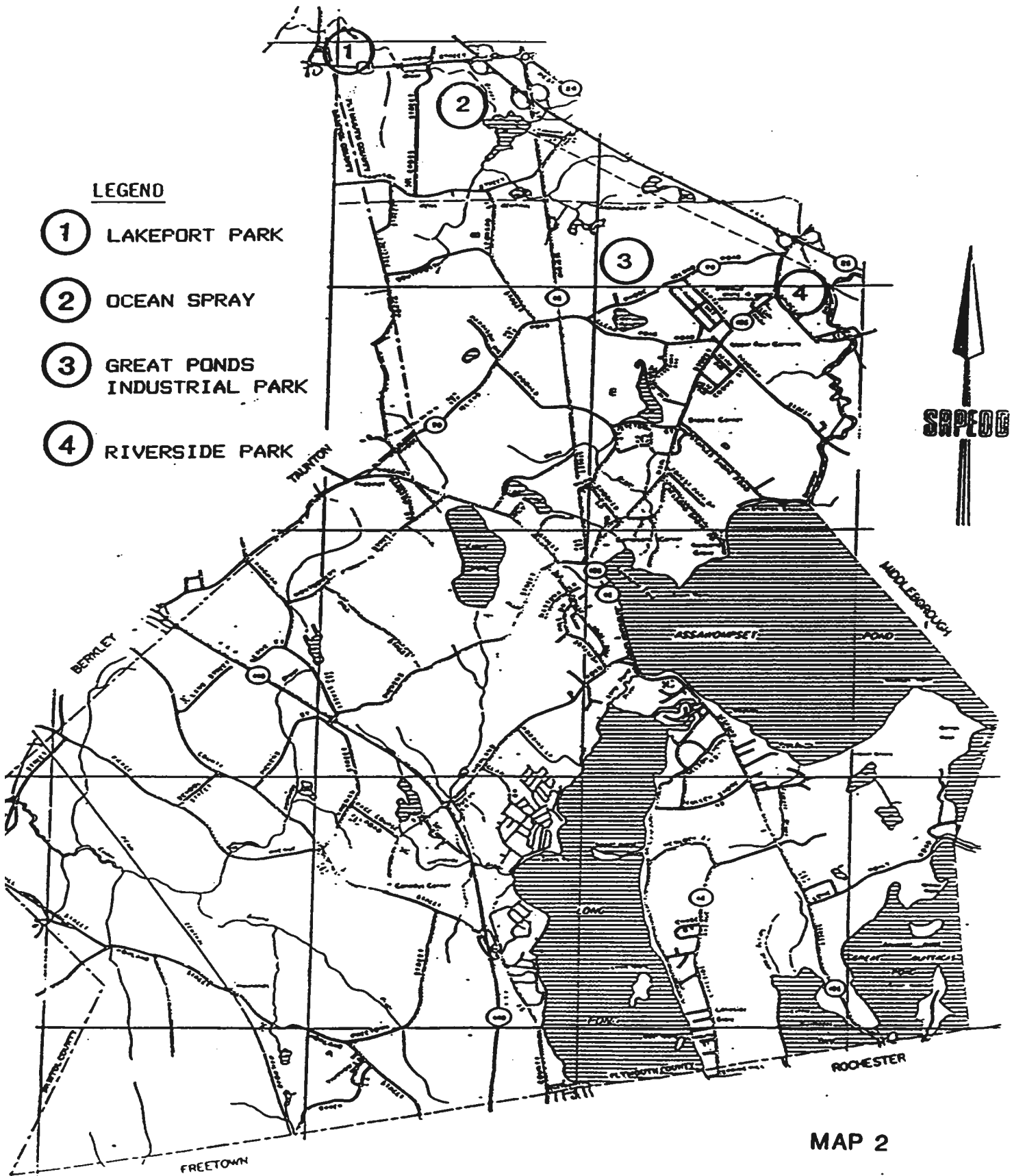
### 1. Lakeport Park

#### a. Land Use and Infrastructure

Located on Route 44 at the Taunton line, Lakeport Park is a 65 acre site served by a 12 inch water main from Taunton public water supply. The area surrounding the site is primarily commercial with a small shopping plaza and a self storage facility directly to the west and a retail outlet directly to the east. Across Route 44 is a small section of retail and considerable amount of open space (see Map 2).

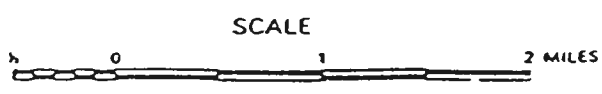
The section of Route 44 along which the site lies is fairly wide and straight. There is ample sight visibility from the access point. Furthermore, the Route 44 location is in close proximity to both the Route 24 and Route 495 interchanges.

To date, Lakeport Park contains three buildings which lie along the front of the site, with a realistic potential for another 17 or so buildings. Because of the preliminary character of negotiations regarding this project, and the unrealistic site plan provided by the developer, little can be said about the final development scenario (see Map 3). However, all future projections as to levels of employment and tax benefits are based on twenty 25,000 square foot

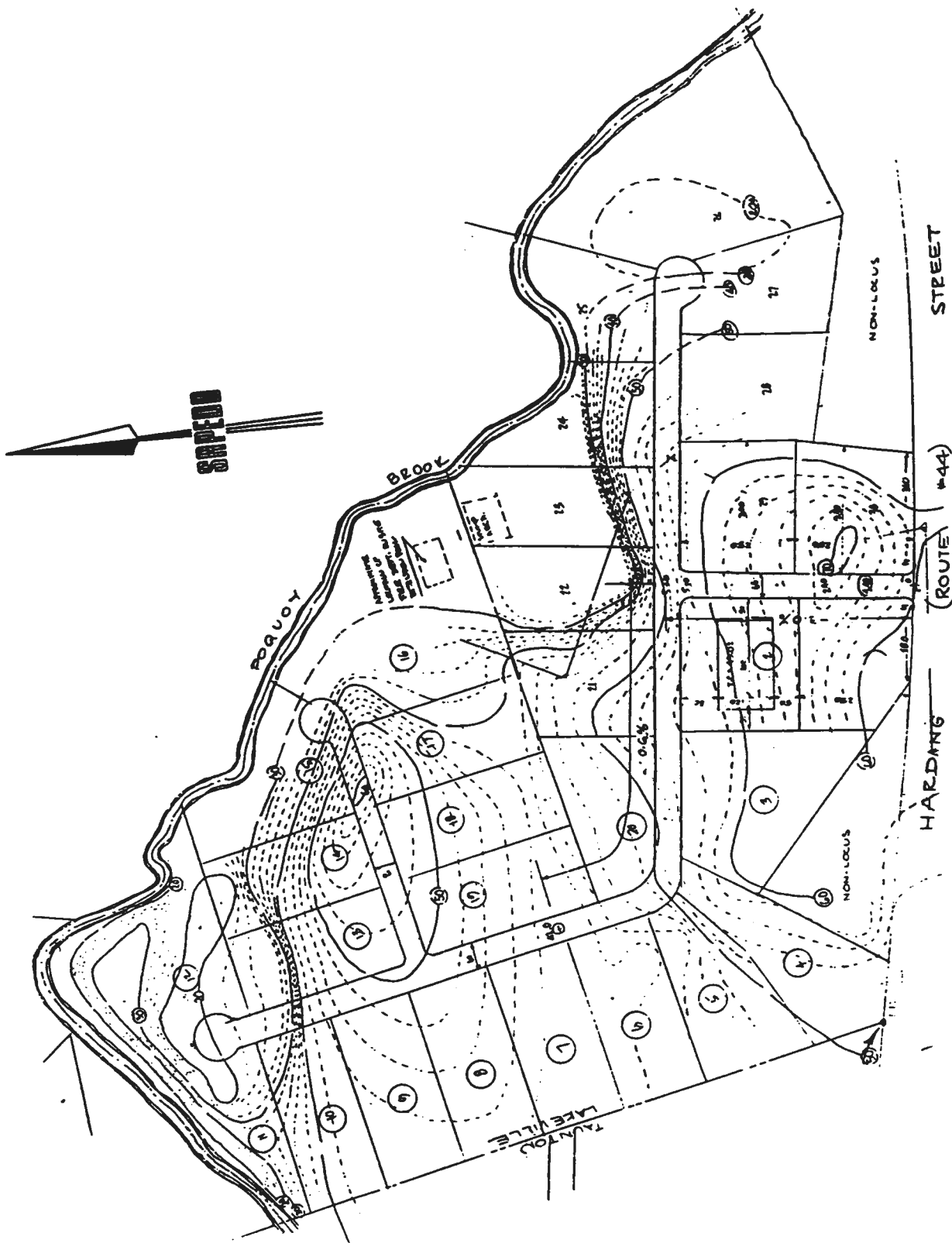


**LEGEND**

- ① LAKEPORT PARK
- ② OCEAN SPRAY
- ③ GREAT PONDS INDUSTRIAL PARK
- ④ RIVERSIDE PARK



**MAP 2**  
**PROJECT LOCATIONS**  
 TOWN OF  
**LAKEVILLE**



MAP 3  
LAKEPORT PARK SITE CONFIGURATION

1" = 320'

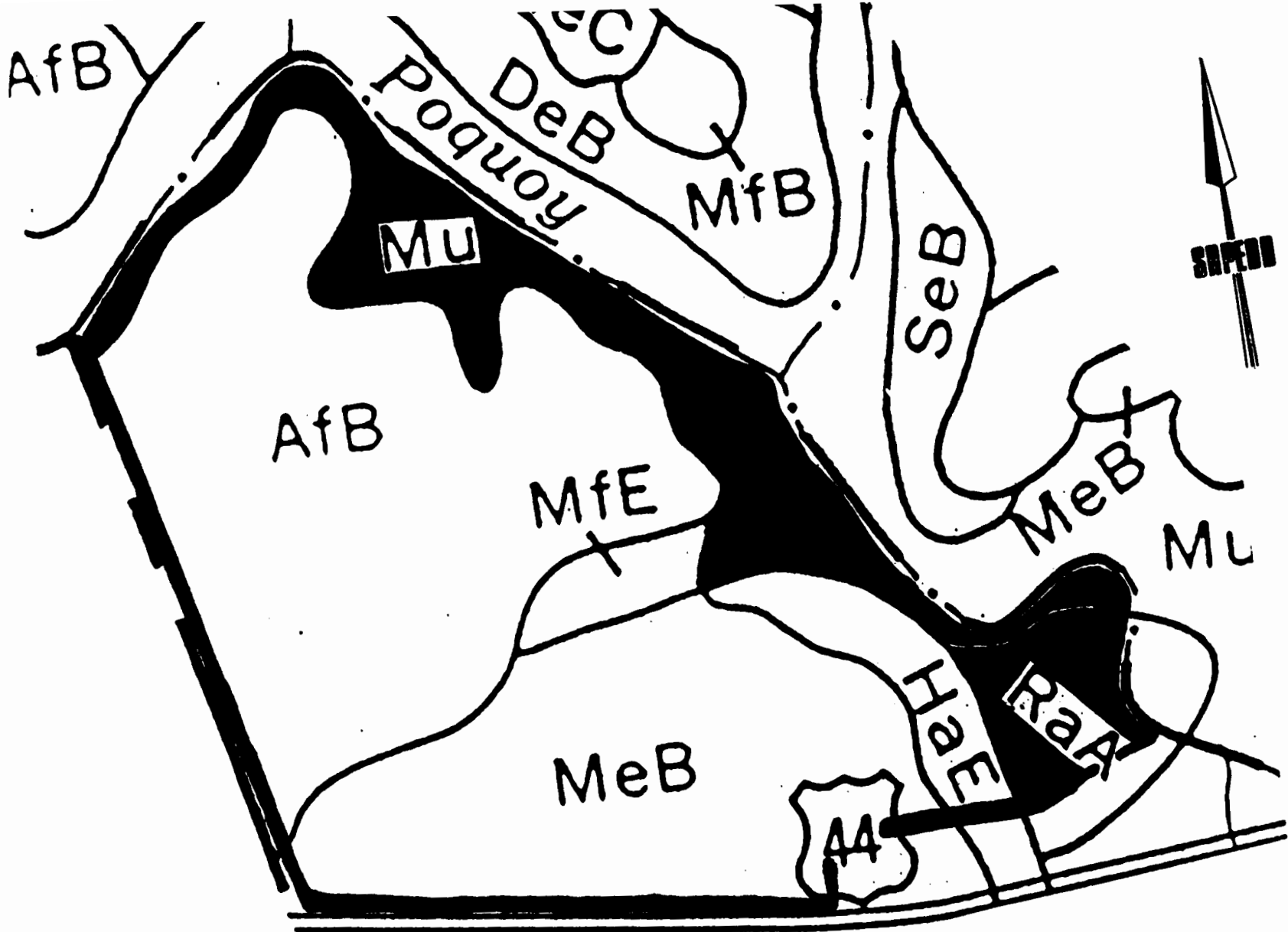
buildings.

b. Soils Profile

This site is comprised primarily of Agwam and Merrimac soils with lesser areas of Hinckley, Raynham and shallow muck (see Map 4). The Agwam, Windsor, Merrimac and Hinckley soils are formed in thick deposits of sand and gravel and are excessively permeable in the upper part of the soil and rapidly to very rapidly permeable in the lower part. Water tables in these soils are generally deep (greater than 6 feet). These soils pose only slight limitations for development.

Raynham soils are poorly drained soils formed in silt and clay. The permeability of these soils is moderately slow or moderate in the upper part and slow in the lower part. The water table is at or near the surface during wet periods of the year. This severely limits the suitability of these soils for building or development.

Mucks are very poorly drained soils developed in well decomposed organic deposits. These soils either have ponded water at the surface or a water table at or near the surface most of the year. These factors, in conjunction with this soil units proximity to Poquoy Brook, severely limits the development potential of this portion of the site.



MAP 4

LAKEPORT PARK SOILS MAP

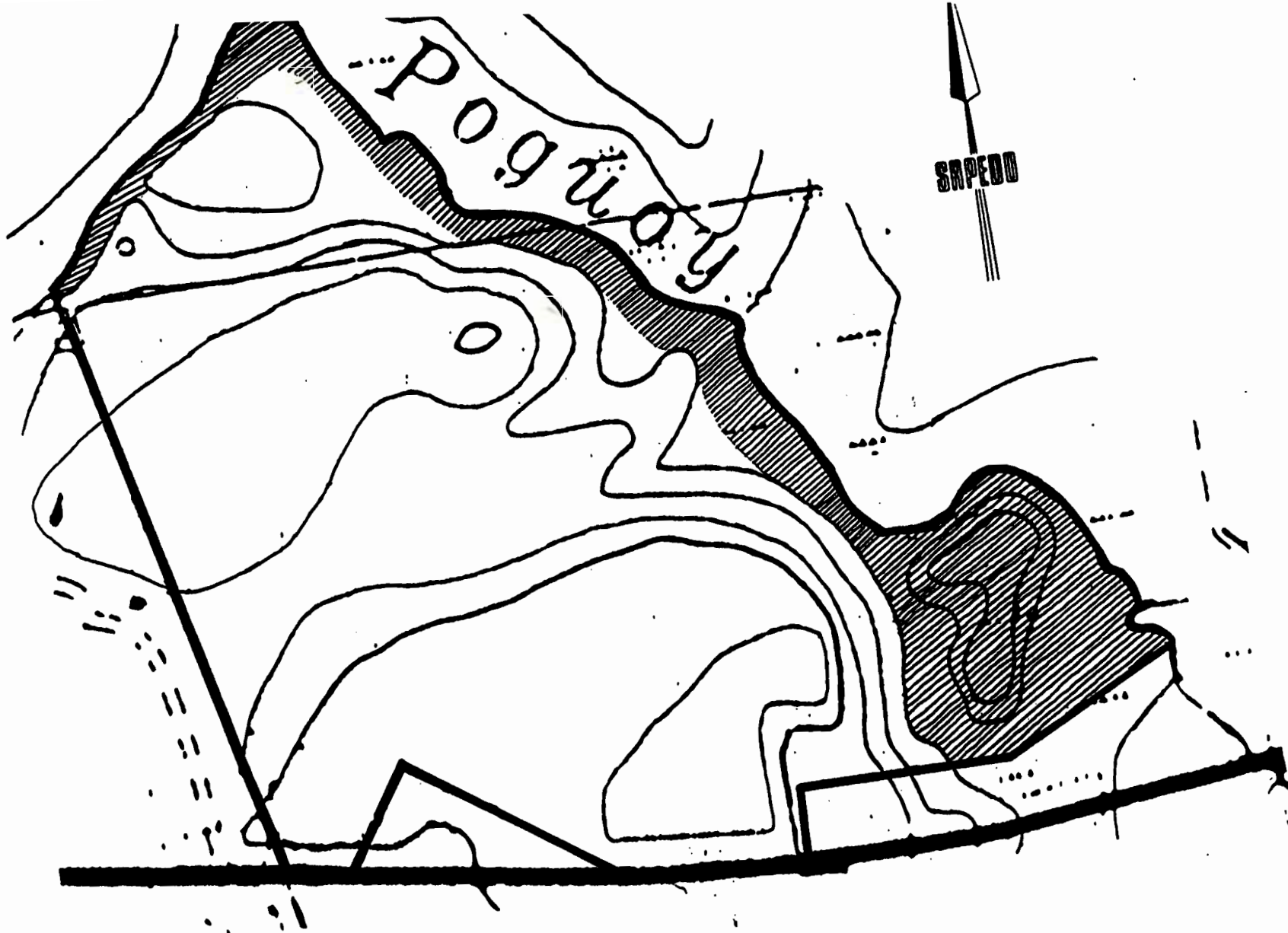
■ SOILS WITH SEVERE LIMITATIONS  
FOR DEVELOPMENT  
1" = 320'



On this Map, as well as on all of the soils maps, the soils that are not suitable for development are colored in black.

c. Wetlands Profile


Lakeport Park is bordered to north and running along the east by the Poquoy Brook and its freshwater wetland environs. The wetlands, surrounding the immediate path of the brook, are mixed freshwater areas. Building plans should attempt to avoid any intrusion into these wetlands which fall within the approximate 100 year flood boundary as delineated on the 1980 National Flood Insurance Program Floodway Map for the Town of Lakeville (see Map 5).



25

MAP 5

LAKEPORT PARK FLOOD MAP

 FLOOD PLAIN ENCROACHMENT  
FOR DEVELOPMENT  
1" = 320'

## 2. Ocean Spray Corporate Headquarters

### a. Landuse and Infrastructure

The Ocean Spray site is 310 acres of which 60 acres are located in Middleborough and 250 acres are located in Lakeville. It contains a 36 acre pond and a 16 acre cranberry bog. The site is served by an 8 inch sewer main along Route 18 and is hooked into the Middleborough sewer system. Also, there is a 12 inch water main extended from Lakeport Park along Route 44 to the site.

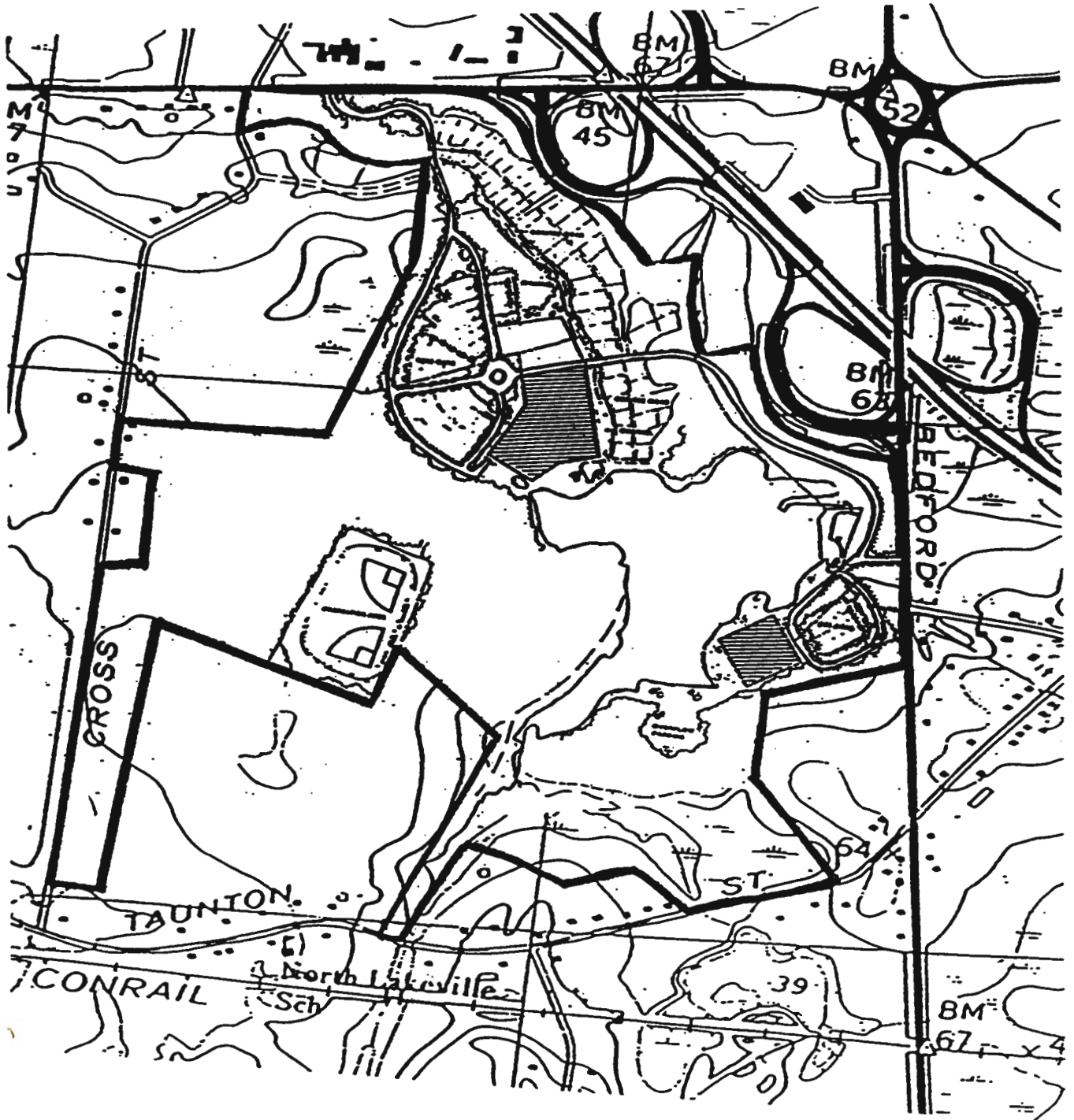
A mixture of land uses surround the site. Along Route 44 there are primarily strip commercial structures, including an auto dealership. Along Route 18 there is a coffee shop and the rest is open space. To the west and south of the site, along Cross Street and Taunton Street, there are primarily residential structures and a public golf course.

Located at the merge of Routes 44, 18 and 495, the Ocean Spray site has great accessibility. The access points on Route 44 and Route 18 have good sight visibility and the internal through street will allow entering and exiting traffic to access the Route 495 interchanges without traveling through the Middleborough rotary.

Map 6 displays the Ocean Spray project layout, with the headquarters and research and development building at the northern section of the site facing Route 495, and the Cranberry World museum at the southeastern corner of the site. Phase I, to be completed this year, consists of 125,000 square feet of office space and 25,000 square feet of research and development space. There will also be parking facilities for 600 automobiles. Phase II of the project, scheduled for completion in 1995, will consist of another 150,000 square feet of office space and a 10,000 square foot building to be used as a museum. The second phase will have additional parking including ten spaces for bus parking.

b. Soils Profile

This site is composed of large map units of Essex, Agwam, and Scituate soils with lesser areas of Merrimac, Deerfield, Windsor, Norwell, Au Gres and deep, shallow and sanded muck (see Map 7). The Agwam, Windsor and Merrimac soils are formed in thick deposits of sand and gravel and are excessively well drained. These soils are moderately to rapidly permeable in the upper part of the soil and rapidly to very rapidly permeable in the lower part. Water tables in these soils are generally deep (greater than 6 feet). These soils pose only slight limitations for development.



MAP 6

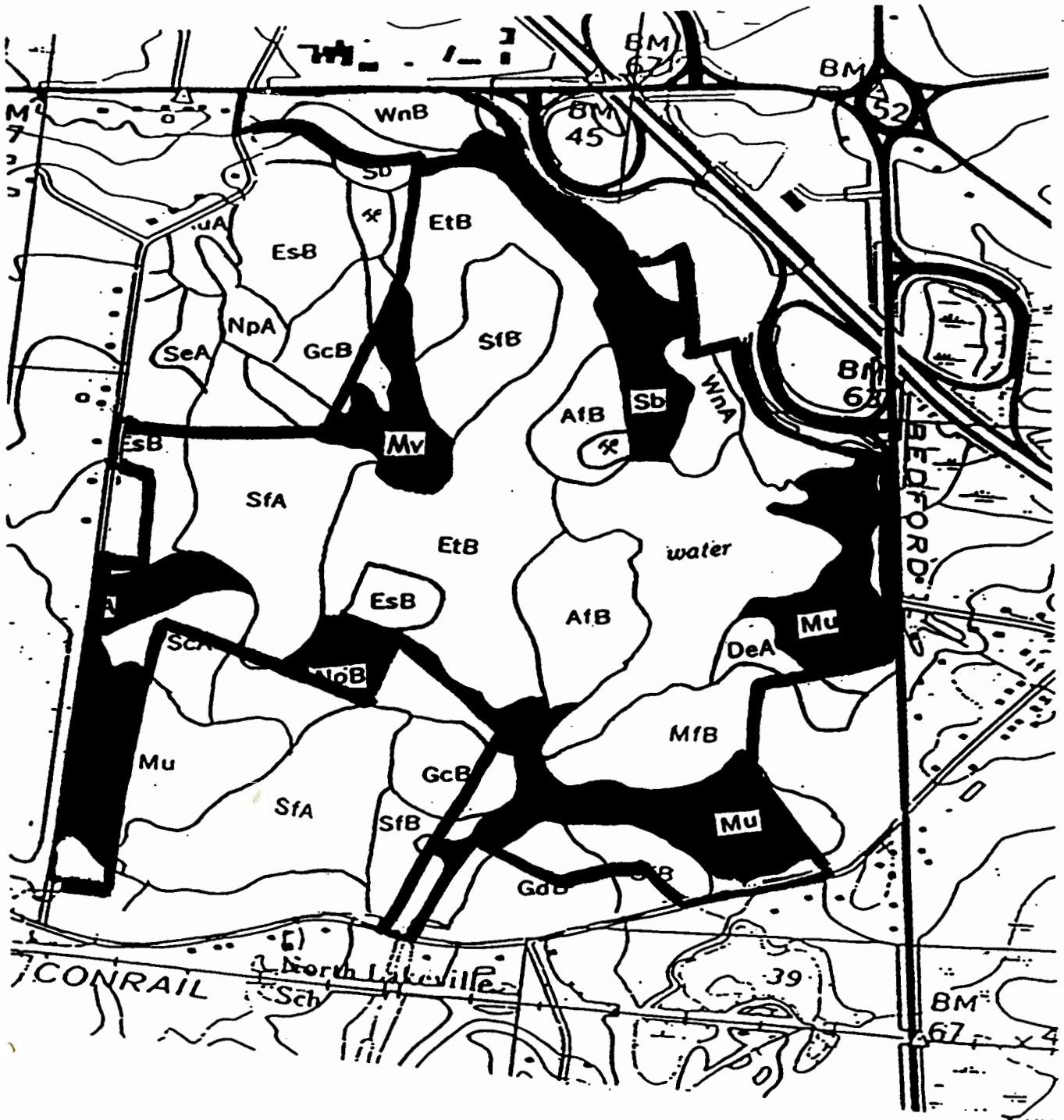
OCEAN SPRAY SITE CONFIGURATION



BUILDING LOCATIONS

1" = 800'





**MAP 7**

**OCEAN SPRAY SOILS MAP**

**SOILS WITH SEVERE LIMITATIONS FOR DEVELOPMENT**  
 1" = 800'



The Essex soils are well drained soils that are formed in stony, loose material that is underlain at a shallow depth (2 1/2 to 3 feet) by firm, compact material referred to locally as hardpan. The permeability of these soils is moderate to moderately rapid in the upper part and slow to very slow in the lower part. Water tables are generally deep in these soils (greater than 6 feet).

The Scituate soils are moderately well drained, formed in stony, loose material that is underlain at a shallow depth (2 to 3 feet) by hardpan. Permeability is moderate in the upper part and slow to very slow in the lower part. Water tables in areas of these soils are at a shallow depth (1.5 to 4 feet) during wet periods of the year.

Deerfield soils are moderately well drained soils that have formed deposits of sand and gravel. They are moderately to rapidly permeable in the upper part and rapidly to very rapidly permeable in the lower part of these soils. Water tables are at a shallow depth, (1.5 to 4 feet) during wet periods of the year.

The Essex, Scituate and Deerfield soils pose moderate limitations due to seasonal wetness. However, these soils can be engineered to accommodate the purpose of this site.

The Norwell and Au Gres soils are poorly and very poorly

drained mineral soils that have formed in material ranging from sand and gravel to silt and clay. Permeability of these soils varies greatly, depending upon the materials in which they are formed. These soils are wet and have a water table at or near the surface during wet periods of the year, making them largely unsuitable for building.

Mucks are very poorly drained soils developed in well decomposed organic deposits. These soils either have ponded water at the surface or a water table at or near the surface most of the year, making these soils unsuitable for development.

c. Wetlands Profile

Surrounding the buildable portion of the site, from the northeastern corner extending to and along the southern boundary, are mixed freshwater forested scrub shrub swamp areas. These areas are dominated by broad leafed deciduous vegetations. Along the western portion of the site and into the southwestern corner, there exists an area of cranberry bogs and freshwater swamp.

Other than the construction of the primary access road, little wetlands intrusion occurs on this site. Rather, much of the natural character of this site is being preserved in the overall construction plan.



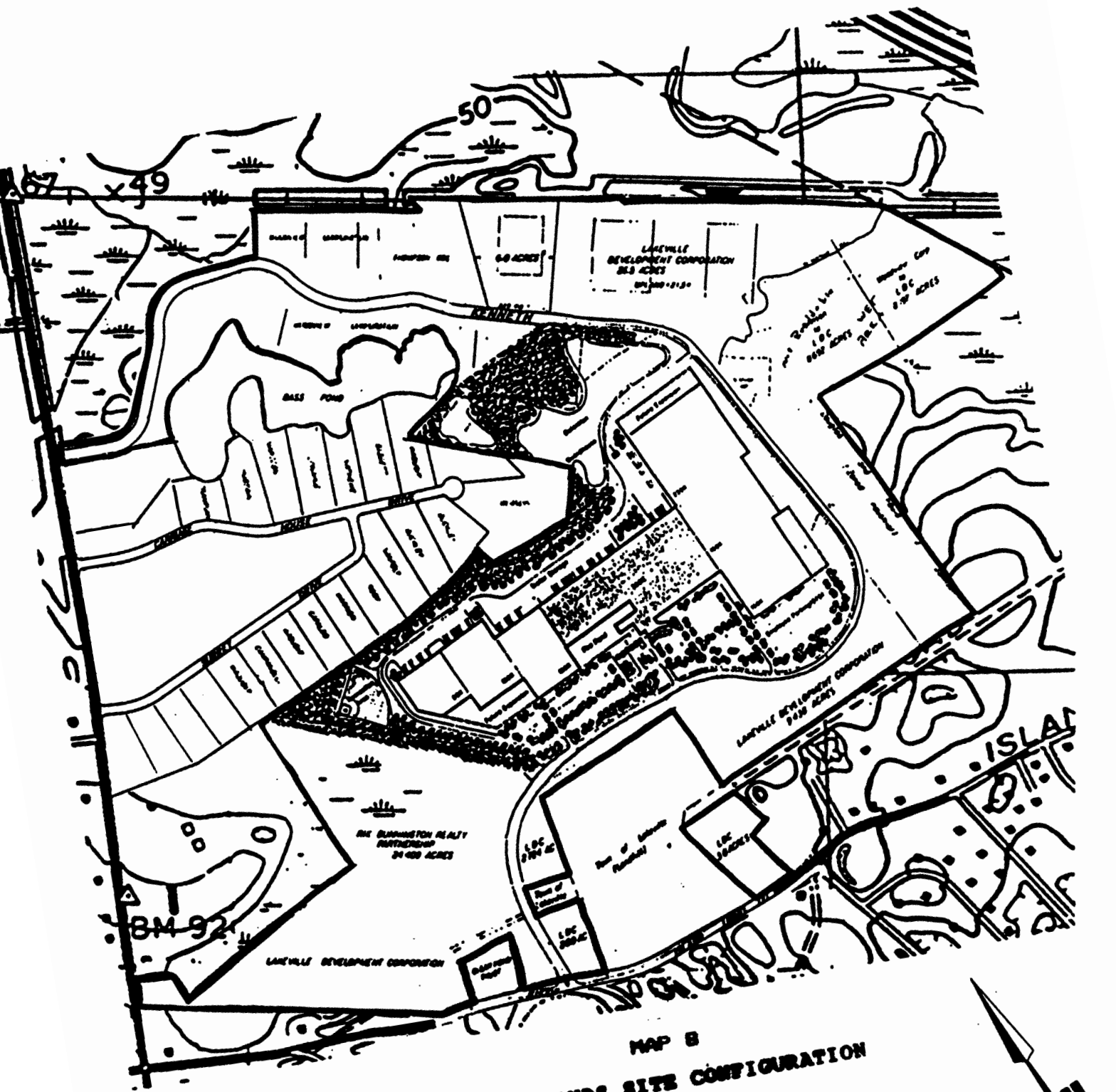
### 3. Great Ponds Industrial Park

#### a. Landuse and Infrastructure

The Great Ponds Industrial site is approximately 200 acres and is being developed by the Lakeville Development Corporation (LDC). While the site is served by a 16 inch water main from the City of Taunton, it will not have any public sewer. The site abuts the Lakeville Landfill to the south. The site surrounds the Carrage House Drive and Surrey Drive subdivision to the west. However, there is a 100 foot buffer area that separates the site from the adjacent properties (see Map 8).

Great Ponds Park is situated at the junction of Routes 79 and 18. Route 79 is presently a narrow winding road. However, it is in the process of being upgraded. Furthermore, upon completion of the Kenneth Welch Drive access to Route 18 traffic problems along Route 79 caused by large trucks will be eased.

The site plan of Great Ponds Industrial Park indicates the location of the Talbot's warehouse and the proposed Rix-Dunnington warehouse. There is also an 80,000 square foot warehouse being built by Thompson Box Company on the Woodview Corporation property. Dundas Machine Company has recently purchased six acres to build a manufacturing plant. The



**MAP B**  
**GREAT PONDS SITE CONFIGURATION**  
 1" = 700'

buildout date for the entire complex is best examined by the separate companies involved.

First, Talbot's has completed the first of its projected four phase project on the 82.657 acres which they purchased from the LDC. Phase I is the existing 360,000 square foot distribution center. Phase II will be the expansion of the facility to 627,000 square feet by the year 1993. Phase III and IV are presently targeted for around the year 2000 and will be the expansion of the facility to 1,300,000 square feet.

The Rix-Dunnington warehouse is to be a 100,000 square foot facility to be in operation by 1990. It will be situated on the 24.409 acres at the southwesterly corner of the industrial park. No expansion of this facility is planned at the present time.

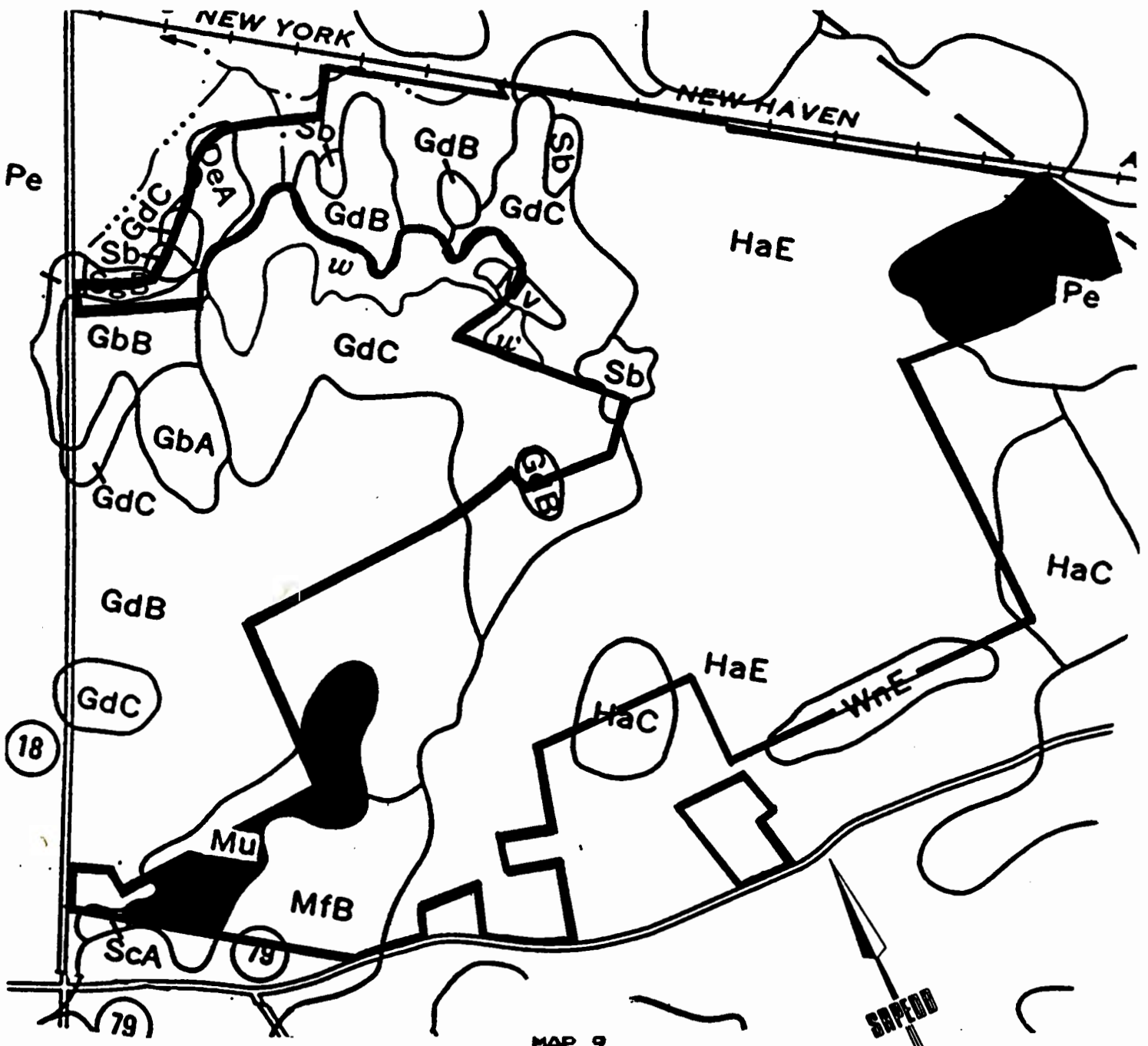
The Thompson Box Company should have completed its facility by 1989. The Dundas Machine Company should have its first phase completed by 1989, and its second phase by 1995. The remaining 36 acres of the industrial park should be sold off and built by 2000.

b. Soils Profile

This site is composed primarily of Hinckley soils with lesser areas of Merrimac, Gloucester, sanded muck, shallow muck, deep muck and peat (see Map 9). The Hinckley and Merrimac soils are formed in thick deposits of sand and gravel and are excessively well drained. They are moderately to rapidly permeable in the upper part and rapidly to very rapidly permeable in the lower part. Water tables in these soils are generally deep (greater than 6 feet).

Gloucester soils are well drained soils that have formed in stony, loose soil material. They are rapidly permeable throughout. Water tables are generally greater than 6 feet. The Gloucester, Hinckley and Merrimac soils pose only slight limitations for the planned development purpose.

Peats are very poorly drained soils developed in well decomposed organic deposits. These soils either have ponded water at the surface or a water table at or near the surface most of the year, making them unsuitable for building or development.



MAP 9  
**GREAT PONDS SOIL MAP**  
 ■ SOILS WITH SEVERE LIMITATIONS  
 1" = 700'

c. Wetlands Profile

The perimeter of this site is surrounded by a variety of wetlands, including mixed freshwater forested scrub shrub swamp, areas of broad leafed deciduous wetland vegetation, freshwater marsh and bogs. There is a minimal amount of wetlands intrusion onto the site in the northwestern corner. There is also an area of hydric soil and wetlands vegetation in the northeastern corner of the site, within the site boundaries. This area, abutting a proposed lot, is undevelopable.

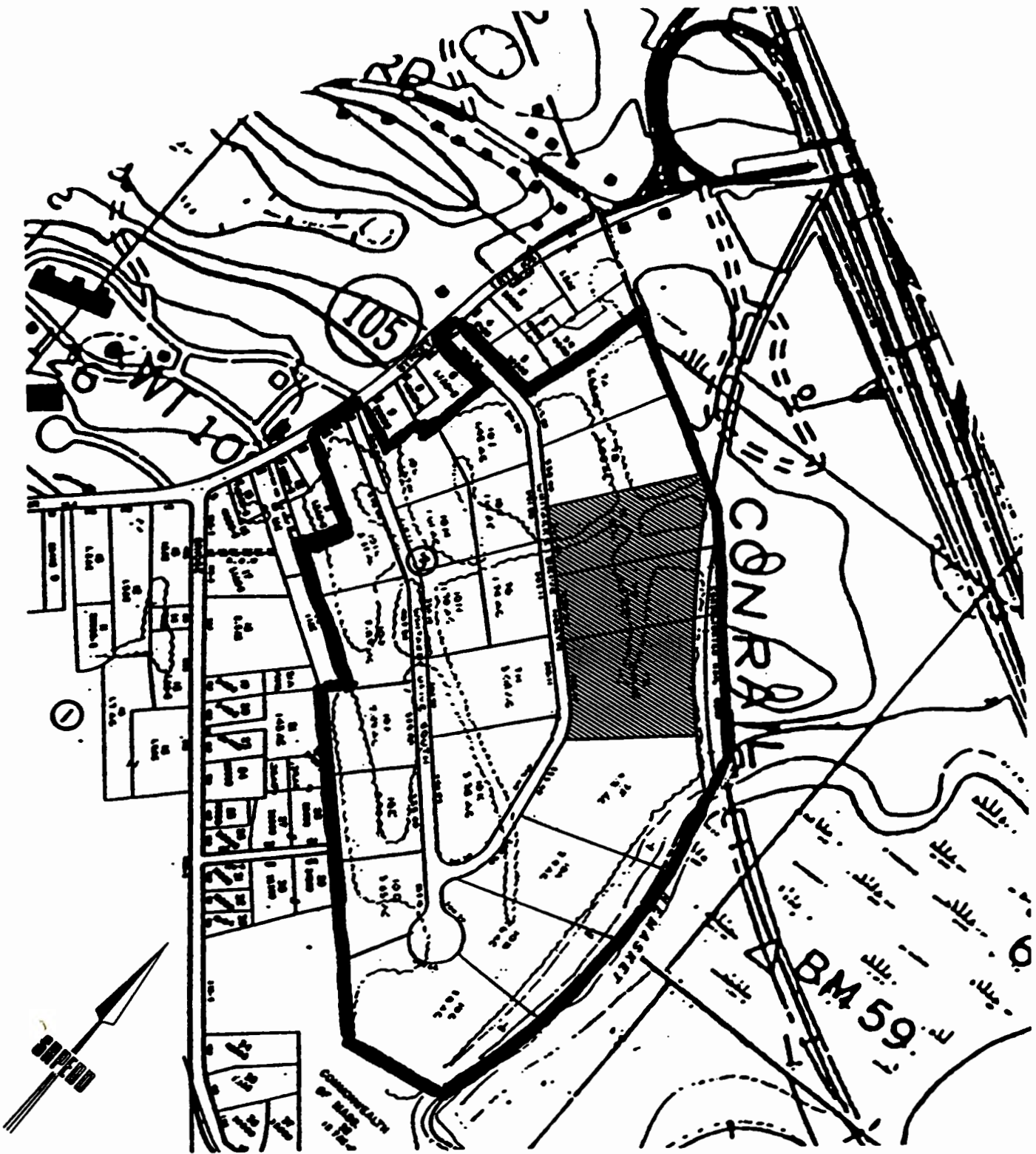
#### 4. Riverside Park

##### a. Landuse and Infrastructure

Riverside Park is located at the intersection of Route 105 and Route 495. It is a 70 acre site consisting of 22 approved building lots. The site will be served by public water from either Middleborough or Taunton, and is the proposed site for the MBTA Middleborough Rail train station (see Map 10).


The site is surrounded by a mixture of commercial (Coldwell Banker, GHR analytical services, and RHS heating sales) and industrial (Country Press Printing in Lakeville and the Ocean Spray processing plant in Middleborough) uses and many residential properties. The site's two access points on Route 105, are expected to draw most of traffic directly off of Route 495 and Route 105 and limit interference with Bridge Street.

The plans for the exact development of the Riverside Park are still preliminary. However, according to the owner (First Middleborough Corp.), the site will most likely contain about 750,000 square feet of buildings, of which approximately 65 percent will be warehouse and distribution, 25 percent will be light industrial, and 10 percent will be office and service. The plan also calls for the MBTA acquiring the



MAP 10

RIVERSIDE PARK SITE CONFIGURATION

 MBTA RAIL TERMINAL  
 1" = 500'



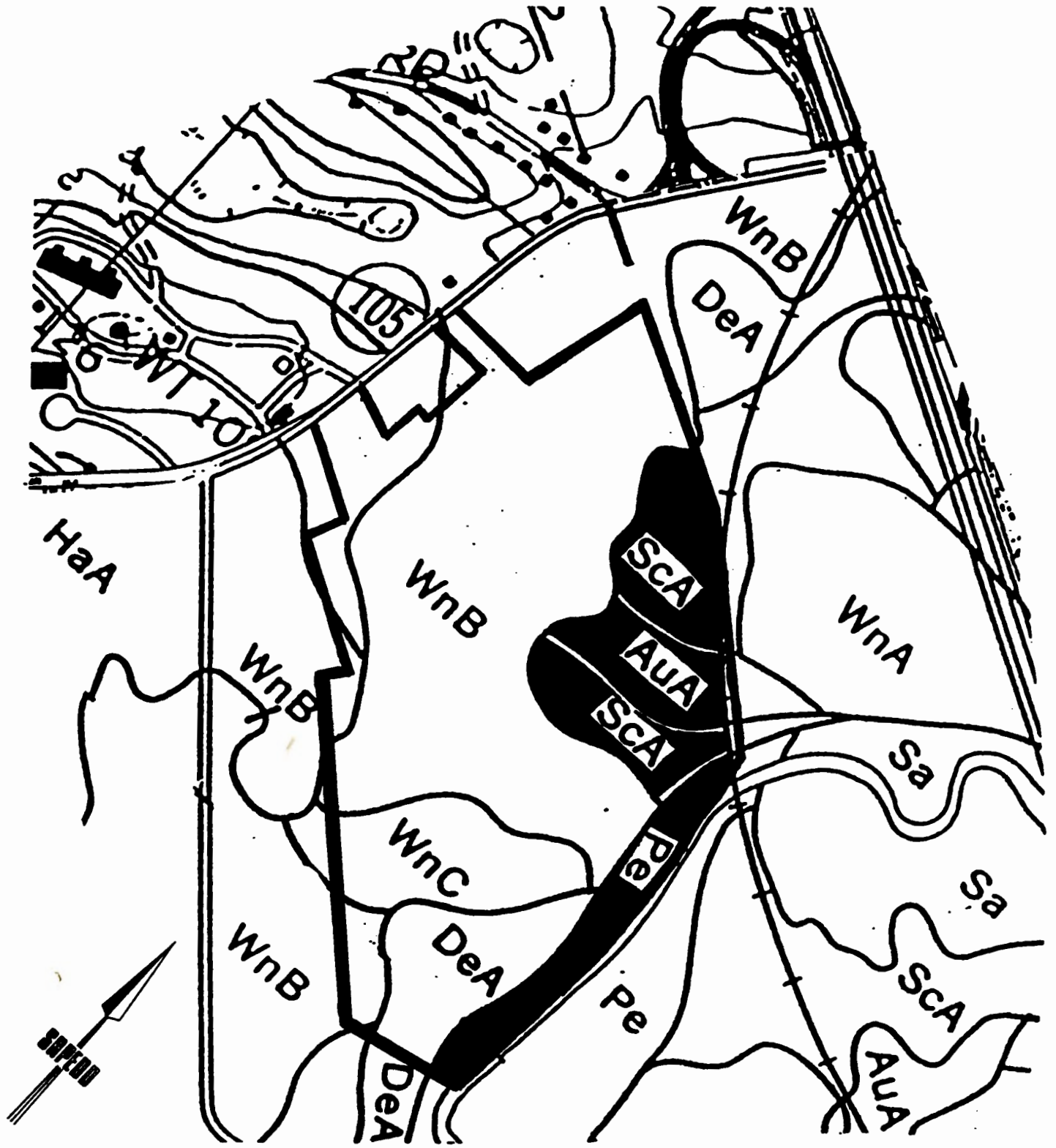
three lots closest to the rail, as well as the construction of a station on another 8 acre parcel.

The projected completion date for both the rail terminal and the industrial park is 1995. Initially, the rail terminal is expected to be constructed with a 500 car parking lot with a possible expansion of 500 more parking spaces at some future date.

b. Soils Profile

This site is composed of large map units of Windsor soils with lesser areas of Au Gres, Scio and Deerfield soils (see Map 11). The Windsor soils are formed in thick deposits of sand and gravel and are excessively well drained. These soils are moderately to rapidly permeable in the upper part and rapidly to very rapidly permeable in the lower part. Water tables in these soils are generally deep (greater than 6 feet). These soils pose only slight limitations to commercial development.

Deerfield soils are moderately well drained soils that have formed in deposits of sand and gravel. They are moderately to rapidly permeable in the upper part and rapidly to very rapidly permeable in the lower part of these soils. Water tables are at a shallow depth (1.5 to 4 feet) during the wet periods of the year. While Deerfield soils pose moderate



MAP 11

RIVERSIDE PARK SOILS MAP

SOILS WITH SEVERE LIMITATIONS  
 FOR DEVELOPMENT  
 1" = 500'

limitations to development due to their seasonal wetness, they can be engineered to accommodate commercial buildings.

The Au Gres soils are poorly and very poorly drained mineral soils that have formed in material ranging from sand and gravel to silt and clay. Permeability varies greatly, depending upon the materials in which they are formed. These soils are wet and have a water table at or near the surface during wet periods of the year, making them largely unsuitable for building.

Scio soils are moderately well drained soils formed in silt material. Permeability of these soils vary greatly depending upon the materials in which they are formed. These soils are wet and have a water table at or near the surface during wet periods of the year. Due to their nature, the development limitations should be addressed on an individual case basis.

c. Wetlands Profile

This site lies within the furthest western boundary of the East Grove Street Well portion of the Nemasket River Recharge area in the Town of Middleborough (as indicated on the Map 12). Areas of freshwater forested scrub shrub swamp, dominated by broad leafed deciduous vegetation, are found just outside of the northwestern and eastern boundaries of the site and in the proximity of and along the banks of the

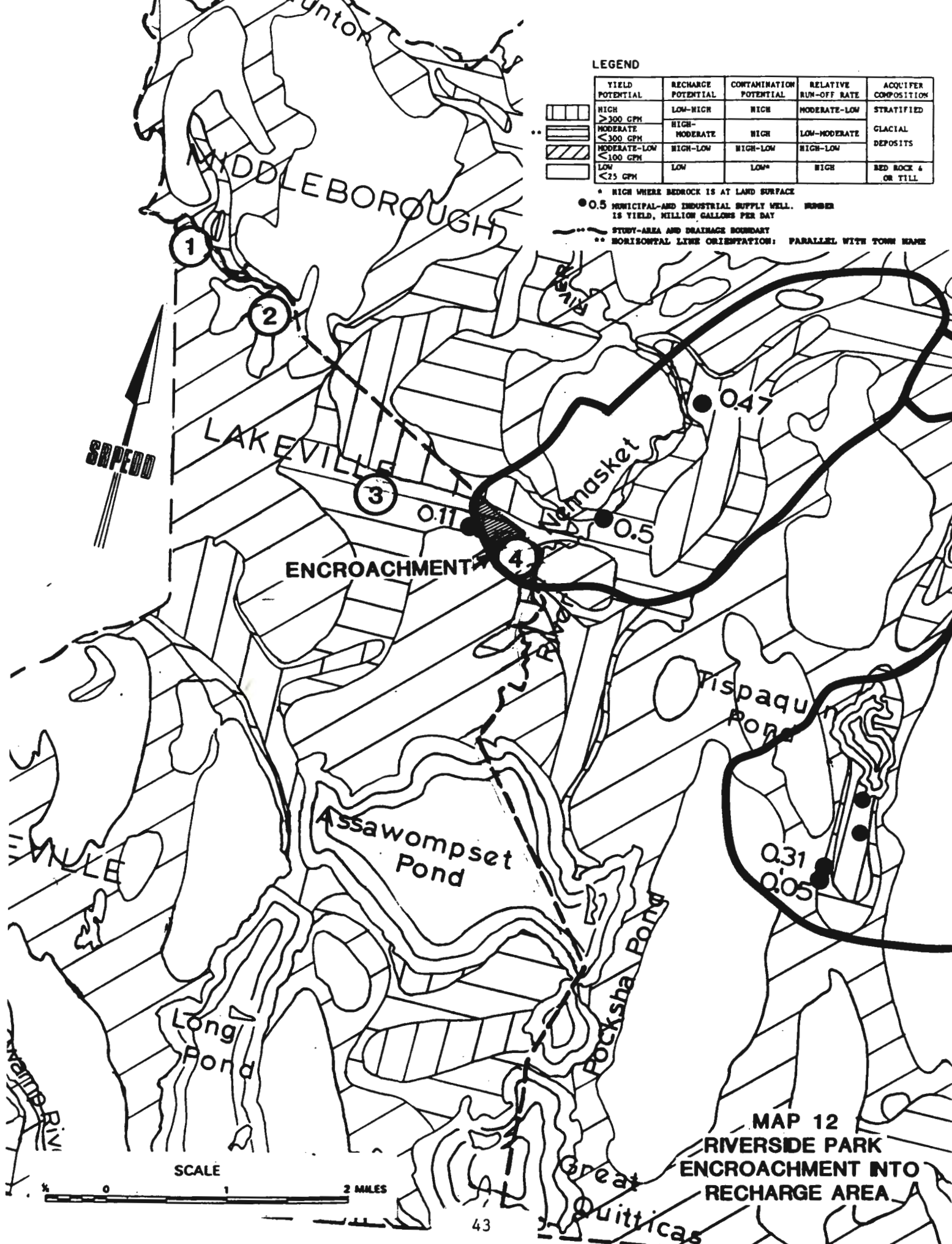
LEGEND

YIELD POTENTIAL	RECHARGE POTENTIAL	CONTAMINATION POTENTIAL	RELATIVE RUN-OFF RATE	AQUIFER COMPOSITION
HIGH >300 GPM	LOW-HIGH	HIGH	MODERATE-LOW	STRATIFIED
MODERATE <300 GPM	HIGH-MODERATE	HIGH	LOW-MODERATE	GLACIAL DEPOSITS
MODERATE-LOW <100 GPM	HIGH-LOW	HIGH-LOW	HIGH-LOW	
LOW <25 GPM	LOW	LOW*	HIGH	RED ROCK & OR TILL

\* HIGH WHERE BEDROCK IS AT LAND SURFACE

● 0.5 MUNICIPAL-AND INDUSTRIAL SUPPLY WELL. NUMBER IS YIELD, MILLION GALLONS PER DAY

--- STUDY-AREA AND DRAINAGE BOUNDARY  
 \*\* HORIZONTAL LINE ORIENTATION: PARALLEL WITH TOWN NAME



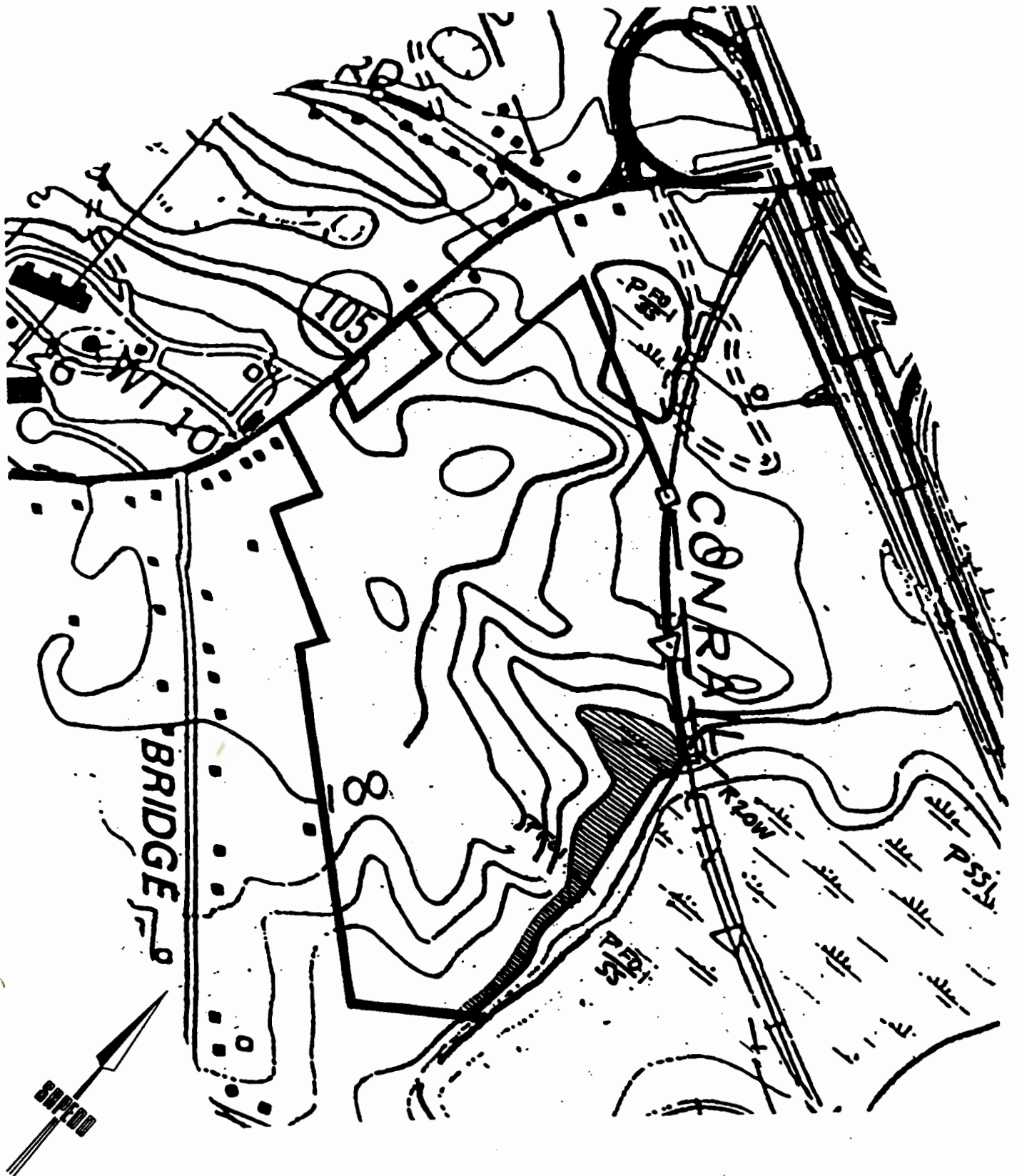
SCALE

0 1 2 MILES

Nemasket River.


The portion of this site that lies within the Nemasket River recharge area is also located within the approximate 100 year flood boundary as delineated on the 1980 National Flood Insurance Program Floodway Map for the Town of Lakeville (Map 13).

The above facts concerning Riverside Park should be taken into consideration regarding proposed development plans. This is particularly important in terms of structural considerations and suitable use.



MAP 13

RIVERSIDE PARK FLOOD MAP

 FLOOD PLAIN ENCROACHMENT  
 FOR DEVELOPMENT  
 1" = 500'

CHAPTER III  
IMPACTS OF DEVELOPMENT

## INTRODUCTION

The preceding chapter presented a brief overview of the population and land use characteristics of the town of Lakeville, as well as a profile of the four development proposals. This Chapter will present the resulting impacts of the developments upon the town. The impacts that are addressed are listed below.

- A. Projections of the primary employment for each of the four developments and the tax benefits to Lakeville.
  
- B. Projections of the secondary employment impacts of the four developments based on national standards and a comparison to several towns in eastern Massachusetts with similar development projects.
  
- C. An estimate of the direct impacts of the four developments on the cost of town services (general government, public safety, public works, health and welfare, recreation, statutory) using an employment anticipation model.
  
- D. An estimate of the percentage of employees in the four developments who will live in Lakeville, the resulting demand for housing, and the aggregate population increase.



- E. An estimate of land use impacts based on the direct impacts of the four developments, land consumed by secondary employers, and land used for residential development associated with the four developments.
  
- F. An estimate of the impacts on housing affordability based on the expected increase in population, the income characteristics of new employees, and the availability of housing in various price ranges as identified by the Multiple Listing Service.
  
- G. An estimate of the impacts on community facilities based on the direct impacts of the four developments, plus estimates of the need for services related to the increase in secondary employment and population.
  
- H. An assignment of transportation impacts based on projections of vehicle trips from the four developments and their assignment to the existing circulation system.

The impacts discussed in this section were limited to only those that were quantifiable. Also, the impacts are addressed on a five year basis from 1990 through 2005, throughout this report.

## TAX REVENUE AND PRIMARY EMPLOYMENT

The most fundamental portion of this impact analysis is the estimates of the future municipal revenues, total direct (or primary) employment and total direct wages for each of the four developments. These estimates are based upon assumptions for each development as to the floor area, the type and average cost of construction, industry type and average number of employees per square foot in that given industry, and the annual wage by industry in the New Bedford SMSA. The estimates are made for five year intervals beginning in 1990 and projected through the year 2005.

### METHODOLOGY

The methodology employed to estimate the revenues, employment and wages was the simple use of multipliers in association with the projections of the future site plans for each of the four developments.

(a) The estimate of tax revenues were generated by applying the estimates of building value for each given land use obtained from the Mean's Building Cost Manual plus the assessed value of the land, to the Town's tax rate of \$9.70 per thousand. (b) Primary employment was estimated by use of the Institute of Traffic Engineers multipliers, which represent a national average of employee per square foot of

building space by the land use.

(c) The wages of the primary employment were estimated by use of the average wage rates in the New Bedford SMSA for the different industrial types. These wage estimates, obtained from the Massachusetts Division of Employment Securities for 1986, were then multiplied by the number of employees in each employment type for three of the four developments. For the Ocean Spray development, more accurate wage data was available from their 1985 environmental report (EIR) and thus substituted for the New Bedford SMSA estimates.

#### ANALYSIS

Due to the repetition of the information for each of the four developments, the assumptions are shown in Table 2. The actual projections are displayed in Table 3.

As observed in Table 3, in 1990 the total real estate taxes generated by the four developments will be \$353,186.00, the direct (or primary) employment will be 1,442 persons, and their wages will be slightly above 28.75 million per year. By the year 2005, it is projected that the real estate taxes will total approximately 1.2 million dollars, the direct employment will reach 5,579 persons, and their wages will be around 113.25 million.

TABLE 2  
DEVELOPMENT ASSUMPTIONS

PROJECT NAME	DEVELOPEMNT CHARACTERISTICS	BUILDING VALUE	TAX RATE APPLIED TO LAND PLUS BUILDING	EMPLOYMENT PER SQUARE FOOT	EMPLOYEE WAGE RATE
LAKEPORT PARK:	20 INDUSTRIAL LOTS CONTAINING 25,000 SQUARE FOOT BLDGS BUILDOUT BY 2000	\$30 PER SQUARE FOOT FOR WAREHOUSE SPACE	\$9.70 / \$1000 ASSESSED VALUE	90% WAREHOUSING @ 1.25 EMP/1000 SF 10% OFFICE SPACE @ 4.7 EMP/1000 SF	WAREHOUSE WAGE BASED ON SIC 50-51 \$19,923 PER YEAR OFFICE WAGE BASED ON SIC 70-89 \$14,304 PER YEAR
OCEAN SPRAY:	100% OFFICE SPACE BUILDOUT BY 1995	\$57.60 PER SQ. FT. FOR OFFICE SPACE	\$9.70 / \$1000 ASSESSED VALUE	ALL OFFICE SPACE @ 4.7 EMP/1000 SF	BASED ON OCEAN SPRAY ESTIMATES BY JOB
GREAT PONDS:	93% WAREHOUSING 7% MANUFACTURING BUILDOUT BY 2005	\$30 PER SQUARE FOOT FOR WAREHOUSE SPACE	\$9.70 / \$1000 ASSESSED VALUE	93% WAREHOUSING @ 1.25 EMP/1000 SF 7% MANUFACTURING @ 1.7 EMP/1000 SF	WAREHOUSE WAGE BASED ON SIC 50-51 \$19,923 PER YEAR MANUFACTURING BASED ON SIC 39 \$20,253 PER YEAR
RIVERSIDE PARK:	65% WAREHOUSING 25% MANUFACTURING 10% OFFICE BUILDOUT BY 1995	\$30 PER SQUARE FOOT FOR WAREHOUSE SPACE \$33.70 PER SQ. FT. FOR MANUFACTURING \$57.60 PER SQ. FT. FOR OFFICE SPACE	\$9.70 / \$1000 ASSESSED VALUE	65% WAREHOUSING @ 1.25 EMP/1000 SF 25% MANUFACTURING @ 1.7 EMP/1000 SF 10% OFFICE SPACE @ 4.7 EMP/1000 SF	WAREHOUSE WAGE BASED ON SIC 50-51 \$19,923 PER YEAR MANUFACTURING BASED ON SIC 39 \$20,253 PER YEAR 1/2 OFFICE BASED ON SIC 60-67 1/2 OFFICE BASED ON SIC 70-89
Sources:	DISCUSSIONS WITH INDIVIDUAL OWNERS	MEANS BUILDING COST DATA (1986)	TOWN ASSESSORS	INSTITUTE OF TRAFFIC ENGINEERS ITE, 1985 REPORT	STATE DIVISION OF EMPLOYMENT SECURITIES 1986, NEW BEDFORD SMSA ESTIMATES

TABLE 3  
LAKEVILLE INDUSTRIAL PARKS  
FIVE YEAR PROJECTIONS

Year 1990				
	FLOOR AREA	TAXES	EMPLOYMENT	WAGES
LAKEPORT	100,000	34,300	160	3,097,776
OCEAN SPRAY	150,000	87,896	360	7,380,000
GREAT PONDS	531,000	159,721	655	13,049,565
RIVERSIDE	200,000	71,269	267	5,319,441
TOTAL	981,000	353,186	1,442	28,846,782
Year 1995				
	FLOOR AREA	TAXES	EMPLOYMENT	WAGES
LAKEPORT	250,000	77,950	399	7,720,239
OCEAN SPRAY	310,000	177,291	610	14,115,000
GREAT PONDS	1,203,000	355,273	1,406	28,003,022
RIVERSIDE	750,000	231,319	1,281	25,085,971
TOTAL	2,513,000	841,834	3,695	74,924,232
Year 2000				
	FLOOR AREA	TAXES	EMPLOYMENT	WAGES
LAKEPORT	500,000	150,700	798	15,440,477
OCEAN SPRAY	310,000	177,291	930	21,525,000
GREAT PONDS	1,846,000	542,386	2,191	43,653,783
RIVERSIDE	750,000	231,319	1,281	25,085,971
TOTAL	3,406,000	1,101,697	5,199	105,705,231
Year 2005				
	FLOOR AREA	TAXES	EMPLOYMENT	WAGES
LAKEPORT	500,000	150,700	798	15,440,477
OCEAN SPRAY	310,000	177,291	930	21,525,000
GREAT PONDS	2,181,000	639,871	2,571	51,224,523
RIVERSIDE	750,000	231,319	1,281	25,085,971
TOTAL	3,741,000	1,199,182	5,579	113,275,971

Sources:

- \* Wage rates are based upon 1986 estimates by employment sector from the State Division Of Employment Securities for the NewBedford SMSA.
- \* Building areas are estimates based on available information.
- \* Property taxes are based upon building values calculated via costing data from Means Construction Cost Manual.

## SECONDARY EMPLOYMENT

Secondary employment is the employment caused by the increase in demand resulting from the incoming industries and their personnel. This is made up of new businesses being established and existing businesses expanding in several areas: businesses that supply raw materials to the primary employers, businesses that provide services (janitorial, accounting, etc.) to the primary employer, and businesses that provide services (convenience stores, restaurants, etc.) to the new employees.

As with direct employment, secondary employment is calculated using national multipliers based upon the number of primary employees created by the developments and the population of the affected community. In this case, a multiplier of 0.4 was used, or for every 10 direct employees, there would be 4 indirect employees within the community. This calculation standard is based on the Edward Ullman and Michael Dacey study on "The Minimum Requirements Approach to the Urban Economic Base."

Table 4 presents the summary of the employment projections, direct and secondary, for the four developments. Tables 5, 6, 7 and 8 are the employment projections for each project, including income and secondary employment for the five year

periods.

As can be seen from the tables, there is going to be an increase in total employment of 2,019 employees in 1990, 5,173 by 1995, 7,279 by 2000, and 7,811 by the year 2005. The breakdown of the secondary employment by industrial categories will be presented in the subsection on land use impacts (subsection D).

Tables 5 through 8 also indicate the total incomes generated by the direct employment of each development. Tables 6, 7 and 8 use estimates as to the percent of employment in each SIC sector at the New Bedford SMSA wage rate, while Table 5 uses detailed estimates obtained from the Ocean Spray Corporation directly; thus the desegregation into low, moderate and high categories (see Table 2 for assumptions).

TABLE 4  
 EMPLOYMENT INCREASE  
 FIVE YEAR SUMMARY

1990		2000	
DIRECT EMPLOYMENT	1442	DIRECT EMPLOYMENT	5199
INDIRECT EMPLOYMENT	577	INDIRECT EMPLOYMENT	2080
TOTAL EMPLOYMENT	2019	TOTAL EMPLOYMENT	7279
-----		-----	
1995		2005	
DIRECT EMPLOYMENT	3695	DIRECT EMPLOYMENT	5579
INDIRECT EMPLOYMENT	1478	INDIRECT EMPLOYMENT	2232
TOTAL EMPLOYMENT	5173	TOTAL EMPLOYMENT	7811
-----		-----	

Source: Canter, "Impact of Growth", 1986;  
 Individual, EIS Reports.



TABLE 5  
 EMPLOYMENT AND INCOME PROJECTIONS FOR  
 OCEAN SPRAY CORPORATE HEADQUARTERS

YEAR	# OF JOBS			DIRECT EMPLOYMENT	INCOME			INCOME TOTAL	SECONDARY EMPLOYMENT
	LOW	MODERATE	HIGH		LOW	MODERATE	HIGH		
1990	90	234	36	360	15,000	20,000	37,500	7,380,000	144
1995	163	291	156	610	15,000	20,000	37,500	14,115,000	244
2000	248	444	238	930	15,000	20,000	37,500	21,525,000	372
2005	248	444	238	930	15,000	20,000	37,500	21,525,000	372

Sources: Ocean Spray EIS, 1985;  
 Canter, "Impact of Growth", 1986.

TABLE 6  
 EMPLOYMENT AND INCOME PROJECTIONS FOR  
 LAKEPORT INDUSTRIAL PARK

YEAR	BUILDING AREA	DIRECT EMPLOYMENT	INCOME TOTAL	SECONDARY EMPLOYMENT
1990	100,000	160	3,097,776	64
1995	250,000	399	7,720,239	160
2000	500,000	798	15,440,477	319
2005	500,000	798	15,440,477	319

Sources: Lakeport Park EIS, 1986  
 Canter, "Impact of Growth", 1986.

TABLE 7  
 EMPLOYMENT AND INCOME PROJECTIONS FOR  
 GREAT PONDS INDUSTRIAL PARK

YEAR	COMPANY NAME	BUILDING AREA	DIRECT EMPLOYMENT	INCOME TOTAL	SECONDARY EMPLOYMENT
1990	TALBOT'S	360,000	400	7,969,200	
	RIX-DUNN	100,000	200	3,984,600	
	THOMP BOX	40,000	40	796,920	
	DUNDAS	31,000	15	298,845	
	NEW BLDGS	0	0	0	
TOTAL		531,000	655	13,049,565	262
1995	TALBOT'S	627,000	700	13,946,100	
	RIX-DUNN	100,000	200	3,984,600	
	THOMP BOX	40,000	40	796,920	
	DUNDAS	131,000	50	996,150	
	NEW BLDGS	305,000	416	8,313,536	
TOTAL		1,203,000	1,406	28,037,306	562
2000	TALBOT'S	965,000	1,070	21,317,610	
	RIX-DUNN	100,000	200	3,984,600	
	THOMP BOX	40,000	40	796,920	
	DUNDAS	131,000	50	996,150	
	NEW BLDGS	610,000	831	16,627,071	
TOTAL		1,846,000	2,191	43,722,351	876
2005	TALBOT'S	1,300,000	1,450	28,888,350	
	RIX-DUNN	100,000	200	3,984,600	
	THOMP BOX	40,000	40	796,920	
	DUNDAS	131,000	50	996,150	
	NEW BLDGS	610,000	831	16,627,071	
TOTAL		2,181,000	2,571	51,293,091	1,028

Sources: Great Ponds EIS, 1986; Lakeville Development Corp, 1988;  
 Talbot's Management, 1988; Canter, "Impact of Growth", 1986.

TABLE 8  
 EMPLOYMENT AND INCOME PROJECTIONS FOR  
 RIVERSIDE PARK

YEAR	BUILDING AREA	DIRECT EMPLOYMENT	INCOME TOTAL	SECONDARY EMPLOYMENT
1990	200,000	267	5,319,441	107
1995	750,000	1,281	25,085,971	512
2000	750,000	1,281	25,085,971	512
2005	750,000	1,281	25,085,971	512

Sources: Riverside Park EIS, 1985; Middleborough Corp. Management, 1988; Canter, "Impact of Growth", 1986.

## Comparative Analysis

In order to obtain a basis for the projected growth of Lakeville, a comparison is made to three towns that had experienced a major increase in their industrial development between 1970 and 1980. The towns examined are North Attleborough, Bridgewater and Dedham. North Attleborough and Bridgewater are chosen due to their locational similarities with Lakeville. Dedham is chosen because it is located along the original Boston ring road, Rte 128, which is becoming replaced by Rte 495.

Table 9 displays the comparison towns. The column entitled "% of Total Employment" indicates the percentage of the total employment in the municipality that is in the each sector. In the Finance, Insurance & Real Estate sector, Lakeville is only slightly below the other towns. The Contract Construction sector is almost double the other towns, on average, and reflects the large amount of development that is currently taking place in Lakeville. Lakeville's Manufacturing sector is significantly below that of the other towns, due to the rural town's character. The Wholesale & Retail Trade sector of Lakeville is greatly below that of both Dedham and Bridgewater, although it is larger than North Attleborough's. And finally the Service Employment is at least double that of the other towns.

The usefulness of this comparative analysis is that it indicates the employment sectors which are likely to change as a result of the industrial development. Therefore, it is expected that the employment distribution in Lakeville will, over time, resemble that of the towns compared. For example, it is likely that employment in the Wholesale and Retail Trade sector will represent a much larger portion of the total employment in the future. This supports the estimate of an increase in secondary employment, although it does not indicate the magnitude of that increase.

TABLE 9  
COMPARITIVE ANALYSIS OF  
SOCIO-ECONOMIC CHARACTERISTICS

		NORTH ATTLEBOROUGH			BRIDGEWATER			DEDHAM			LAKEVILLE		
	YEAR	NO.	% CHANGE	% OF TOT EPLMT	NO.	% CHANGE	% OF TOT EPLMT	NO.	% CHANGE	% OF TOT EPLMT	NO.	% CHANGE	% OF TOT EPLMT
POPULATION	1950	12146						18487			2066		
	1960	14777	22%		10276			23869	29%		3209	55%	
	1970	18665	26%		12902	26%		26938	13%		4376	36%	
	1980	21095	13%		17202	33%		25298	-6%		5931	36%	
HOUSING UNITS	1970	6013			3160			7776			1318		
	1980	7579	26%		5084	61%		8409	8%		1980	50%	
TOTAL EMPLOYMENT	1970	4261			1812			9833			314		
	1980	5162	21%		1953	8%		10900	11%		385	23%	
	1985	6004	16%		2312	18%		11894	9%		676	76%	
FINANCE INSURANCE REAL ESTATE	1970	151		3.5%	82		4.5%	773		7.9%	0		0.0%
	1980	262	74%	5.1%	112	37%	5.7%	905	17%	8.3%	15		3.9%
	1985	261	0%	4.3%	122	9%	5.3%	1128	25%	9.5%	25		3.7%
CONTRACT CONSTRUCTION	1970	488		11.5%	41		2.3%	1386		14.1%	35		11.1%
	1980	283	-42%	5.5%	72	76%	3.7%	639	-54%	5.9%	55	57%	14.3%
	1985	359	27%	6.0%	184	156%	8.0%	851	33%	7.2%	88	60%	13.0%
MANUFACTURING TRADES	1970	2300		54.0%	1215		67.1%	2445		24.9%	0		0.0%
	1980	2591	13%	50.2%	973	-20%	49.8%	2176	-11%	20.0%	10		2.6%
	1985	2789	8%	46.5%	627	-36%	27.1%	1487	-32%	12.5%	26	160%	3.8%
WHOLESALE RETAIL TRADE	1970	945		22.2%	335		18.5%	3619		36.8%	130		41.4%
	1980	1330	41%	25.8%	603	80%	30.9%	5237	45%	48.0%	147	13%	38.2%
	1985	1530	15%	25.5%	1055	75%	45.6%	5465	4%	45.9%	194	32%	28.7%
SERVICE EMPLOYMENT	1970	295		6.9%	97		5.4%	1390		14.1%	122		38.9%
	1980	414	40%	8.0%	119	23%	6.1%	1516	9%	13.9%	169	39%	43.9%
	1985	737	78%	12.3%	240	102%	10.4%	2501	65%	21.0%	327	93%	48.4%
BUILDING PERMITS FOR NEW RESIDENTIAL CONSTRUCTION	1980	61			106			22			43		
	1981	60	-2%		386	264%		45	105%		35	-19%	
	1982	381	535%		37	-90%		30	-33%		31	-11%	
	1983	119	-69%		48	30%		41	37%		96	210%	
	1984	204	71%		123	156%		35	-15%		114	19%	
	1985	317	55%		142	15%		48	37%		162	42%	
Total		1142			842			221			481		

Sources: U.S. Census, 1950, '60, '70, 1980; Annual Building Permit Data, 1980-1985; Massachusetts Division of Employment Securities, 1986 report.

## FISCAL IMPACTS

The following is an analysis of municipal costs of the four developments by use of the employment anticipation method. This method, developed by the Center for Urban Policy Research at Rutgers University, predicts a change in municipal costs based on an anticipated change in local commercial and industrial employment levels and per capita municipal costs.

The principal areas of impact are on public safety, public works and statutory and unclassified expenses, and insurance costs applicable to other town departments. Statutory and unclassified expenses also include a number of miscellaneous expenses such as unpaid bills from prior years and the Plymouth County Assessment. The estimated cost to Lakeville, as displayed in Table 10, ranges from \$107,187 in 1990 to \$414,699 in the year 2005.

Revenues from the projects are estimated based on the estimated real property value of the land and buildings in projects and the current Lakeville real property tax rate. It is estimated (based on calculations contained in Table 3) that real property tax revenues from all four developments will range from \$353,186 in 1990 to \$1,199,182 in 2005.

TABLE 10  
PROJECTED EXPENDITURES BASED ON  
EMPLOYMENT ANTICIPATION METHOD

Expenditure Category	YEAR			
	1990	1995	2000	2005
General Government	\$1,243	\$3,185	\$4,482	\$4,810
Public Safety	\$25,482	\$65,295	\$91,872	\$98,587
DPW Highway	\$21,223	\$54,381	\$76,516	\$82,109
Board of Health (land fill)	\$3,229	\$8,275	\$11,643	\$12,494
Health & Welfare	\$4,119	\$10,554	\$14,850	\$15,936
Recreation & Culture	\$12,256	\$31,405	\$44,188	\$47,417
Statutory & Unclassified	\$39,201	\$100,450	\$141,337	\$151,668
Debt Service	\$434	\$1,112	\$1,564	\$1,678
<b>TOTAL EXPENDITURES</b>	<b>\$107,187</b>	<b>\$274,657</b>	<b>\$386,452</b>	<b>\$414,699</b>
<b>PROJECTED REVENUES</b> (from Table 3)	<b>\$353,186</b>	<b>\$841,834</b>	<b>\$1,101,697</b>	<b>\$1,199,182</b>
<b>NET REVENUE</b>	<b>\$245,999</b>	<b>\$567,177</b>	<b>\$715,245</b>	<b>\$784,483</b>

Sources: Burchell and Listokin, Fiscal Impact Handbook, 1983;  
Lakeville 1986 Annual Report.

The bottom line of Table 10 predicts the net revenue based upon the estimated increase to real property tax, minus the estimated increases in municipal costs. As can be observed, it is estimated that Lakeville will obtain a net gain from the four developments of \$245,999 in 1990, and \$784,483 in 2005.

In addition to the real property tax on land and buildings, a small amount of revenue will be raised from other sources. Additional revenue will be raised via personal property tax on equipment for non-incorporated businesses, real property taxes on the value of utility lines (principally telephone



lines), and the motor vehicle excise tax on all registered vehicles garaged in Lakeville. Revenues will also be raised from a variety of miscellaneous sources such as fees for permits (building, wiring, etc.), police extra duty charges and parking tickets.

## HOUSING AND POPULATION INCREASE

### 1. Baseline

In order to determine the impacts of the four developments on Lakeville over the next fifteen plus years, it is necessary to project the future changes in the town's population and housing without the developments. This was achieved by using a modified cohort survival population projection technique.

The modified cohort survival technique uses the population trends from the 1970 and 1980 Federal Census and the 1985 State Census as well as the recent trend of building permits (obtained annually from the Town through 1986) and forecasts those trends into the future. In this case, a simple linear regression of the building permit data was used (from 1970 through 1986) to estimate future growth while normalizing the extremely high rate of building activity in Lakeville over the last four years. The population projection is shown in Table 11 as the Baseline Trend Growth.

The Baseline Trend Growth indicates that the population will reach 13,986 by 2005. The total number of occupied housing units will be 4,995. Although recent sales data indicates that Lakeville's vacancy rate is around 2%, the housing statistics used in this case are from the 1980 Federal Census, which indicated a 4.5% vacancy rate. For this

TABLE 11  
ESTIMATED HOUSING IMPACTS ON LAKEVILLE DUE TO INDUSTRIAL DEVELOPMENT  
BASED ON NATIONAL AVERAGES

	Year:	1980	1985	1990	1995	2000	2005
<b>BASELINE TREND GROWTH</b>							
population		5,931	6,785	8,431	10,039	11,892	13,986
occupied housing		1,891	2,210	2,839	3,450	4,173	4,995
total housing							
vacancy 4.50%		1,980	2,310	2,966	3,605	4,360	5,220
unoccupied housing		89	99	128	155	188	225
<b>LAKEVILLE'S INDUCED GROWTH</b>							
<b>In-Migrant Workers</b>							
direct workers		0	0	72	185	260	279
indirect workers		0	0	29	74	104	112
Population		0	0	260	654	900	950
<b>Cumulative Housing Requirements</b>							
single-families		0	0	43	110	155	166
multi-families		0	0	12	32	45	48
mobile-homes		0	0	27	70	98	106
other		0	0	5	13	18	19
total		0	0	88	225	316	339
<b>Net Five Year Housing Requirements</b>							
single-families		0	0	43	67	45	11
multi-families		0	0	12	20	13	3
mobile-homes		0	0	27	43	28	7
other		0	0	5	8	5	1
total		0	0	88	137	91	23
<b>TOTAL GROWTH INCLUDING INDUCED GROWTH</b>							
population		5,931	6,785	8,691	10,693	12,792	14,936
occupied housing		1,891	2,210	2,926	3,675	4,488	5,334
total housing							
vacancy 4.50%		1,980	2,310	3,058	3,840	4,690	5,574
unoccupied housing		89	99	132	165	202	240
<b>Percent Induced Housing Requirements Over Baseline</b>							
		0.0%	0.0%	3.1%	6.5%	7.6%	6.8%

Sources: Population projections based on SRPEDD's 1988 Cohort Survival Projection;  
Multipliers used, were obtained from the book "Impact Of Growth", Lewis Publishers, Inc.  
\* All Multipliers are listed in Appendix.

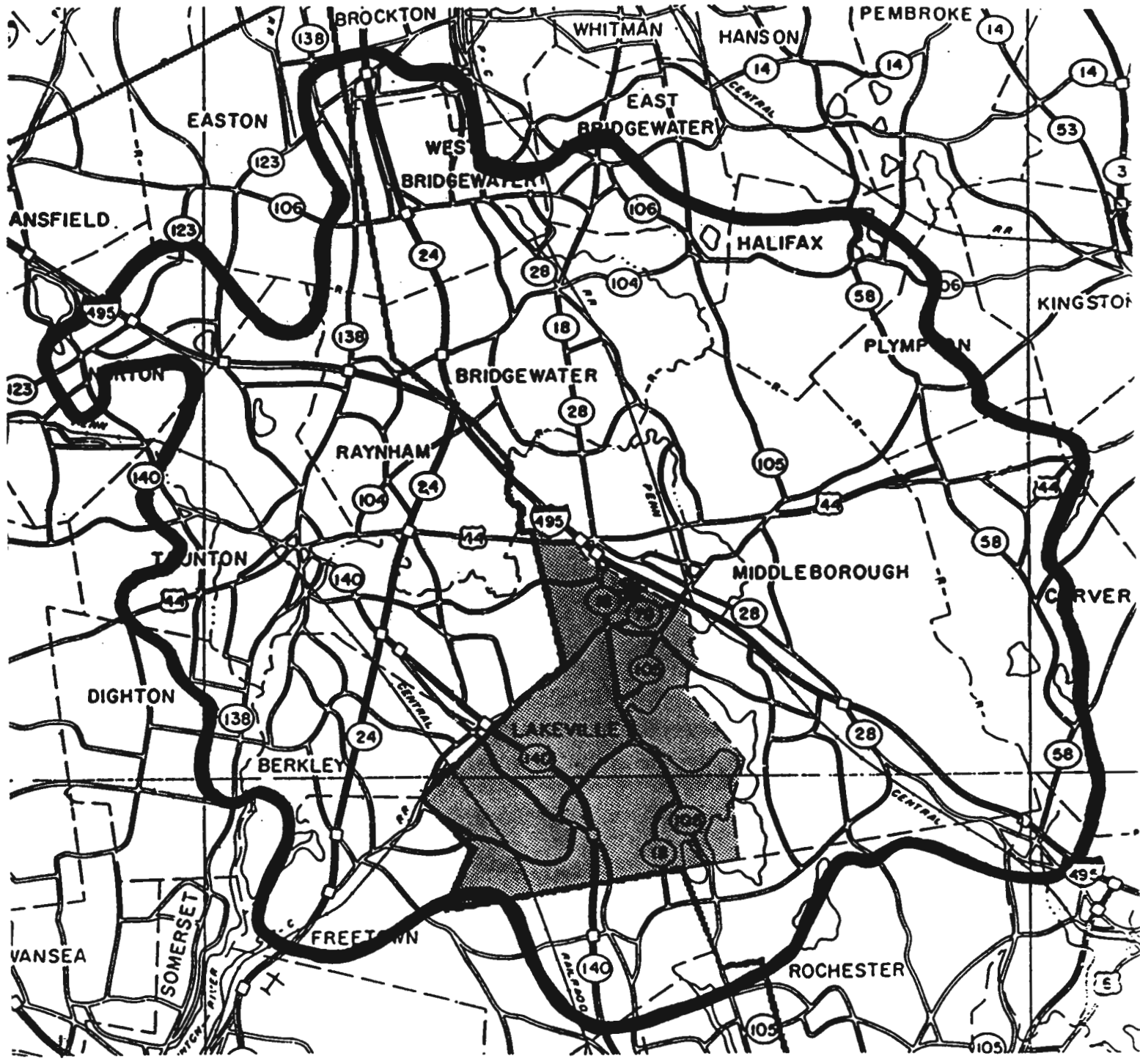
reason, we generally refer to the total occupied housing units rather than the total housing units.

It should be noted that the individual figures in the following tables may not sum to the exact totals. This is a result of the rounding and not an error in the addition.

## 2. Region Of Influence

The size of the four developments and their proximity to Route 495 made it necessary to look at the "region of influence" (ROI) in order to determine the direct impacts on Lakeville (Map 14). The region of influence was arrived at by using the average Massachusetts mean travel time to work, 20 minutes, and the actual driving distance at a reasonable speed to the limits of that travel time. It was assumed that fifteen minutes would be the maximum time spent on a major highway (Routes 495, 24 & 140) in order to allow time to navigate from the interchange to a residential location.

Lakeville's total land area makes up approximately 11% of the entire region of influence. This would indicate that approximately 11% of the mean of the work force would want to live in Lakeville. A 50% weight was placed on this factor to reflect those employees who would want to live beyond that mean travel time, and thus Lakeville would contain 5.5% of the total work force generated by the four developments.



**MAP 14**  
**AREA MAP CORRESPONDING TO**  
**20 MINUTE TRAVEL TIME TO WORK**  
**FROM CENTRAL LOCATION**

The estimate of the resident employees is on an area basis and does not reflect the greater supply of available affordable housing units in the surrounding towns.

### 3. Induced Housing Demand and Population Increase

The "Lakeville's Induced Growth" section of Table 11 relates the in-migration of employees to the number and preference of housing units needed by the workers. These figures are derived from national standards which allot different quantities of workers per household and workers families per household in different housing types (see Appendix for multipliers). Although these housing types are unavailable under present zoning, this table still reflects the demand for these housing types which will be created by the four developments. This will be discussed in further detail in the section on land use impacts (subsection D).

The "Cumulative Housing Requirements" section is the total housing units required to house the workers who wish to live in Lakeville. The "Net Five Year Housing Requirements" is the difference between the cumulative total for that period and the cumulative total for the preceding period. Thus, it is the amount of housing required from one period to the next. For single family homes in 1995 the net requirement is 67, (ie. 110 minus 43).

The section of Table 11 entitled "Total Growth" is the baseline population projection plus the expected number of new employees and their families. These projections for total population are also calculated using the multipliers

for the number of workers per household and the number of family members per worker. This indicates that by the year 2005, there will be a total population of 14,936 and an occupied housing supply of 5,334 units within Lakeville. Thus an increase of 950 persons, or 6.8% over the baseline projection, is expected as a result of the four developments.

Table 12 is identical to Table 11 except for the multipliers used to calculate housing demand. Table 12 applies the averages obtained from the "Outside SMSA" category for Massachusetts from the 1980 Federal Census. The results of this change was a 39% increase in single-family housing demand and a 93% decrease in mobile-homes. This lowers the total housing demand by 9 units. The induced population is decreased by 25 persons. (Table 12 is for comparison purpose only, it displays the relationship of population to housing type and zoning).

An important element of these housing and population projections is that they are based upon one worker per family household. Thus, it does not take into account the families where both the husband and wife work in the same industry or where the husband or wife works in a secondary industry. Therefore, the estimate of population and housing is likely to be above the actual increase.



TABLE 12  
 ESTIMATED HOUSING IMPACTS ON LAKEVILLE DUE TO INDUSTRIAL DEVELOPMENT  
 BASED ON MASSACHUSETTS (OUTSIDE SMSA'S) AVERAGE

	Year:	1980	1985	1990	1995	2000	2005
<b>BASELINE TREND GROWTH</b>							
population		5,931	6,785	8,431	10,039	11,892	13,986
occupied housing		1,891	2,210	2,839	3,450	4,173	4,995
total housing							
vacancy 4.50%		1,980	2,310	2,966	3,605	4,360	5,220
unoccupied housing		89	99	128	155	188	225
<b>LAKEVILLE'S INDUCED GROWTH</b>							
<b>In-Migrant Workers</b>							
direct workers		0	0	72	185	260	279
indirect workers		0	0	29	74	104	112
Population		0	0	253	637	877	925
<b>Cumulative Housing Requirements</b>							
single-families		0	0	60	153	215	231
multi-families		0	0	24	61	86	92
mobile-homes		0	0	2	4	6	7
total		0	0	85	219	308	330
<b>Net Five Year Housing Requirements</b>							
single-families		0	0	60	93	62	16
multi-families		0	0	24	37	25	6
mobile-homes		0	0	2	3	2	0
total		0	0	85	133	89	23
<b>TOTAL GROWTH INCLUDING INDUCED GROWTH</b>							
population		5,931	6,785	8,684	10,676	12,769	14,911
occupied housing		1,891	2,210	2,924	3,669	4,480	5,325
total housing							
vacancy 4.50%		1,980	2,310	3,056	3,834	4,682	5,565
unoccupied housing		89	99	132	165	202	240
<b>Percent Induced Housing Requirements Over Baseline</b>							
		0.0%	0.0%	3.0%	6.3%	7.4%	6.6%

Sources: Population projections based on SRPEDD's 1988 Cohort Survival Projection;  
 Multipliers used were obtained from the book "Impact Of Growth", Lewis Publishers, Inc.  
 \* All multipliers are included in the Appendix.

## LAND USE IMPACTS

The following is an analysis of the projected land consumption as related to the four developments. The land consumption is separated into direct impacts resulting from the use of land for the four developments, the land needed for the housing demand caused by the influx of direct and secondary workers into Lakeville, and secondary employment impacts which attempts to project the amount of land required to provide for the secondary business spawned by the four developments.

### 1. Direct Impacts

Lakeport, Ocean Spray, Great Ponds and Riverside projects account for an aggregate land area of 575 acres within Lakeville (60 acres of the Ocean Spray site are in Middleborough). This figure includes the total land area for buildings, roadways, parking areas, landscaping and open space.

Of the total 575 acres, there are approximately 100 acres of wetlands, 40 acres of open water, 20 acres of bogs and 20 acres of floodplain all of which will remain virtually unaltered. The remainder of land to be developed is primarily open space and woodlands.

## 2. Land Consumed Related to Secondary Housing Impacts

The land use impacts associated with the housing demand created by the four developments are addressed in Table 13, "Acres Required for Residential Development". This table estimates the impacts in terms of that land acreage which will be needed to provide housing for the total number of workers (both direct and secondary) assumed to settle in Lakeville. This estimate was discussed in the "Housing and Population Increase" section of this chapter (Table 11). Under Lakeville's current zoning requirements, the cumulative impact of worker related housing demands within the Town by 2005 is projected to be 326 units, covering 523.6 acres of land. (see Table 13, Scenario 1)

If Lakeville's zoning requirements are changed in the near future to allow mixed, multi-family housing and mobile homes, the housing related land use impact could be lessened. This possibility is reflected in Table 13, Scenario 2, which presents alternative housing impacts based on national averages for housing demand. Under Scenario 2, a greater number of housing units is provided while saving approximately 115 acres of land. The final alternative, Scenario 3, is based upon the recent Massachusetts patterns for housing demand. This shows that the total land acreage can be reduced by 99 acres. Therefore, changes in current zoning requirements could create less of an impact in

TABLE 13  
 ALTERNATIVE ZONING SCENARIOS  
 ACRES OF LAND REQUIRED FOR RESIDENTIAL DEVELOPMENT  
 (Based upon 5% of total employment to locate in Lakeville)

	Year:	1990		1995		2000		2005	
LAKEVILLE PROJECTED HOUSING DEMAND			LAND ACRES		LAND ACRES		LAND ACRES		LAND ACRES
In-Migrant Workers									
direct workers		72		185		260		279	
indirect workers		29		74		104		112	
SCENARIO 1		HOUSING		HOUSING		HOUSING		HOUSING	
Current Zoning		UNITS		UNITS		UNITS		UNITS	
single-families 1 unit/70,000 SF		84	135.3	216	346.8	303	487.5	326	523.6
SCENARIO 2									
Zoning Changes (National Average)									
single-families 1 unit/70,000 SF		43	69.0	110	176.9	155	248.6	166	267.0
multi-families 2 units/ACRE		12	6.2	32	16.0	45	22.5	48	24.2
mobile-homes 1 unit/ACRE		27	27.3	70	70.1	98	98.5	106	105.8
other 2 units/ACRE		5	2.4	13	6.3	18	8.8	19	9.4
total		88	105.0	225	269.2	316	378.4	339	406.4
SCENARIO 3									
Zoning Changes (Massachusetts Average)									
single-families 1 unit/70,000 SF		60	96.4	153	245.9	215	345.5	231	371.2
multi-families 2 units/ACRE		24	12.0	61	30.5	86	43.0	92	46.0
mobile-homes 1 unit/ACRE		2	2.0	4	4.0	6	6.0	7	7.0
total		86	110	218	280	307	395	330	424

\* Scenario 1 is based on current local zoning.

\* Scenario 2 is based on national averages for housing demand (see Table 11).

\* Scenario 3 is based on Massachusetts "Outside SMSA" averages for housing demand (see Table 12).

Source: Multipliers used in this model were obtained from the book "Impact Of Growth", of Lewis Publishers, Inc.

\* All multipliers are listed in Appendix.

addressing projected housing needs.

### 3. Secondary Employment Impacts

The initial businesses, once established, have secondary land use impacts. They attract service oriented activities to serve the needs created within the park itself. The nature of secondary activities within a region will vary according to the diversity and needs of the principal businesses as well as the local or regional labor supply. As it is virtually impossible to predict the nature of the secondary activities, estimate of the occupations for secondary or indirect employment are based upon the most recent available employment trends in Plymouth County (1980 U.S. Census).

The number of secondary workers per occupation was derived by applying the percentages of employees per occupation in Plymouth County to the projected number of secondary workers (listed in Table 14, "Occupation, Plymouth County by Percentage"). These projections are listed in Table 14. According to the cumulative figure, secondary employment is projected to increase by 2,232 positions, within the entire region, by the year 2005.

In order to determine the land acreage and square feet of building space required for the projected secondary workforce, the potential occupations presented in Table 15

TABLE 14  
 OCCUPATIONS, PLYMOUTH COUNTY BY PERCENTAGE  
 FOR 1980  
 (total employed 175,768)

	1		2		3		4				
	ADMIN	PROF/TECH	SALES	ADMIN/SUP	SERV	FARM	PPC&R	MACH/OP	TRANS	LABORS	TOTAL
1980	11.74%	16.39%	10.45%	17.77%	13.71%	1.10%	13.28%	8.81%	3.04%	3.71%	1

TABLE 15  
 PROJECTED SECONDARY EMPLOYMENT BY OCCUPATION FOR LAKEVILLE  
 Total Employment

	ADMIN	PROF/TECH	SALES	ADMIN/SUP	SERV	FARM	PPC&R	MACH/OP	TRANS	LABORS	TOTAL
1990	68	95	60	103	79	6	77	51	18	21	577
1995	174	242	155	263	203	16	196	130	45	55	1478
2000	244	341	217	370	285	23	276	183	63	77	2080
2005	262	366	233	397	306	24	296	197	68	83	2232

TABLE 16  
 CUMULATIVE LAND USE IMPACT OF SECONDARY EMPLOYMENT  
 (in employee square feet & employee acres)

	1990		1995		2000		2005	
	Sq Ft	Acres	Sq Ft	Acres	Sq Ft	Acres	Sq Ft	Acres
OFFICE	86,023	50	220,350	128	310,100	180	332,762	193
WAREHOUSE	31,154	3	79,803	7	112,307	10	120,514	11
INDUSTRIAL	78,676	8	201,530	21	283,614	29	304,340	32
TOTAL	195,853	61	501,683	156	706,022	219	757,616	235

- 1 PROFESSIONAL / TECHNICAL
- 2 ADMINISTRATIVE SUPPORT
- 3 PRECISION PRODUCT CRAFT & REPAIR
- 4 MACHINE OPERATORS / ASSEMBLERS

Sources: U.S. Census 1980. Massachusetts Division of Employment Security, 1986 Report.  
 Institute of Traffic Engineers, 1985.

are categorized into: Office, Warehouse and Industrial services (see Table 16). The number of employees within each of these three categories were then multiplied by standards given by the Institute of Traffic Engineers, Trip Generation Manual to determine the amount of square feet of space and acres of land necessary to accommodate local industrial growth.

The cumulative land use impacts of secondary employment shows an increase of 757,616 square feet of building space and 235 acres of land within the region by the year 2005. It should be noted that these numbers are not necessarily indicative of one or more discrete planned industrial developments.

Rather, these figures may represent additions to existing buildings, buildings on single lots, as well as new developments. Furthermore, it should be remembered that these figures are based upon the total buildout of the four developments being with a primary industries rather than a secondary industries, an assumption which is sure to inflate the actual amount.

## HOUSING AFFORDABILITY

Housing affordability has become a major issue in Massachusetts because housing market imbalances are now affecting households on all rungs of the economic ladder. Today's housing problems are the result of economic growth itself: prosperity means higher incomes and cheaper credit, and these two elements have led in the mid-1980's to a run on the housing stock within the State. Adding to this is the pent up demand from the years of high interest rates and pressure from an unusually large number of new households competing for homes and rental units. Within a span of thirty months beginning in 1984, a median-priced home in the Boston Metropolitan Area became the most expensive median-priced home in the United States, affordable for only a small segment of Massachusetts households.

Lakeville is no exception to this tremendous increase in housing prices. According to the Multiple Listing Service, there are 89 housing units on the market in Lakeville, with an average asking price of \$211,000. The price ranges and units available in Lakeville are listed in the first and second column of Table 17.



TABLE 17  
 LAKEVILLE HOUSING LIST PRICE AND INCOME REQUIREMENTS  
 FOR BOTH 25% AND 33% OF ANNUAL HOUSEHOLD INCOME  
 (May 1988)

PRICE	# UNITS	25% OF ANNUAL INCOME	33% OF ANNUAL INCOME
> \$74999	6	23,040	17,280
\$ 75000 -99999	6	33,600	25,200
\$ 100000 -149999	15	58,368	43,776
\$ 150000 -199999	27	67,200	50,400
\$ 200000 -249999	19	86,400	64,800
\$ 250000 -299999	8	105,600	79,200
\$ 300000 -349999	4	124,800	93,600
\$ 350000 -399999	3	144,000	108,000
\$400000 +	1	153,600	115,200

\*\*Assuming a standard mortgage with 20% down at 11% interest rate on a 30 year note.

Source: New Bedford Multiple Listing Service, 1988.

The increase in housing prices is being driven by the rising price of available land. Presently there are 14 buildable parcels listed in the Multiple Listing Service, ten for sale for between \$75,000 and \$100,000, three between \$100,000 and \$200,000 and one subdividable parcel for greater than \$200,000.

The cost of rental housing in Lakeville, when available, runs around \$900 to \$1,100 per month. The exception to this is the large supply of summer cottages which generally rent for between \$700 and \$800 per month. These are only cottages however, and would not be adequate for employee housing.

The sale price of housing in Lakeville is largely the same as surrounding rural communities; however, this is not true with

the rental market. The main reason for the disparity in rental housing is the complete lack of apartment style housing in Lakeville.

Middleborough, for example, has a rental price for single family homes roughly the same as that of Lakeville. However, the apartment rental price differs due to the availability. In Middleborough, the price of apartments with one bedroom are between \$375 and \$425 per month and the two bedroom units are between \$500 to \$600 per month. In Taunton, the rental prices, starting at around \$300 per month, varies widely due to the large supply.

The demand for different types of housing is going to increase as a result of the four developments; this was displayed in Table 11. However, even if this demand is not met under the present zoning, and those interested in the other forms of housing go elsewhere, the demand for single family houses is going to increase greatly in the lower price ranges.

The last two columns in Table 17 indicate the approximate family income needed to purchase units in these price ranges with 25% and 33% of a family's yearly earnings devoted to housing. Both 25% and 33% are considered by financing companies acceptable portions of family income contributable to housing expense.

The type of jobs created by the developments, with exception of Ocean Spray, will have large percentages of low to moderate income employment. This will create a demand for the lower priced units which may increase the price of these units and decrease their availability.

Table 18 indicates the approximate number of the direct employees with incomes within the given ranges. Comparing the number of jobs in the different income ranges to the income requirements from Table 17, it is easy to see the inability of new employees to afford the average selling price of housing in Lakeville. It should be noted that Table 18 does not take into account any secondary income resulting from a working spouse, which in Massachusetts in 1980 was around 53%. Nor does it take into account any other incomes which may be generated by interest and dividends from investments.

Housing affordability is increasingly becoming an important issue facing local communities. Lakeville should look toward zoning alternatives, including density bonuses for clusters and accessory apartments, for ways to ease the housing crunch.

TABLE 18  
 INCOME FROM DIRECT EMPLOYMENT  
 AND THE NUMBER OF JOBS PER INCOME RANGE

YEAR	- 14,999	15,000 19,999	20,000 24,999	25,000 +	TOTAL
1990	16	1,156	243	36	1,442
1995	104	2,720	715	156	3,695
2000	144	3,846	972	238	5,199
2005	144	4,226	972	238	5,579

Sources: The four development EIR's. Massachusetts Division  
 of Employment Securities.

## COMMUNITY FACILITIES

This section estimates the impacts on community facilities based on the direct impacts of the four developments and the probable need for services due to the increase in population. To accomplish this, however, an analysis of existing conditions had to be drawn first.

The methodology used in this section relied on the use of national standards as a means of comparison. However, when more relevant data was available, regional standards were substituted.

### 1. Existing Condition of Lakeville Facilities

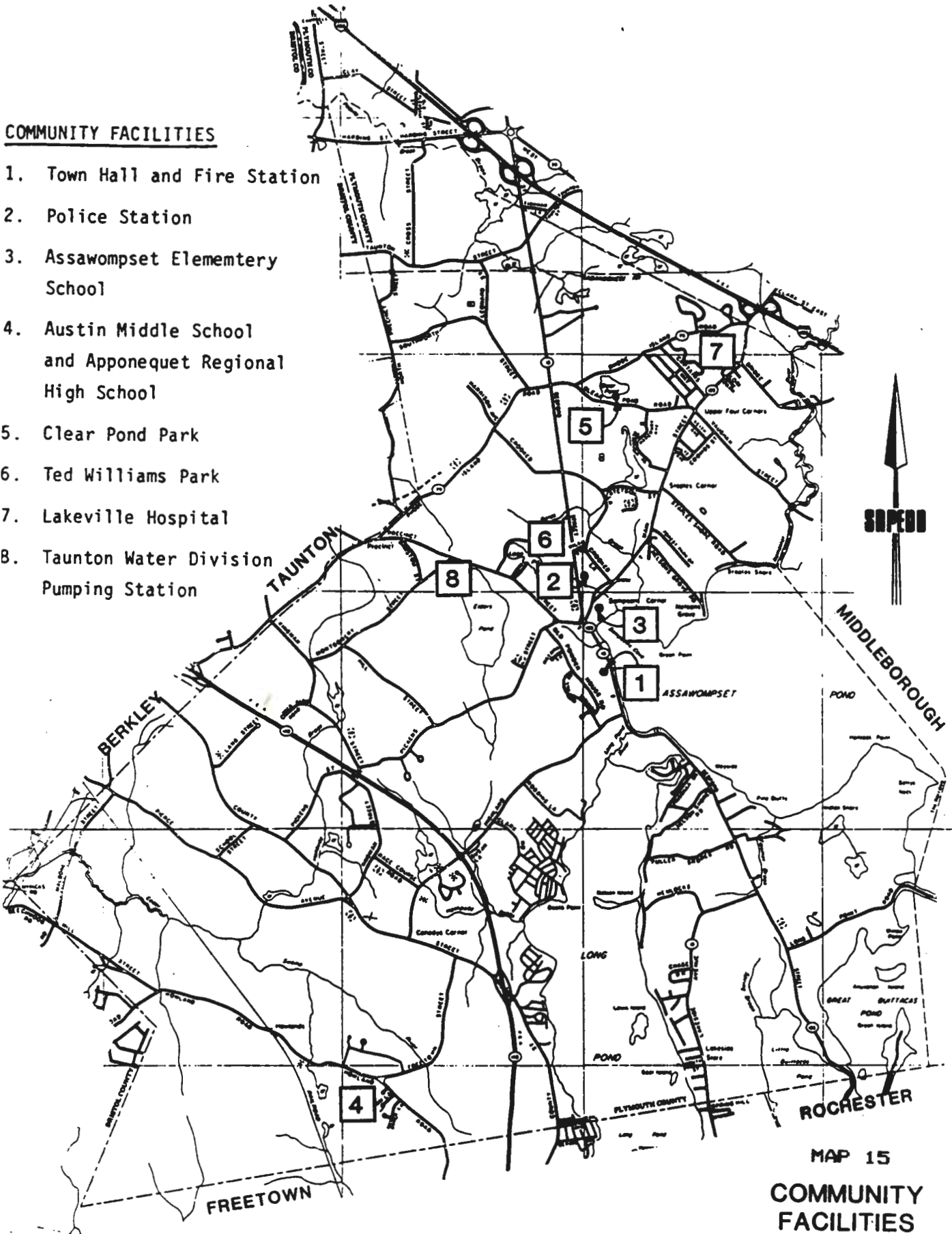
#### a. Police Protection

The Town of Lakeville presently employs 16 police officers and owns five cruisers plus two unmarked vehicles. The police station is centrally located on Bedford Street and contains a square footage of 3,200. (see Map 15 for location of all public facilities)

When compared to the national standards (see Table 19), the Town of Lakeville exceeded the staffing standard of 1.5 police officers per 1,000 population by 0.86, or about 6 patrolmen. The number of police vehicles exceeded the

**COMMUNITY FACILITIES**

1. Town Hall and Fire Station
2. Police Station
3. Assawompset Elementary School
4. Austin Middle School and Apponequet Regional High School
5. Clear Pond Park
6. Ted Williams Park
7. Lakeville Hospital
8. Taunton Water Division Pumping Station



SCALE  
0 1 2 MILES

BASE MAP UPDATE BY SRPEDD NOV, 1985

MAP 15  
COMMUNITY FACILITIES  
TOWN OF LAKEVILLE

standards by 0.43 or around 3 cars. And finally, the square feet of facility space fell short of the standards by 25 square feet per officer.

These standards may however, be too low for the large geographic size (36 square miles) of the community in terms of personnel and vehicles.

The police chief has submitted to Lakeville Board of Selectmen a proposal for a study committee for a new facility to relieve the over crowding in the present police building. Chief Bowles indicated a need for more space for files, office space, locker space for the officers, and a cell for women prisoners among other facilities. The purpose of this proposed study will be to indicate the exact space needs and probable costs.

b. Fire Protection

Lakeville's Fire Department has seven full time and 23 on-call firefighters, as well as mutual aid agreements with surrounding towns. It owns seven trucks and one car and is housed in a 6,134 square foot facility. The fire station is located on Bedford Street in the center of town.

Compared to National Standards, Lakeville's Fire Department looks poorly equipped (see Table 19). The Town of Lakeville exceeded the staffing standard of 2 full time firemen per 1,000 dwelling units by 1.03, or about 2 firefighters. The number of firefighting vehicles is difficult to relate to the present conditions. It exceeded the standards of 4 vehicles per station by 4 vehicles; however, it fell short of the total number of vehicles by 1, when the number of fire stations per 1,000 dwelling units were figured in.

The square feet of facility space fell short of the standards by 2,465 square feet. The reason for this is because the standards require 1 station being 5,120 square feet per 1,000 dwelling units. In the case of Lakeville, the one fire station is 6,134 square feet; however, another station is required.

The difficulty with national standards is that they are very general and do not take into account the size of a town, the population density throughout the town, and other mitigating factors like mutual aid.

A spokesman for the Lakeville Fire Department stated that the department needs substations in both the north and south ends of town, but most critically in the south end. No funding is immediately available for these facilities.



TABLE 19  
EXISTING FACILITIES

Lakeville population 1985: 6785  
dwelling units : 2310

	LAKEVILLE (Total)	LAKEVILLE (%)	NATIONAL STANDARDS	LAKEVILLE comparison
Police:				
officers	16	2.36	1.5 /1000 population	0.86 /1000 population
vehicles	7	1.03	0.6 /1000 population	0.43 /1000 population
facility (S.F.)	3200	200	225 /police officer	-25 /police officer
Fire:				
firemen full time	7	3.03	2 /1000 dwelling units	1.03 /1000 dwelling units
vehicles	8	8	4 /fire station	4 /fire station
facility (S.F.)	6134	2655 /1000 DU.	5120 /1000 dwelling units	-2465 /1000 dwelling units

Source: "Impact of Growth", Lewis Publishing Co. Inc., 1984, Tables 9, 11.

c. Public Water and Sewer

Lakeville, like many other small communities, has limited public facilities. The Town has no public water system or public sewer system of its own. There is, however, access to both the Taunton systems and the Middleborough systems for the four developments under study. These will be analyzed in the "Direct Impacts of the Four Developments" portion of this section.

## 2. Projected Direct Impacts of the Four Developments

The services provided by Lakeville which are relevant to the examination of the impacts of the four developments are police protection, fire protection, and water and sewer services.

In general, industrial development which is able to use on-site sewage disposal, has limited water service requirements and is relatively self-sufficient in terms of security need not trigger major public investment (except, perhaps, in the area of roadway improvements) or increase in ongoing service costs. These costs are calculated in the "Analysis of Municipal Costs and Revenues" section of this chapter.

### a. Police Protection

The impacts of the growth upon police protection within the four developments will be mitigated by the following factors. First, Ocean Spray will employ its own security force. Secondly, Lakeport Park, while not having its own security force, will have burglar and fire alarms tied into a master alarm station at the entrance to the park. Furthermore, Lakeport is near the businesses along Route 44, which is already patrolled by Lakeville Police Cruisers. Thirdly, at least two of the businesses in Great Ponds Park will employ

their own security forces; they are the Talbots and Rix-Dunnigton warehouses. And finally, while the impact of the Riverside Industrial Park is harder to estimate due to the preliminary stages of development, it may be assumed that the MBTA station will maintain a security staff on the site.

It should be noted, however, that even the presence of private security forces will not relieve the town of its obligation to provide police protection to these developments.

b. Fire Protection

Both the towns of Lakeville and Middleborough provide fire protection to the northern end of Lakeville, where the four development sites are located. The response time of the two fire departments to these sites as follows:

<u>Site</u>	<u>Lakeville F.D.</u>	<u>Middleborough F.D.</u>
Lakeport	7 - 8 minutes	5 minutes
Ocean Spray	5 minutes	6 - 7 minutes
Great Ponds	5 minutes	
Riverside	5 minutes	

It appears that there will be a long term need for a new fire station in the northern area of Lakeville.

However, the Town of Middleborough has recently voted funds to develop plans and specifications for a new fire station to be constructed at Bedford Street and Clay Street, within one-quarter mile from the Ocean Spray headquarters. The new fire station is expected to be fully operational within three years. The town of Lakeville should coordinate the siting of any new fire station in its northern end to complement the coverage of Middleborough's new facility.

c. Water Services

Three of the developments will be served by the Taunton water system, Lakeport Park, Ocean Spray and Great Ponds, while the plans for Riverside are still indefinite. The Taunton system is more than adequate to meet the water consumption of the four sites. Taunton's water system draws on four ponds located in Lakeville and presently pumps 8 million gallons per day. The city is expanding its system to serve Massachusetts Correctional Institution (MCI) Bridgewater and the adjacent residential area. It hopes to further expand its services to other towns in the region. The safe yield of the Taunton system is 21.3 million gallons per day over an extended period of time.

d. Sewage Generation

Two of the four developments are using on-site disposal for their sewage; they are Lakeport Park and Great Ponds. The Ocean Spray headquarters will be served by the Middleborough sewer system. Rough calculations of the sewage generation by the Ocean Spray facility (based on DEQE Title 5 standards of 75 gallons/1,000 sq. ft./day for office buildings) indicates a sewage flow of 11,250 gallons per day (gpd) by 1990 and 22,500 gpd after 1995.

Plans for the Riverside site are not final in this area. However, reliance on the Middleborough system is not an option since all of the excess capacity of their treatment plant is reserved for projected future growth within the community. This includes both the Ocean Spray headquarters, and the Middleborough Development Opportunities District. It is likely that Riverside Park will have to rely on an on-site septic system, unless an arrangement is reached with the state to upgrade Middleborough sewerage treatment capacity.

3. Projected Impacts of Induced Population Growth

The estimated induced growth in Lakeville's population and housing units were presented in Tables 11 and 12. These Tables showed that the maximum induced growth occurs in the year 2000. Since the projected impact is less than 8 percent

of the total projected baseline population and housing units over the entire study period, it is expected that the impact on all community services will be small. Lakeville is already attempting to cope with pressures of an approximately 14 percent growth rate between 1980 and 1985, when the population grew from 5,931 to an estimated 6,785. This growth is presently impacting recreational and educational services.

a. Police and Fire Protection

The following Tables show the projections for increased police and fire protection needs of the community based on the baseline trend population and the induced growth population.

TABLE 20  
PROJECTED POLICE AND FIRE PROTECTION NEEDS  
(Based on National Average)

	Police				Fire			
	1990	1995	2000	2005	1990	1995	2000	2005
	----	----	----	----	----	----	----	----
Baseline Population:								
Personnel	13	15	18	21	6	7	9	10
Vehicles	5	6	7	8	12	14	17	21
Facility*	2,845	3,388	4,014	4,720	15,186	18,458	22,323	26,726
Baseline + Induced Growth Population:								
Personnel	13	16	19	22	6	8	9	11
Vehicles	5	6	8	9	12	15	19	22
Facility*	2,933	3,609	4,317	5,041	15,657	19,661	24,013	28,539
Difference:								
Personnel	0	1	1	1	0	0	1	1
Vehicles	0	0	1	1	0	1	1	1
Facility*	88	221	304	321	471	1,203	1,690	1,812

\* Facility number represents square feet.

Source: "Impact of Growth", Lewis Publishing Co. Inc., 1984.

b. Water Use and Sewage Generation

There is no public water supply to residential areas in Lakeville, except to a few homes in western Lakeville on the Taunton water system and to Lakeville Hospital and several homes along the line on the Middleborough water system. Furthermore, there is no public sewerage system in the town. Therefore, considerations of projected water use and sewage generation is not pertinent.

c. Solid Waste Generation

Presently, Lakeville is served by a municipal landfill and commercial haulers, although most residents take their own trash to the landfill. It is estimated that the total residential, commercial and industrial waste from Lakeville is presently 4,000 to 5,000 tons per year.

According to SEMASS, a regional solid waste management facility, residential solid waste generation is approximately 2 to 2.5 pounds per person per day in a rural area without recycling. Based on this standard, the 1985 residential population of Lakeville, estimated to be 6,785, would generate approximately 6.8 to 8.5 tons per day or 2,500 to 3,100 tons per year.

The town has contracted with SEMASS to handle a minimum of 3,200 and a maximum of 3,520 tons of residential solid waste per year. The impact of the induced residential growth on solid waste generation was calculated using the standard of 2.5 pounds per person per day obtained from SEMASS. The results are as follows:

TABLE 21  
PROJECTED RESIDENTIAL SOLID WASTE GENERATION  
(Tons per year)

Solid Waste from:	1990	1995	2000	2005
	----	----	----	----
Baseline population	3847	4580	5426	6381
Baseline + induced growth population	3965	4879	5836	6815
Difference No:	118	299	410	434
Percent:	3.1%	6.5%	7.6%	6.8%

Source: SEMASS regional waste facility.

This study's projection of the town's residential solid waste exceeds the maximum contracted tonnage some time before 1991 (for both the baseline population and induced growth population). Although there is some flexibility in the contract and the maximum tonnage can be increased, this cannot be done before May 1993 and can only be increased by 2 percent.



d. Educational Facilities

An educational needs study was undertaken for the Freetown-Lakeville School District by Dr. John A. Calabro & Associates of Cohasset. The draft of the study was completed in June of last year and is now under review by the town and school district.

At the time of this study, a major addition and renovation program was being undertaken at the Assawompsett Elementary School in Lakeville. The Calabro study states that "the enlargement will alleviate overcrowding and provide needed spaces for program now operating in corridors and closets." However, "it is probable that Assawompsett will be at capacity by 1989 and, if projections prove correct, it is certain that new facilities will be needed by the following year somewhere... Based upon State Department of Education standards, as well as general current good practices, the Assawompsett Elementary School has reached its ultimate size and should not be further enlarged to accommodate expanding numbers." A new elementary school is recommended for another location somewhere in Lakeville. It is also recommended that the elementary system be expanded to grade 5 to relieve the likely future crowding in the middle school. It presently serves just grades K-4.

The Austin Middle School serves grades 5 through 8 and has a rated capacity of approximately 998 pupils. The enrollment in the spring of 1988 was 952. The assessment of the middle school was that the building was adequate to meet the needs of the student population with some redesign of space allocation and major improvements in the heating and air conditioning systems.

The Apponequate Regional High School is presently undergoing an ambitious renovation and expansion program which should provide adequate space and number of classrooms for the near future.

Comparisons between Calabro's school enrollment projections and SRPEDD's are difficult because the Calabro study assumes a higher birth rate and rate of in-migration than SRPEDD does. As a result, it projects a higher grades K-4 population. However, using SRPEDD's methodology, the impacts of the households moving into Lakeville as a result of the four developments can be analyzed. The results are displayed in Tables 22 and 23.

The per pupil costs were the latest available from Freetown Lakeville Superintendent of School's Office. They represent total school budget expenditures. Information on the town portion of these costs was not readily available (Table 24).

TABLE 22  
PROJECTED SCHOOL AGE CHILDREN IN LAKEVILLE

	1990	1995	2000	2005
	----	----	----	----
Children of baseline population	1673	1934	2232	2561
Children of baseline + induced growth pop*	1726	2058	2424	2720
Difference	53	124	192	159
Projected Public School Enrollment:**				
Children of baseline population	1564	1807	2086	2392
Children of baseline + induced growth pop.	1614	1923	2266	2540
Difference	50	116	180	148

\* Based on following pupils per household projections: 0.59 in 1990, 0.56 in 1995, 0.54 in 2000, and 0.51 in 2005.

\*\* Based on 7% average private/parochial school enrollment.

Sources: U.S. Census, 1970. Freetown/Lakeville School Department, 1988.

TABLE 23  
ESTIMATED GRADE BREAKDOWN OF NET PROJECT  
INDUCED GROWTH ENROLLED IN LAKEVILLE SCHOOLS

Grade	1990	1995	2000	2005
Kindergarten	4	8	13	11
Grades 1-4	14	33	51	42
Grades 5-12	32	74	116	95
Total	50	116	180	148

Sources: Calabro Study, Dr. John A. Calabro & Associates, 1988.  
Freetown/Lakeville School Department, 1988.

TABLE 24  
PROJECTED SCHOOL EXPENDITURES

Grade	Per Pupil Cost ('85)	1990	1995	2000	2005
Kindergarten	\$1,207	\$4,828	\$9,656	\$15,691	\$13,277
Grades 1-4	\$1,956	\$27,384	\$64,548	\$99,756	\$82,152
Grades 5-12	\$2,528	\$80,896	\$187,072	\$293,248	\$240,160
Total		\$113,108	\$261,276	\$408,695	\$335,589

Source: Freetown/Lakeville School Department, 1988.

e. Recreation Facilities

The standards obtained from the "Impact of Growth" book of 3.9 acres of playgrounds and 3.3 acres of neighborhood parks per 1,000 dwelling units, indicated that Lakeville was well above the national average. However, a 1981 SRPEDD prepared Lakeville Open Space Plan, found that the recreational facilities were generally adequate for the town residents, although there was a deficiency in the neighborhood parks (by about 11 acres), playgrounds (24 acres), hiking areas (6 acres), nature study areas and campsites as compared with the National Bureau of Outdoor Recreation Space Standards. It was recommended at that time that the town develop access to beach frontage along Long Pond, develop nature trails within some existing conservation areas and continue to maintain existing recreational facilities. A greater emphasis was placed on protecting water supplies and watershed areas, as well as preserving farmlands.

Since that time, Lakeville has lost access to two ballfields with the construction of a new addition to one of the schools. This development overloaded the existing ballfields, one of which has severe drainage problems (at John Paun Memorial Playground).

As a result, the town acquired the 148 acre, Ted Williams Boys' Camp/Lakeville Tennis Club. The ballfields, tennis courts and basketball court have been long neglected and need much work to bring them up to satisfactory conditions. The town recently approved \$22,000 to do work on the ballfields; to construct new backstops and to provide restroom facilities. Many other improvements remain to be done at both the Paun Playground and at the old Ted Williams Camp. In addition, the Park Commission hopes to add a bocce court and walking and jogging paths to the old camp.

Thus, the town is doing its best to catch up with the growing recreational needs of its residents. Playgrounds, ballfields and other facilities are being upgraded slowly with limited funds. The numeric difference between the projected baseline population and the induced growth population is not so great as to require any more recreational facilities by the year 2005.

## TRANSPORTATION IMPACTS

The Transportation Impact section of this report was produced by Thomas A. Pisaturo, the Comprehensive Planning Manager of Southeastern Regional Planning and Economic Development District. Due to the importance of this section, it will remain in the Thesis Project for the benefit of those who may wish to use this analysis, as a guide.

The following is an analysis of traffic impacts based on the existing highway network and the employment characteristics of each of the four developments as described in Tables 5 through 8. The analysis focuses on the morning and evening peak hour periods and on major intersections. Peak hour periods are the portion of the day with the heaviest traffic. Intersections are the critical control points at which traffic congestion and/or accidents are most likely to occur because of the conflicting vehicular flows that occur at these points. Theoretically, if intersections are functioning adequately, the highway segments should also be functioning adequately.

### 1. Methodology

The methodology used in this analysis was to estimate the number and direction of peak hour trips to and from the four developments (based on their employment characteristics) and

distribute these trips to the highway system. The MBTA Train Station at Riverside Park was treated as a separate entity, due to its unique characteristics. These calculations were made for the years 1990, 1995, 2000 and 2005. Existing traffic counts were derived from a number of recent surveys conducted by the State DPW and SRPEDD in 1986 and 1987. This is added to the highway system and is assumed to grow by 1.5% per year to reflect the growth in background traffic. Background traffic grows because of other developments in the study area such as the secondary employment and population growth.

Two additional developments are examined directly by this study: the Raynham Woods Corporate Park and the Middleborough Development Opportunities District. These are very large developments which will generate a significant amount of traffic and will have a significant impact on the roadways in the area.

## 2. Study Area

The study area includes the intersections immediately surrounding the four developments. These intersections are:

1. Route 79 (Rhode Island Rd.)/Route 18 (Bedford St.)
2. Route 79 (Rhode Island Rd.)/Clear Pond Road



3. Route 79 (Rhode Island Rd.)/Route 105 (Main St.)
4. Route 105 (Main St.)/Route 18 (Bedford St.)
5. Route 18 (Bedford St.)/Highland Road
6. Middleborough Circle
7. Route 44/Route 495 Northbound ramp
8. Route 44/Route 495 Southbound ramp
9. Route 18 (Bedford St.)/Route 495 Southbound ramp
10. Route 18 (Bedford St.)/Route 495 Northbound ramp
11. Route 105 (Main St.)/Route 495 Southbound ramp
12. Route 105 (Main St.)/Route 495 Northbound ramp

These intersections will be directly affected by traffic from the four developments. They are also important traffic control points which control the access of Lakeville's residents to the area's highway system.

### 3. Trip Generation

Vehicular trips were generated for seven developments - Raynham Woods, Lakeport Park, Ocean Spray Corporate Headquarters, the Middleborough Development Opportunities District, Great Ponds Industrial Park, Riverside Park, and the MBTA Train Station. In general, trips were generated by applying the estimates of employment (Tables 5 through 8) for each time period to peak hour trip rates taken from the Trip Generation Manual of the Institute of Transportation Engineers. In the case of Raynham Woods trips were taken from the Environmental Impact Report for the development. Trips for the MBTA Train Station were taken from data developed by the MBTA. Table 25 summarizes the trips for each development.

The trips for Ocean Spray are lower than other uses of its size because of the characteristics of the use. Large office buildings tend to have their trips spread out more evenly over the course of the day to reflect the comings and goings of corporate officers and marketing personnel.

### 4. Trip Distribution

In general, the trip distributions of the project developers (as shown in the EIR's and other studies) were accepted. However, distributions had to be developed for Lakeport and

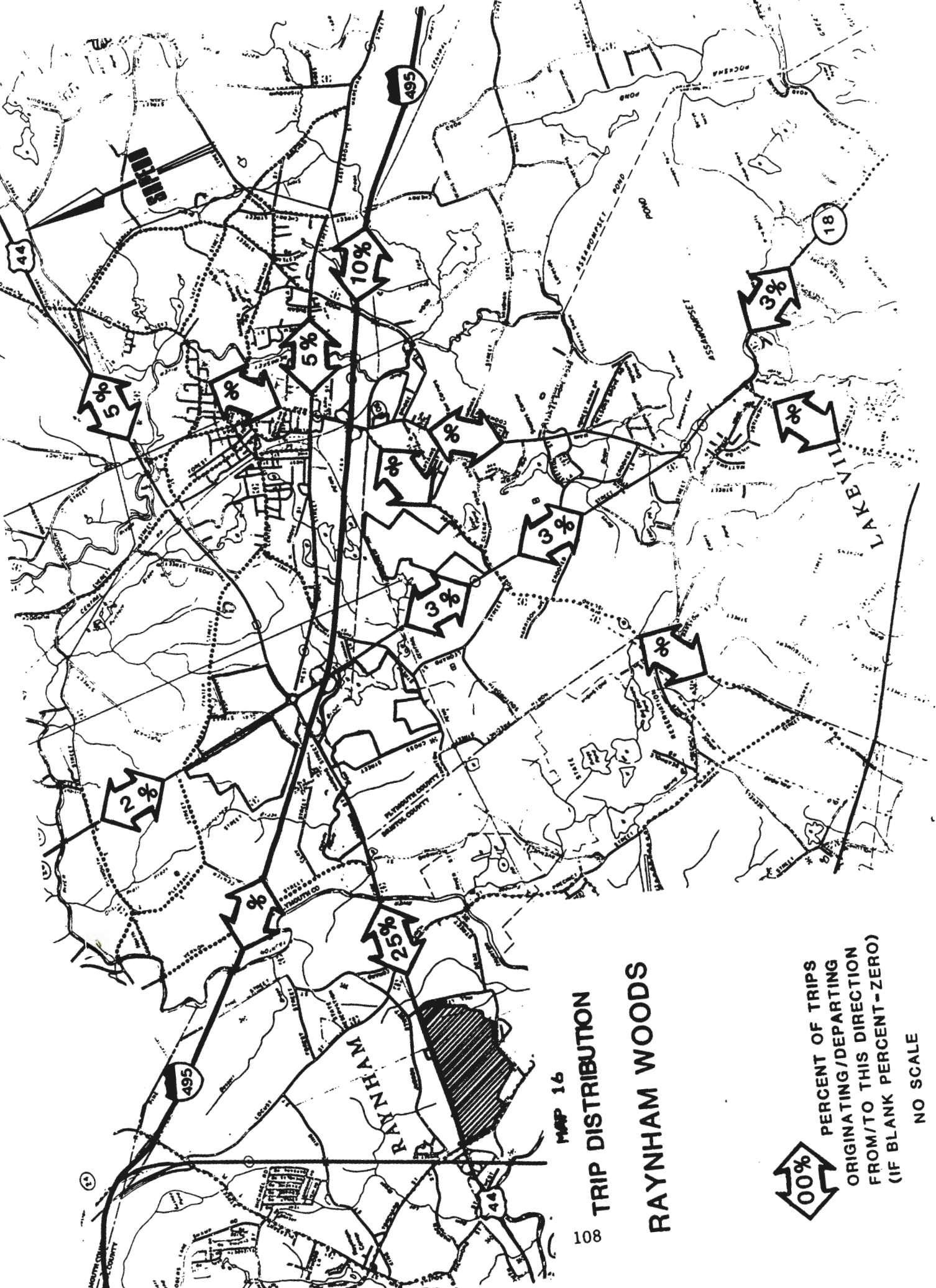
TABLE 25  
VEHICLE TRIPS - PEAK HOUR

	1990				1995				2000				2005			
	A.M. PEAK		P.M. PEAK		A.M. PEAK		P.M. PEAK		A.M. PEAK		P.M. PEAK		A.M. PEAK		P.M. PEAK	
	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
RAYNHAM WOODS	594	69	107	462	1688	193	291	1346	2767	313	463	2246	2767	313	463	2246
LAKEPORT	60	15	40	150	160	40	90	380	320	80	200	770	320	80	200	770
OCEAN SPRAY	130	25	14	97	220	45	25	165	335	65	35	250	335	65	35	250
MIDDLEBOROUGH DOD	904	205	312	803	1807	410	623	1606	2710	614	933	2408	3613	819	1245	3211
GREAT PONDS	325	65	163	585	700	140	350	1260	1100	220	550	1980	1300	260	650	2340
RIVERSIDE	135	27	68	243	640	128	320	1152	640	128	320	1152	640	128	320	1152
NBTA TRAIN STATION	--	--	--	--	324	58	58	324	324	58	58	324	324	58	58	324

Where buildout occurs prior to 2005, trips at buildout were carried forward to 2005 without change.

Source: Institute Of Transportation Engineers, 1985 Trip Generation Manual.

Riverside. The trip distribution for Great Ponds had to be modified from the developer's estimated 40% of the traffic to originate from Route 18 south to 20%. This distribution was modified to a more even distribution reflective of a large development drawing employees from the Brocton and Taunton areas. The trip distribution pattern for each project is shown on maps 16 through 22. In some cases the total percent of trips shown on a road is the total of trips from two or more down stream roads. For example, Map 22 shows 10% of trips originating from Route 18 south of Route 495. However, this is composed of trips originating from Route 79 (2.5%), Highland Road (5.0%) and Route 18 south of Highland Road (2.5%).



MAP 16

108 TRIP DISTRIBUTION

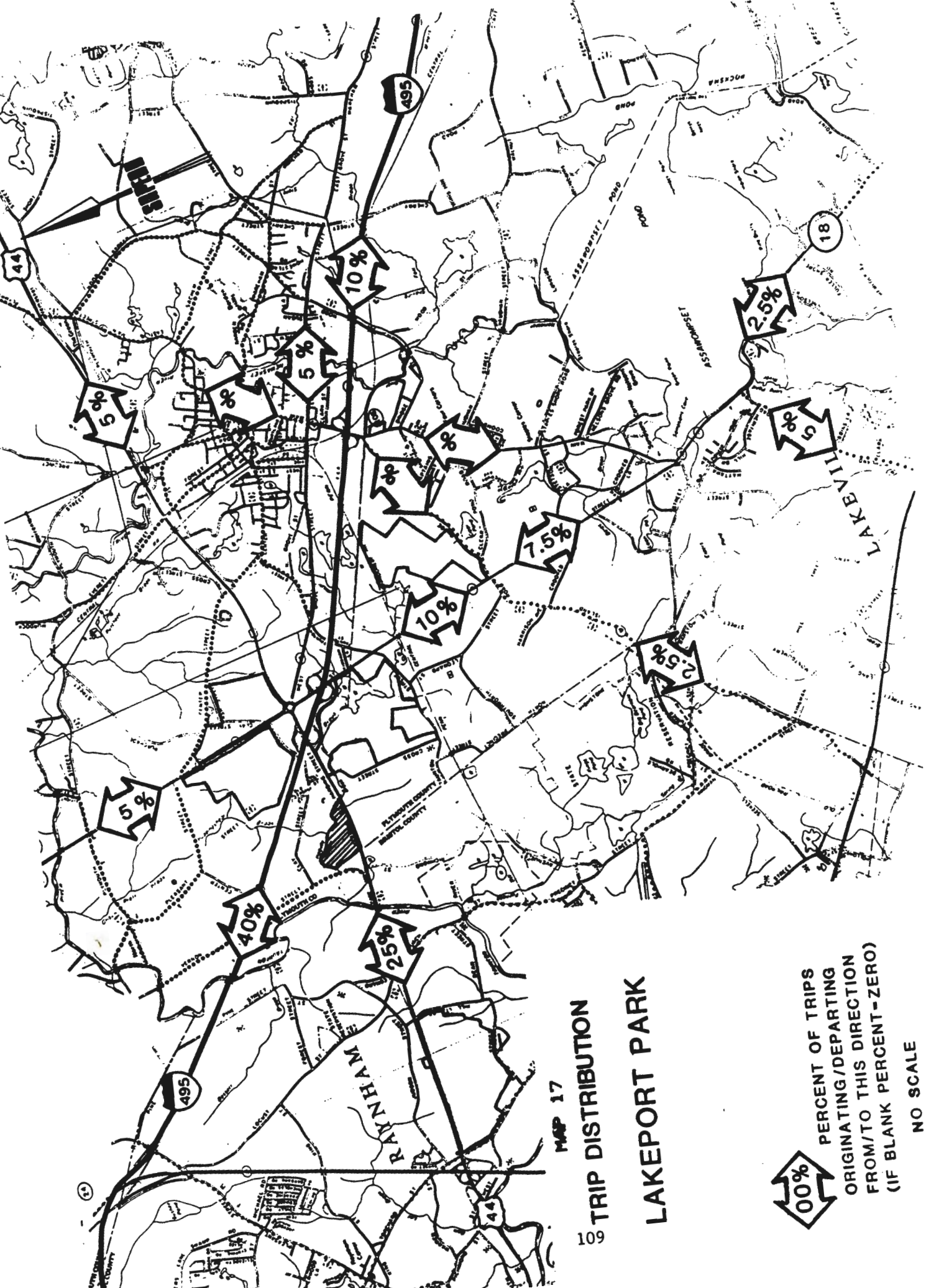
RAYNHAM WOODS



PERCENT OF TRIPS  
ORIGINATING/DEPARTING  
FROM/TO THIS DIRECTION  
(IF BLANK PERCENT-ZERO)

NO SCALE

Source: Raynham Woods EIS, 1983.



MAP 17

TRIP DISTRIBUTION

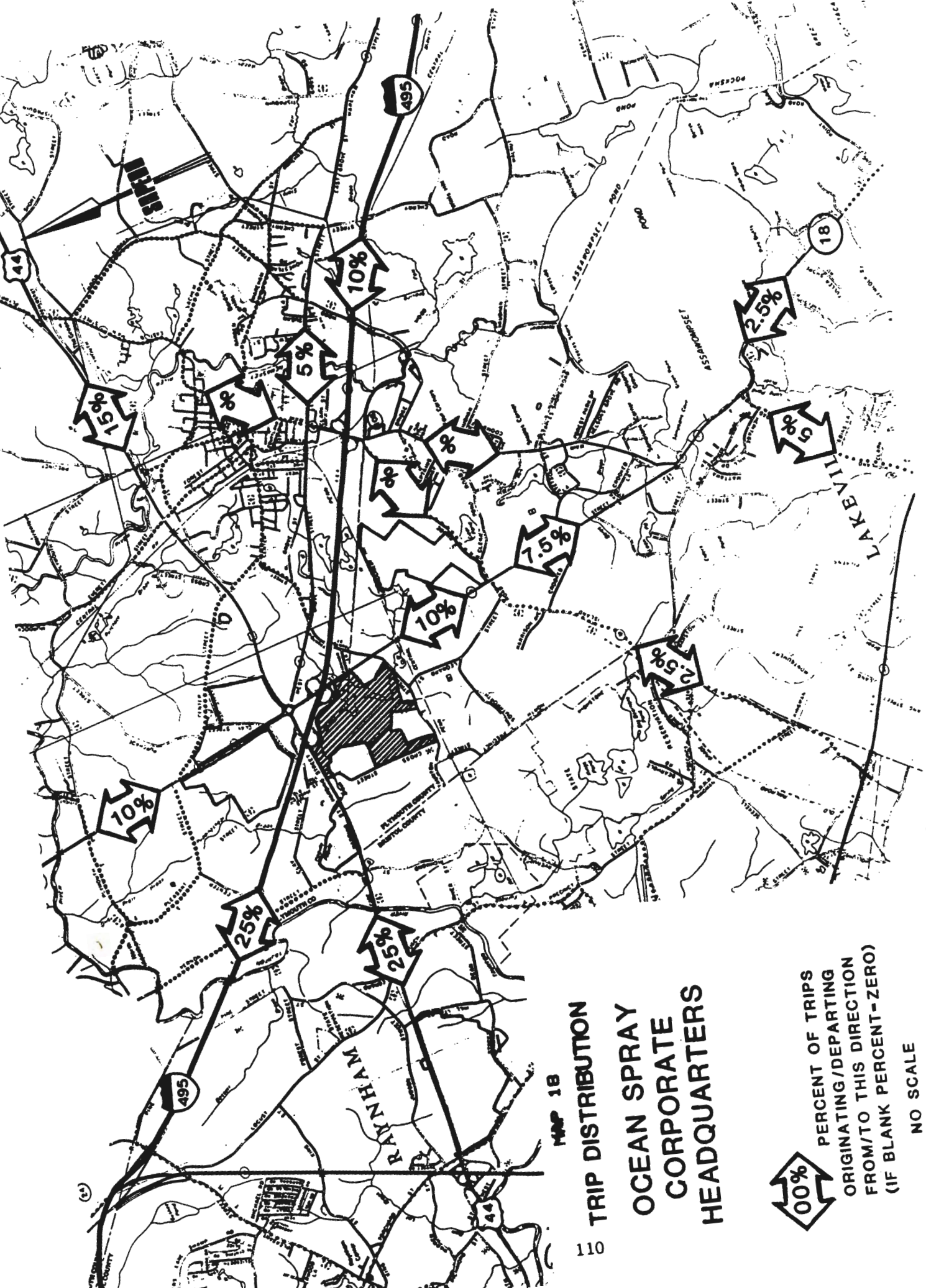
LAKEPORT PARK



PERCENT OF TRIPS  
ORIGINATING/DEPARTING  
FROM/TO THIS DIRECTION  
(IF BLANK PERCENT-ZERO)

NO SCALE

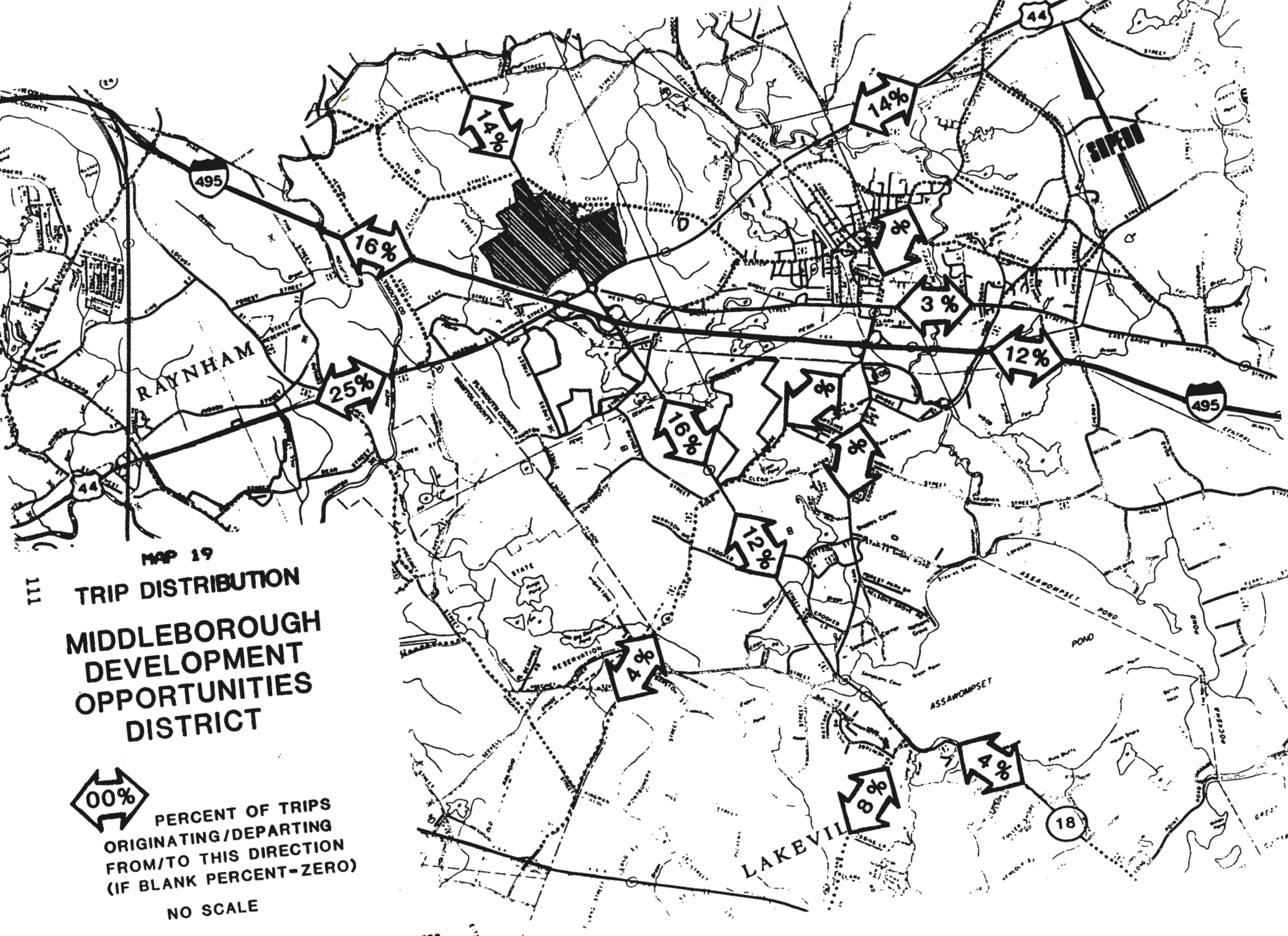
Source: Lakeport Park EIS, 1986.



MAP 1B  
 TRIP DISTRIBUTION  
 OCEAN SPRAY  
 CORPORATE  
 HEADQUARTERS

100%  
 PERCENT OF TRIPS  
 ORIGINATING/DEPARTING  
 FROM/TO THIS DIRECTION  
 (IF BLANK PERCENT-ZERO)  
 NO SCALE

Source: Ocean Spray EIS, 1985.



**MAP 19**  
**TRIP DISTRIBUTION**  
**MIDDLEBOROUGH**  
**DEVELOPMENT**  
**OPPORTUNITIES**  
**DISTRICT**

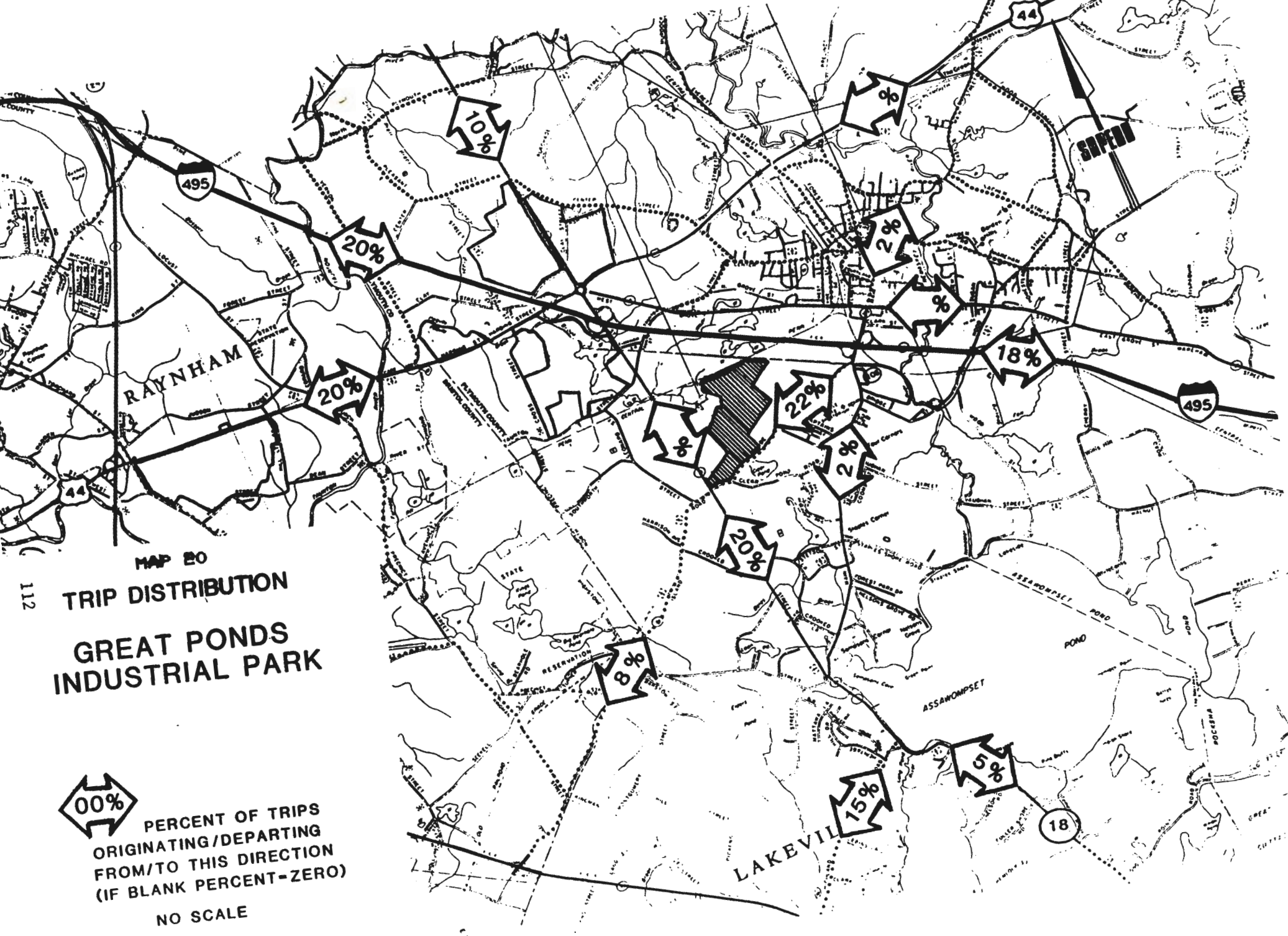


PERCENT OF TRIPS  
 ORIGINATING/DEPARTING  
 FROM/TO THIS DIRECTION  
 (IF BLANK PERCENT-ZERO)

NO SCALE

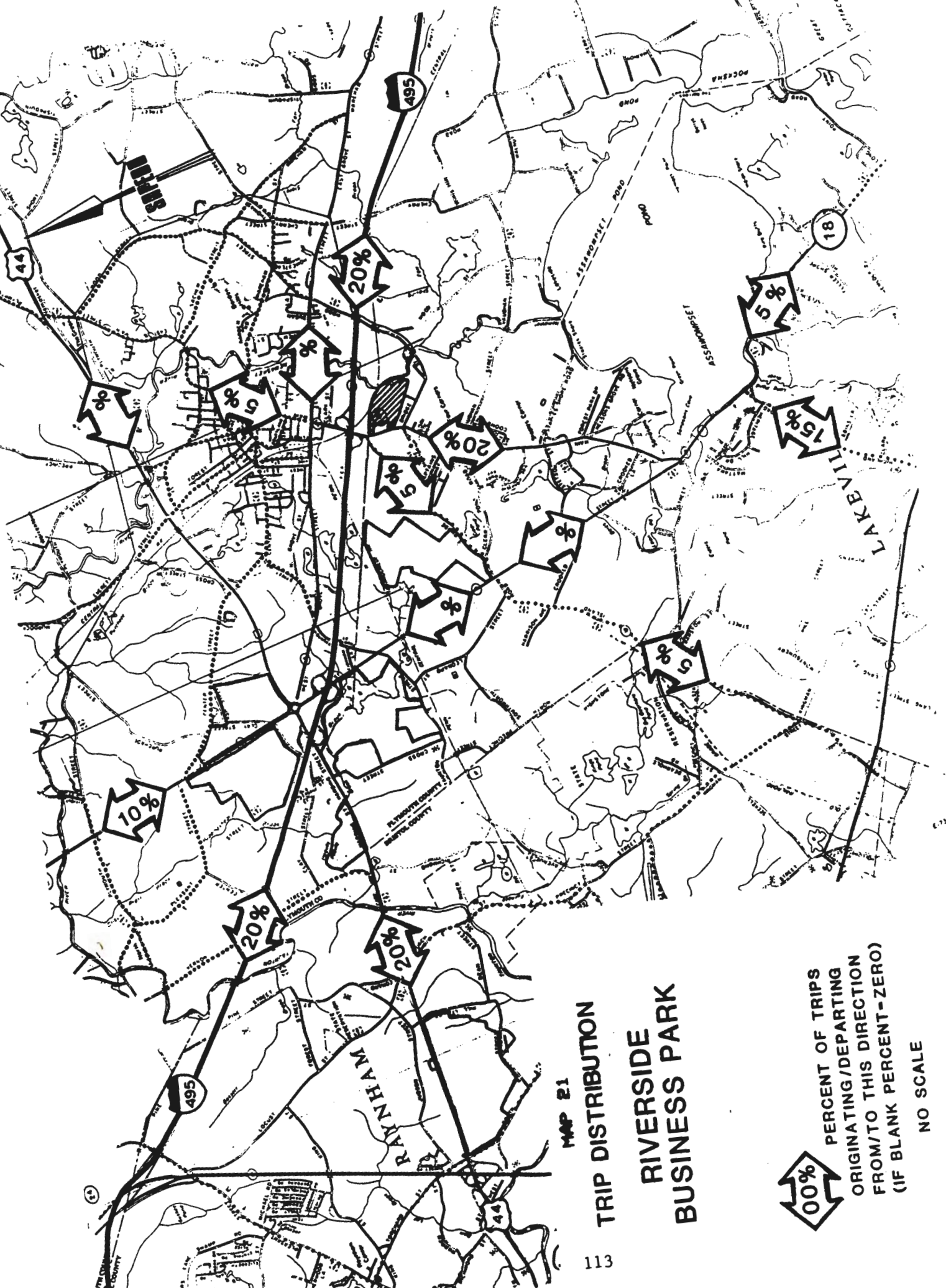
Source: Middleborough Planning Department, 1988.

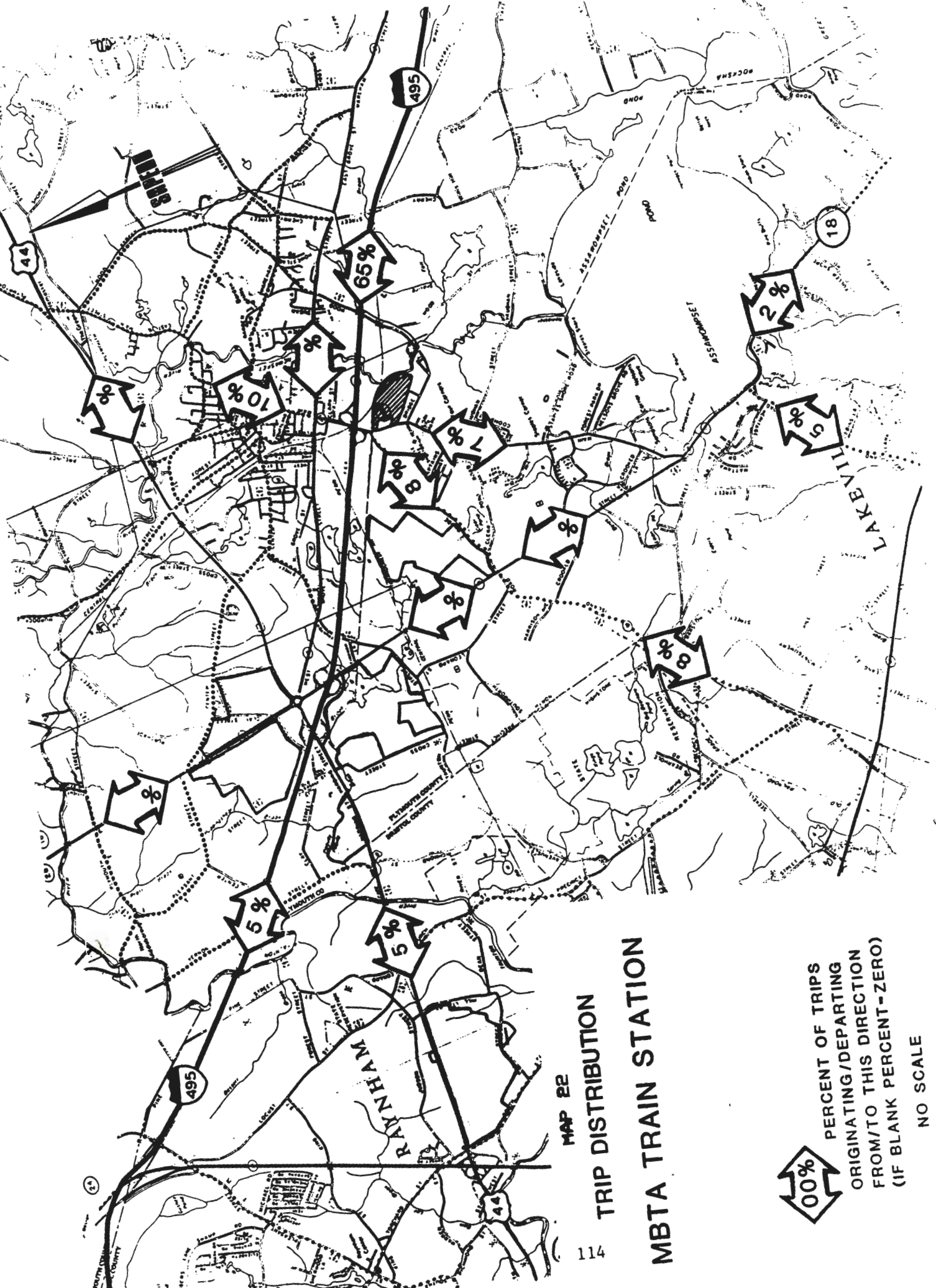





112

Source: Great Ponds Industrial Park EIS, 1986.





MAP 22  
 TRIP DISTRIBUTION  
 MBTA TRAIN STATION


 PERCENT OF TRIPS  
 ORIGINATING/DEPARTING  
 FROM/TO THIS DIRECTION  
 (IF BLANK PERCENT-ZERO)  
 NO SCALE

## 5. Volume/Capacity Analysis

Intersection capacity was analyzed using the Highway Capacity Manual computer program of the Federal Highway Administration. The program utilizes the level of service concept. The level of service concept can be used to evaluate the performance of highway intersections and the impact that additional traffic volume will have on the operating characteristics of those intersections. Six levels of service have been established to describe different operating conditions. Level of service (LOS) A describes a condition of free flow with little or no delay. LOS B and C have stable traffic flow short to average delays. LOS D through F describe conditions where traffic flows become unstable with long to very long traffic delays. The upper limit of level of service E is considered the capacity of the roadway below which driving comfort is low and accident potential is high.

The results of this analysis show significant capacity problems at nearly every intersection in the study area early into the study period. Many intersections are projected to experience problems by 1990. These problems will become more severe as time passes and traffic flow increases. The results of the analysis for each intersection are described briefly below.

Route 79 (Rhode Island Rd.)/Route 18 (Bedford St.) - It is projected that in 1990 the westbound approaches of Route 79 will operate at Level of Service F during PM peak hour. By 1995, both approaches of Route 79 are projected to operate at LOS F during the PM peak hour. (Improvements to this intersection were proposed as part of the Great Ponds Environmental Impact Report.)

Route 79 (Rhode Island Rd.)/Clear Pond Road - The worst projected LOS is E for Left turns from Clear Pond Road onto Route 79 during PM peak in 2000 and 2005.

Route 79 (Rhode Island Rd.)/Route 105 (Main St.) - In 1990 left turn movements from Route 105 onto Route 79 are projected to operate at LOS E during the AM peak hour and LOS F during the PM peak hour. By the year 2000 it is projected that right turn movements from Route 79 onto Route 105 will operate at LOS E during the AM peak hour. (Improvements to this intersection were proposed as part of the Great Ponds Environmental Impact Report.)

Route 105 (Main St.)/Route 18 (Bedford Rd.) - During the AM peak hour in 1990 both the left turn and through movements from Route 105 westbound onto Route 18 are projected to operate at LOS F. The eastbound left turn and through movements from Route 105 are projected to operate at LOS E, during the 1990 AM peak hour, deteriorating to LOS F by 1995.

Route 18 (Bedford Rd.)/Highland Rd. - The left turn movement from Highland Road onto Route 18 will operate at LOS F during both the AM and PM peak hours in 1990. By 1995 the left from Route 18 onto Highland Road operates at LOS E during the PM peak hour.

Middleborough Circle - It is difficult to calculate level of service for rotaries because of their unique characteristics. However, they are considered to operate satisfactorily when all approach legs carry no more than 3,000 vehicles per hour. The projected vehicles per hour for the Middleborough Circle range from 3,506 in 1990 during the AM peak hour to 8,350 in 2005 during the PM peak hour.

Route 44/Route 495 Northbound ramp - Projected conditions in 1990 are LOS E in the AM peak hour for left turns onto Route 44. In 1995 left and right turns from the ramp in the AM peak will be at LOS E and F respectively. All critical turning movements are projected to operate at LOS F during the PM peak hour by the year 2000.

Route 44/Route 495 Southbound ramp - This intersection is projected to experience LOS F in the AM peak hour for left turn movements from the Route 495 ramp onto Route 44 and LOS F for both left and right movements from the Route 495 ramp onto Route 44 in the PM peak hour. Conditions are projected to deteriorate as traffic volumes grow in the future.

Route 18 (Bedford St.)/Route 495 Southbound ramp - Projected conditions are LOS E during the 1990 PM peak hour for left turns from the Route 495 ramp onto Route 18. By the year 2000 the PM peak hour left turn movement from the ramp onto Route 18 is still at LOS E, but the right turn movement onto Route 18 has deteriorated to LOS F.

Route 18 (Bedford St.)/Route 495 Northbound ramp - In 1990 the left turn from the Route 495 ramp onto Route 18 is projected to operate at LOS E in the AM peak hour. By the year 2000 both the left and right turn onto Route 18 are projected to operate at LOS F during the AM peak hour.

Route 105 (Main St.)/Route 495 Southbound ramp - Projected conditions are LOS F in 1990 for left turns from the ramp onto Route 105 during the PM peak hour. By 1995 left turns from Route 105 onto the ramp are also projected to operate at LOS F.

Route 105 (Main St.)/Route 495 Northbound ramp - In 1990 left turns from the Route 495 ramp onto Route 105 will experience LOS F during the AM peak hour. Left turns from Route 105 onto Route 495 will operate at LOS E during the PM peak hour by 1995.

## 6. Summary

Nearly every major intersection in the study area is projected to experience operating problems during the study period. In many cases these problems may develop by 1990. In some instances the problems can be corrected by intersection improvements such as widening, channelization and signalization. Improvements of this nature have recently been proposed for Route 79/ Route 18 intersection and Route 79/ Route 105 intersection. However, some intersections , such as the Middleborough Circle, are projected to receive so much traffic that only major road reconstruction will alleviate the problem. Delays at a number of intersections will be so severe that drivers will have no choice but to seek alternative routes. This will cause congestion on other local streets not covered by this study.



**CHAPTER IV**  
**RECOMMENDATIONS AND ZONING REVISIONS**

## INTRODUCTION

Having examined the physical characteristics of the four developments and their impacts on the town, the final Chapter lays out, first, the specific recommendations for the previous analysis and, secondly, looks at the existing growth policies of Lakeville and their ability to deal with these projected impacts.

## RECOMMENDATIONS

### Land Use and Housing Affordability

The Land Use analysis looked at the land area required to house the primary and secondary employees created by the four developments. Table 13 displayed three different zoning scenario's ranging from the present town zoning to zoning of the surrounding towns.

The comparison indicated that a change in zoning from one unit per 70,000 square feet to a mixture of allowed lot sizes will reduce the amount of land area needed to house the increasing population (see Table 13). This finding is further strengthened by the Housing Affordability analysis.

The Housing Affordability analysis indicated that the average wage paid for the direct and indirect employment created by the four developments would not be enough to cover local housing costs. The result would be a need for a greater number of affordable housing units for the employees. Therefore, it is recommended that the current zoning requirements be altered to allow cluster development.

The clustering of housing units would lower the costs of housing by reducing the cost of site improvements. By reducing the land requirements for roads, more open space can be produced for the common use of residence. Furthermore, accessory apartments, another recommendation from the Housing Affordability analysis, would increase the supply of rental housing and thereby lowering the demand for new housing construction on available land.

#### Community Facilities

The Community Facilities analysis indicated that generally the town's facilities are in good shape. The exceptions were related to building space for the Police and Fire departments.

The Lakeville Police Headquarters, according to the Chief, is lacking in office space as well as a women's prison cell. We back the Police Chief's proposal for a facilities study

and further recommend that the police station remain in its present central location.

The Lakeville Fire Department was also determined to be insufficient for total coverage of the town. However, unlike the police station which can be expanded to increase its space, a second fire station is needed for a proper response time for other sections of the town. It is recommended that a study committee be formed and that the committee meet with the Middleborough Selectmen to assess the proper location for the future station.

Finally, the Community Facilities analysis of this report revealed the need for further study relating to the residential solid waste. We project the town's residential solid waste will exceed the maximum SEMASS contracted tonnage by the year 1991. This could be a serious problem and demands attention.

### Traffic

This section studied the traffic impacts on the town resultant from the four developments. This analysis indicated that Lakeville is going to experience severe congestion in the coming years. There are two recommendations that are strongly made in regards to the future traffic flow.

First, it is recommended that a major traffic circulation study of the area be undertaken to explore options for alleviating the impacts described by this analysis. The project should be a traffic engineering study in which alternative design concepts from intersection improvements to new road construction are developed and evaluated.

Secondly, this study has shown that the intersections in the vicinity of the four developments cannot handle the traffic from the non-residential developments presently approved. In the absence of major highway improvements, it is recommended that Lakeville review its zoning and consider down zoning to restrict the construction of any large non-residential projects. Lakeville should urge its neighboring towns to do the same with their zoning.

## GROWTH POLICIES

The Lakeville growth policies that were analyzed are: 1) the Protective Zoning By-Laws, 2) the Subdivision Regulations, 3) the Board of Health Regulations, 4) the Conservation Commission Regulations, and 5) other town ordinances and by-laws deemed appropriate. Upon review, several recommendations are suggested with reference to the first three. There are also several recommendations regarding the requirements of the Zoning Board of Appeals.

Sample warrant articles and regulations are included in the appendix.

## PROTECTIVE BY-LAW

An extensive review of Lakeville's current zoning by-law (known as the Protective By-Law) was conducted and the recommendations are as follows:

### 1. Recodification

At present, Lakeville's zoning by-law is difficult to read and interpret; therefore, it has been recommended that a complete recodification of the by-laws be done. This recodification would eliminate some loop holes and technical deficiencies and produce a more readable document. It would

also be easier to amend in the future and provide better protection for the town's natural environment and rural character.

It is suggested that the recodification be organized in the following format:

**Section One: Administration and Procedure**

1.01 Purpose

1.02 Enforcement

1.03 Permits

etc.

**Section Two: Definitions**

**Section Three: Establishment of Districts**

**Section Four: Use Regulations**

**Section Five: Dimensional and Density Regulations**

**Section Six: General Regulations**

6.01 Off Street Parking Requirement

**Section Seven: Special Permit Regulations**

7.01 Site Plan Review

7.02 Aquifer Overlay Districts

7.03 Cluster

7.03.3 Inclusionary

7.04 Accessory Apartments

In addition, the zoning map should be updated and reproduced at a scale that can be sold with the zoning bylaw.

## 2. Definitions

The second recommendation for the Protective By-Law is for definitions to be added to the text. These additional definitions will assist the enforcement agent and local boards in the determination of uses.

The following words should have definitions supplied in the by-law:

Aquifer	Area, Floor
Abandonment	Basement
Accessory Building	Boathouse Private
Accessory Use	Boathouse Public
Alterations	Boarding House
Airport	Buffer Setback
Animal Feedlot	Building
Animal Kennel or Hospital	Building, Coverage
Area, Building	Building, Attached



Area, site	Building, Detached
Building, Front Line	Public Utility
Building, Rear Line	Radio Transmission
Building, Principal	Recharge Area
Building, Accessory	Recreation, Indoor Com
Building, Nonconforming	Recreation Outdoor Com
Bulk Storage	Restaurant, Indoor
Business Offices	Restaurant, Outdoor (Take Out)
Camping, Commercial	Roadside Stand
Camping, Supervised	Solid Waste
Conforming Use	Street Line
Cemetery	Structure
Club	Signs
Cluster Development	Sign, Area
Contractor's Yard	Stable, Private
Disposal	Stable, Public
Dwelling	Structures, Temporary
Dwelling, Unit	Transportation Term.
Dwelling, Single Family	Wetlands
Dwelling, Two Family	Mining of Land
Dwelling, Multi Family	Recharge Areas
Dwelling, Conversions	
Floodway	
Floor Area	
Frontage	
Funeral Home	

Ground Water  
 Golf Course  
 Hazardous Materials  
 Height  
 Home Owners Association  
 Home Occupation  
 Hospital  
 Hotel or Motel  
 Impervious Surface  
 Industrial Building  
 Junk  
 Junk Yard  
 Leachable Wastes  
 Life Care Center  
 Lot, Corner  
 Lot, Depth  
 Lot, Line  
 Lot, Width  
 Medical Center or Clinic  
 Motor Vehicle, Boat, Farm Implement, Sales or Rental  
 Motor Vehicle, Boat, Farm Implement, Light Service  
 Motor Vehicle, Boat, Farm Implement, General Repairs  
 Motor Vehicle, Boat, Farm Implement, Used Parts and  
   Dismantling  
 Non-Conforming Use                                     Parking Space  
 Nursery or Greenhouse                                 Portable Sign  
 Nursing, Convalescent or Rest Home               Printing Shop

### 3. Language

In addition to the definitions, it is recommended that the following language should be added to address the uses not provided for:

#### 4.01 Applicability of Use Regulations:

Except as provided in the Protective By-law or in the Zoning Enabling Act Ch 40A, no building, structure, or land shall be used except for the purpose permitted in the district as described in this section. Any use not listed shall be construed to be prohibited.

Permitted uses should be listed for quick easy reference.

The following language is recommended:

#### 4.02 Permitted Uses:

In the following Table of use regulations the uses permitted by right in said district shall be designated by the letter (Y). Those uses that may be permitted by special permit in said district, in accordance with section seven, shall be designated by the letters (SP). Uses designated by the letter (N) shall not be permitted in said district.

The Water Resource Protection Section (II-B) needs to be refined and supported with technical data (ie. Zone III Boundaries). The language should include determinations on sanitary landfills, junk yards, municipal sewerage treatment plants, all private sewerage treatment plants, motor vehicle salvage operations, underground storage of fuels, commercial painting, and wood preserving, finishing, stripping, or refinishing.

Regulations should be adopted for small private sewerage treatment facilities in the use regulations to display the location within the town where allowed. (See next section on the Board of Health Regulation)

Area regulations should be reformatted and expanded.

In order to address the future housing needs of Lakeville, the town should consider adding the following elements:

1. An inclusionary housing element (by special permit).
2. An accessory apartment element (by special permit).
3. A cluster or flexible site development (by special permit).

These Special Permits should be established in the zoning by-laws and fully explained in the Rules and Regulations for Special Permits. (See Appendix C for examples of these By-laws)

Certain zoning districts should be recommended for rezoning. These are the industrial land off Pierce Avenue, the industrial parcel off of Bedford Avenue near Long Point Road, the commercial land south of Clear Pond Road (the golf course), and the commercially zoned property off of Staples Shore Road.

Finally, a general site plan review section should be written with standard procedures and basic requirements which could be used by whichever board is acting as the Special Permit Granting Authority. (A sample site plan review by-law is included in the appendix)

#### SUBDIVISION REGULATIONS

The Lakeville Subdivision Rules and Regulations could use some minor additions in Section I and III. They are as follows:

##### 1. Section I

In Section I, the following definitions are recommended to be included in the Rules and Regulations:

Aashto

ACI

Areas of Single Access

Frontage

General Laws

Large Trees

Astm	Land Surveyor
Department Specification	Layout
Department Standards	Retention Facility
Detention Facility	Minor Residential St.
Emergency Access	Traveled Way
Engineer	

2. Section III - Procedures for Submission and Approval of Plans

In Section III, the following changes are recommended:

- a. The language in Section A numbers 3, 4 and 5, should be changed from 14 to 21 days to comply with the recent changes in State law.
- b. The following information should be required with definitive submittals:
  - i) A sheet showing the entire subdivision, 2 foot contour lines, and pre and post development drainage areas.
  - ii) Proposed locations of dwellings and driveways with the percent of grade of said ways.

- iii) Location of sources of private water supply, nearest public water supply source, and existing septic systems in accordance with the Rules and Regulations of the Board of Health.
- iv) Location of approved percolation test pits and deep observation pits, if any, in accordance with the Rules and Regulations of the Board of Health. Whether or not septic systems are proposed, general soil logs and groundwater profiles shall be shown based on on-site observation pits and/or wells and/or percolation test. Soil logs shall be sufficient in detail to show the depth of organic matter, subsoil thickness, and depth to bedrock (up to 8'), as well as percent composition of soil and subsoil types. Locations of test pits shall be adequately distributed throughout the land area to the satisfaction of the Planning Board, providing at least 1 test hole per every two lots, and 1 per each 500' of proposed roadway. Additional test holes and test pit locations shall be developed through consultation with the Board, Town Engineer, and Town Planner as may be required by the specific conditions on the site.

- v) Location of proposed sewage disposal facilities with the elevation of the bottom of the leaching bed or trenches shown.
  
- vi) Center lines of all proposed roads must be staked out and clearly marked with station numbers two weeks prior to public hearing.
  
- vii) Contour information should be 2 feet instead of 5 foot.
  
- viii) An erosion control and construction management plan should be submitted.
  
- ix) Designation of the stump burial areas on the plans.



## BOARD OF HEALTH REGULATIONS

The Lakeville Board of Health Regulations generally reflect the State's Title 5 requirements. However, two suggestions would help the town direct growth into suitable areas, they are as follows;

### 1. Package Treatment Plant Regulation

Private package treatment plants are becoming more and more common. Therefore, it is important for the town to look for ways to control the locations of these facilities. It is important that there be supporting regulations in both the form of a use regulation of the Protective By-laws and in the Board of Health Regulations. The use regulation will state the locations within Lakeville where package treatment plants will be permitted, while the Board of Health regulation will support the use regulation with a statement restricting the placement of a facility in the ground water protection areas. (A model Package Treatment Plant regulation is included in Appendix E)

### 2. Summer Cottage Conversion Regulation

Lakeville has a considerable number of summer cottages, a great many of which are located on undersized lots. To prevent the cottages with poor septic systems from being

converted to year-round dwellings and thus affecting nearby water supplies, it is suggested that Lakeville's Board of Health require inspection and certification of the on site septic system upon sale of the property. (A model septic system inspection regulation is included in Appendix E).

#### OTHER APPROPRIATE REGULATIONS

The only other regulation which could use some revision is the Zoning Board of Appeals requirements for site plans. It is recommended that all site plans contain the following additional information.

1. Locus scale should be 1 to 1,000.
2. Show existing buildings within 100 feet of the property lines.
3. Stop sight distance should be shown.
4. Wetlands and waterbodies
5. Actual on-site soils information including the percent composition of soil and subsoil types. Locations of said test pits should be on the proposed locations of drainage facilities.

6. Proposed landscaping plans.
7. Proposed lighting.
8. Building elevations.
9. Proposed contours at 2 foot increments.
10. Parking, curbing and drainage.

## BIBLIOGRAPHY

1. Burchell, Robert and Listokin, David, The Financial Impact Handbook, The Center for Policy Research, Piscataway, New Jersey. 1983.
2. Canter, Larry, Impact Of Growth, Lewis Publishers, Inc. Chelsea, Michigan, 1984.
3. Calabro, John, and Associates, Freetown-Lakeville School District Study, Cohasset Massachusetts, 1988.
4. Division Of Employment Securities, 1986 Employment Wage Rates By Industry, Boston Massachusetts, 1987.
5. E. J. Flynn Engineers, Inc., The Fair Shopping Plaza, (Riverside Park, MBTA Train Station), Environmental Impact Report, Westboro, Massachusetts, 1987.
6. HMM Associates, Great Ponds Industrial Park, Environmental Impact Report, Concord, Massachusetts, 1988.
7. Institute of Transportation Engineers, 1985 Traffic Generation Tables, 1985.
8. Lakeville Annual Town Reports, Lakeville Massachusetts, 1960 - 1980.
9. Moor-Heder, Architects, Planners, Ocean Spray Cranberries Inc. Corporate Headquarters, Environmental Impact Report, Boston, Massachusetts, 1988.
10. Massachusetts Census Bureau, 1985 State Census, Boston, Massachusetts, 1986.
11. Robert, Snow, Means Co. Inc., Means Building Cost Data, Kingston, Massachusetts, 1986.
12. Sasaki Associates Inc., Raynham Woods Commerce Center, Environmental Impact Report, Watertown, Massachusetts, 1986.
13. SRPEDD, Lakeport Park, Massachusetts Community Development Action Grant Application, Taunton, Ma. 1983.
14. U.S. Federal Census Bureau, 1960 - 1980 Federal Census, Washington D.C.

## APPENDICES

## SRPEDD'S Methodology for Population Projections

SRPEDD has developed a simple, straightforward methodology to do population projections for any community using a microcomputer. The methodology is a compound cohort survival one and is "driven" by projections of new housing units expected to be built in a community. Since there is presently a housing shortage in Eastern Massachusetts, it is expected that virtually all units newly constructed will be occupied within a year or two of completion. Since many people in the area normally commute long distances to work, where the adult members of the household work will have only an indirect impact on where a household chooses to live.

The projections for population are based on the following components of population change:

1. Natural population change resulting from births and deaths.
2. Out-migration of individuals due to job changes, retirement, pursuit of higher education, lack of affordable housing, etc.
3. In-migration of people either moving into existing homes or into newly constructed units.

The specific values used to project each of these three components of population change were based on the following:

1. Fertility rates and survival rates for Bristol County or Plymouth County, depending upon the location of the community. These rates are based on 1980 data on births and deaths from the Massachusetts Department of Public Health and on the 1980 U.S. Census of Population, U.S. Bureau of the Census. The rates were generated by the Massachusetts Institute of Social and Economic Research (MISER) at the University of Massachusetts at Amherst. Survival rates are either five year or one year rates (depending on the level of detail of the projection) for males and females separately by age cohorts. Similarly, fertility rates used are five year or one year rates of births per thousand women by age cohort of mother, ages 15 to 44.

2. Net in-migration and out-migration rates for each five year age cohort based on a comparison of the 1970 population of the community (according to the 1970 U.S. Census of Population) projected forward to 1980 (called the "1980 projected population") and the actual 1980 population of the community according to the 1980 U.S. Census of Population. The 1970 population is "aged" forward to 1980 using county specific 1970 survival rates (generated by MISER) and actual births as reported by the Massachusetts Department of Public Health. The 1980 projected population was compared to 1980 actual population, cohort by cohort. The difference between the figures represents a net movement of people by age cohort in to or out of the community over the ten year period. Many communities show a net influx of new residents in all age cohorts except in the 20 to 24 age group and in some older age categories, generally over age 55.

The increase between 1970 and 1980 in year-round occupied housing units as reported by the 1970 and 1980 U.S. Censuses is used as the indicator of new household formation over the decade. The "net in-migrant" age cohorts are divided by the number of new households formed in the decade to produce an age profile of the "typical net migrant household." This term describes the

average number of people (or fraction of people) of each age cohort who would be added to the town's population for each new household created. It should be noted that the "typical net migrant household" does not reflect the typical family moving into or out of the community. Rather it is a statistical average which combines the effects of in-migration, out-migration and changing family size. The remainder rates of net out-migrant age cohorts are computed separately. This methodology is discussed at the end of this appendix.

Next, the 1980 population of the community is projected forward to 2005 using a model based on the aforementioned fertility and survival rates, as well as the number of new dwelling units expected to be built, which in turn generates the number of projected in-migrants. The rate of new housing starts expected in the future is based on an analysis of past residential building trends, on building permit data from the local building department, and on verbal input from the local building inspector and/or city or town planner. Net out-migrant age cohorts are projected forward separately, independent of new housing construction, based on the remainder rate computed previously.

SRPEDD's computer model for population projections can be changed fairly easily in future years to reflect changing circumstances, such as actual fluctuations in building permits, or to project different future scenarios, such as high growth, low growth and middle growth rates.

#### Methodology of Deriving Net Out-migrant Age Group Remainder Rates:

The actual 1980 population in each net out-migrant age group is divided by the projected 1980 population to derive a ten year remainder rate for the group. ( $R_{N}^{10}$  where  $R^{10}$  = the 10 year rate and N = the specific age group.) To obtain a five year remainder rate, the square root of  $R_{N}^{10}$  was computed. This rate is applied specifically to net out-migrant age cohorts.

LAKEVILLE POPULATION PROJECTIONS

SUMMARY OF HOUSING PROJECTIONS  
ESTIMATED NEW HOUSING UNITS:

1980-1984	=	319
1985-1989	=	627
1990-1994	=	614
1995-1999	=	719
2000-2004	=	824

TABLE 12:  
SUMMARY TABLE OF POPULATION PROJECTIONS:

5/4/88

AGE COHORT	1980 POP.	1985 POP.	1990 POP.	1995 POP.	2000 POP.	2005 POP.
UNDER 5	363	387	477	543	620	708
5-9	470	457	576	661	758	867
10-14	592	591	695	809	934	1,071
15-19	559	632	671	773	900	1,038
20-24	337	451	510	541	624	726
25-29	435	389	555	612	660	761
30-34	541	603	721	879	991	1,095
35-39	449	648	816	929	1,122	1,270
40-44	340	499	749	913	1,043	1,253
45-49	289	347	514	761	927	1,059
50-54	320	316	404	567	819	993
55-59	293	339	362	446	613	868
60-64	274	300	361	383	470	636
65-69	246	282	332	388	416	507
70-74	179	232	279	322	376	406
75-79	114	156	206	246	285	331
80-84	64	85	116	152	183	211
85+	66	72	88	115	150	187
TOTAL	5,931	6,785	8,431	10,039	11,892	13,986
TOTAL HOUSEHOLDS	1,891	2,210	2,837	3,451	4,170	4,994
PERSONS/HOUSEHOLDS	3.14	3.07	2.97	2.91	2.85	2.80



APPENDIX B

Larry Canter Impact of Growth:

Predicting Future Conditions with Project, Tables 11 & 12.

Methodolgy:

Determine the five year influx of workers to the community based on the following standards;

- a) The communities percentage of the Region of Influence. In this case 1/2 of 11%, or 5.5%.
- b) The percentage of workers who will be accompanied by family. 25% unaccompanied, 75% accompanied.

Unaccompanied workers demand on housing type:

Single family units: 15%, 3.0 workers per unit  
 Multi family units: 27%, 2.0 workers per unit  
 Mobile homes: 38%, 2.5 workers per unit  
 Other unit types: 20%, 1.5 workers per unit

Accompanied workers demand on housing type:

Single family units: 55%, 1 family per unit  
 Multi family units: 12%, 1 family per unit  
 Mobile homes: 31%, 1 family per unit  
 Other unit types: 2%, 1 family per unit

Example of Cumulative Housing Requirements for 1990 from Table 11:

Housing Type	Unaccompanied Workers (25%)	Accompanied Workers (75%)	Total
Single family units:	$(72+29)(.25)(.15)/3$	$+ (72+29)(.75)(.55)$	= 43
Multi family units:	$(72+29)(.25)(.27)/2$	$+ (72+29)(.75)(.12)$	= 12
Mobile homes:	$(72+29)(.25)(.38)/2.5$	$+ (72+29)(.75)(.31)$	= 27
Other unit types:	$(72+29)(.25)(.20)/1.5$	$+ (72+29)(.75)(.02)$	= 5

The total is off by one as a result of rounding: 88

# APPENDIX C

## SOIL LEGEND

The first capital letter is the initial one of the soil name. A second capital letter, A, B, C, D, or E, shows the slope. Symbols without a slope letter are those of nearly level soils or land types.

SYMBOL	NAME	SYMBOL	NAME
AfA	Agawam fine sandy loam, 0 to 3 percent slopes	HoA	Hinckley gravelly loamy sand, 0 to 3 percent slopes
AfB	Agawam fine sandy loam, 3 to 8 percent slopes	HoB	Hinckley gravelly loamy sand, 3 to 8 percent slopes
AgA	Agawam fine sandy loam, silty subsoil variant, 0 to 3 percent slopes	HoC	Hinckley gravelly loamy sand, 8 to 15 percent slopes
AgB	Agawam fine sandy loam, silty subsoil variant, 3 to 8 percent slopes	HoE	Hinckley gravelly loamy sand, 15 to 35 percent slopes
AuA	Au Gres and Wareham loamy sands, 0 to 3 percent slopes	HoB	Hollis-Charlton fine sandy loams, 3 to 8 percent slopes
AuB	Au Gres and Wareham loamy sands, 3 to 8 percent slopes	HpC	Hollis-Charlton very rocky fine sandy loams, 3 to 15 percent slopes
BaA	Belgrade silt loam, 0 to 3 percent slopes	HrC	Hollis-Charlton extremely rocky fine sandy loams, 3 to 15 percent slopes
BaB	Belgrade silt loam, 3 to 8 percent slopes	HrD	Hollis-Charlton extremely rocky fine sandy loams, 15 to 25 percent slopes
BbB	Bernardston silt loam, 3 to 8 percent slopes	Ma	Made land
BbC	Bernardston silt loam, 8 to 15 percent slopes	MeA	Merrimac fine sandy loam, 0 to 3 percent slopes
BcB	Bernardston very stony silt loam, 3 to 8 percent slopes	MeB	Merrimac fine sandy loam, 3 to 8 percent slopes
BcD	Bernardston very stony silt loam, 8 to 25 percent slopes	MeC	Merrimac fine sandy loam, 8 to 15 percent slopes
BdA	Birdsoll silt loam, 0 to 3 percent slopes	MfA	Merrimac sandy loam, 0 to 3 percent slopes
Ba	Borrow land, loamy material	MfB	Merrimac sandy loam, 3 to 8 percent slopes
Br	Borrow land, sandy and gravelly materials	MfC	Merrimac sandy loam, 8 to 15 percent slopes
BsA	Brockton loam, 0 to 3 percent slopes	MfE	Merrimac sandy loam, 15 to 35 percent slopes
BtA	Brockton extremely stony loam, 0 to 3 percent slopes	Mu	Muck, shallow
CoA	Carver coarse sand, 0 to 3 percent slopes	Mv	Muck, deep
CoB	Carver coarse sand, 3 to 8 percent slopes	NnA	Ninigret sandy loam, silty subsoil variant, 0 to 3 percent slopes
CoC	Carver coarse sand, 8 to 15 percent slopes	NnB	Ninigret sandy loam, silty subsoil variant, 3 to 8 percent slopes
CaE	Carver coarse sand, 15 to 35 percent slopes	NoA	Norwell sandy loam, 0 to 3 percent slopes
CbA	Carver loamy coarse sand, 0 to 3 percent slopes	NoB	Norwell sandy loam, 3 to 8 percent slopes
CbB	Carver loamy coarse sand, 3 to 8 percent slopes	NpA	Norwell extremely stony sandy loam, 0 to 3 percent slopes
CbC	Carver loamy coarse sand, 8 to 15 percent slopes	NpB	Norwell extremely stony sandy loam, 3 to 8 percent slopes
CcD	Carver and Gloucester soils, 8 to 35 percent slopes	Pe	Peat
DeA	Deerfield sandy loam, 0 to 3 percent slopes	PtA	Pittstown silt loam, 0 to 8 percent slopes
DeB	Deerfield sandy loam, 3 to 8 percent slopes	PuB	Pittstown very stony silt loam, 3 to 15 percent slopes
Du	Dune land and Coastal beach	QuA	Quonset sandy loam, 0 to 3 percent slopes
EnA	Enfield very fine sandy loam, 0 to 3 percent slopes	QuB	Quonset sandy loam, 3 to 8 percent slopes
EnB	Enfield very fine sandy loam, 3 to 8 percent slopes	QuC	Quonset sandy loam, 8 to 15 percent slopes
EnC	Enfield very fine sandy loam, 8 to 15 percent slopes	QuE	Quonset sandy loam, 15 to 35 percent slopes
EsA	Essex coarse sandy loam, 0 to 3 percent slopes	RaA	Royndham silt loam, 0 to 3 percent slopes
EsB	Essex coarse sandy loam, 3 to 8 percent slopes	Sa	Saco very fine sandy loam
EsC	Essex coarse sandy loam, 8 to 15 percent slopes	Sb	Sanded muck
EtB	Essex very stony coarse sandy loam, 3 to 8 percent slopes	ScA	Scarboro sandy loam, 0 to 3 percent slopes
EtC	Essex very stony coarse sandy loam, 8 to 15 percent slopes	SdA	Scarboro fine sandy loam, silty subsoil variant, 0 to 3 percent slopes
EtD	Essex very stony coarse sandy loam, 15 to 25 percent slopes	SeA	Scituate sandy loam, 0 to 3 percent slopes
EuB	Essex extremely stony coarse sandy loam, 3 to 8 percent slopes	SeB	Scituate sandy loam, 3 to 8 percent slopes
EuC	Essex extremely stony coarse sandy loam, 8 to 25 percent slopes	SfA	Scituate very stony sandy loam, 0 to 3 percent slopes
Fr	Fresh water marsh	SfB	Scituate very stony sandy loam, 3 to 8 percent slopes
GoA	Gloucester fine sandy loam, firm substratum, 0 to 3 percent slopes	SgA	Scituate extremely stony sandy loam, 0 to 3 percent slopes
GoB	Gloucester fine sandy loam, firm substratum, 3 to 8 percent slopes	SgB	Scituate extremely stony sandy loam, 3 to 8 percent slopes
GoC	Gloucester fine sandy loam, firm substratum, 8 to 15 percent slopes	Td	Tidal marsh
GbA	Gloucester loamy sand, 0 to 3 percent slopes	TsA	Tisbury very fine sandy loam, 0 to 8 percent slopes
GbB	Gloucester loamy sand, 3 to 8 percent slopes	WaA	Walpole fine sandy loam, silty subsoil variant, 0 to 3 percent slopes
GbC	Gloucester loamy sand, 8 to 15 percent slopes	WbA	Warwick fine sandy loam, 0 to 3 percent slopes
GcB	Gloucester very stony fine sandy loam, firm substratum, 3 to 8 percent slopes	WbB	Warwick fine sandy loam, 3 to 8 percent slopes
GcC	Gloucester very stony fine sandy loam, firm substratum, 8 to 15 percent slopes	WbC	Warwick fine sandy loam, 8 to 15 percent slopes
GcD	Gloucester very stony fine sandy loam, firm substratum, 15 to 25 percent slopes	WcC	Warwick very rocky fine sandy loam, 3 to 15 percent slopes
GdB	Gloucester very stony loamy sand, 3 to 8 percent slopes	WnA	Windsor loamy sand, 0 to 3 percent slopes
GdC	Gloucester very stony loamy sand, 8 to 15 percent slopes	WnB	Windsor loamy sand, 3 to 8 percent slopes
GeB	Gloucester extremely stony loamy sand, 3 to 15 percent slopes	WnC	Windsor loamy sand, 8 to 15 percent slopes
GeD	Gloucester extremely stony loamy sand, 15 to 35 percent slopes	WnE	Windsor loamy sand, 15 to 35 percent slopes

## APPENDIX D

### Special Permit Regulations

#### 1. Site Plan Review (7.01)

##### 7.01.1 Statement of Purpose

The purpose of site plan review is to ensure that the design and layout of certain developments permitted as of right (or by special permit) will constitute suitable development and will not result in a detriment to the neighborhood or the environment.

In considering a site plan the Planning Board acting as the Special Permit Granting Authority (SPGA) shall assure:

1. Protection of adjacent areas against detrimental or offensive uses on the site by provision of adequate surface water drainage, buffers against light, sight, sound, dust and vibration, and preservation of light and air;
2. Convenience and safety of vehicular and pedestrian movement within the site and in relation to adjacent areas;
3. Adequacy of the methods of disposal for wastes;
4. Protection of environmental features on the site and in adjacent areas.

##### 7.01.2 Projects Requiring Site Plan Review

No business or industrial building over 2,500 square feet shall be erected or externally enlarged, and no business or industrial use shall hereafter be established or expanded in ground area except in conformity with a site plan bearing an endorsement of approval from the (SPGA). The (SPGA) shall adopt regulations for carrying out its duties under this section.

##### 7.01.3 Procedure

1. An applicant for site plan review under this section shall file with the SPGA 6 copies of each of an application and a site plan. The site plan shall be prepared by an engineer, architect, or landscape architect.
2. The following information shall be required by the applicant for site plan review:
  - a. locus plan;

- b. location of structures within 100 feet of property lines;
  - c. existing and proposed buildings, showing setbacks from property lines;
  - d. building elevations;
  - e. existing and proposed contour elevations in two-foot increments;
  - f. parking areas, driveways, and facilities for pedestrian movement
  - g. drainage system;
  - h. utilities and lighting;
  - i. landscaping, including trees to be removed and retained;
  - j. loading and unloading facilities;
  - k. provisions for refuse removal;
  - l. existing and projected traffic volumes from the site and effect on the local road network;
  - m. drainage calculations and type of soil;
  - n. other information as may be necessary to determine compliance with the provisions of this bylaw.
3. The Planning Board acting as SPGA shall examine the following concerns in reviewing the site plans of the proposed development:
- a. proper drainage of the property;
  - b. safe access to the development, minimizing the number and width of curb cuts;
  - c. acceptable design and layout of ways, streets, and parking areas;
  - d. that the projected traffic increases to the local road(s) is within the capacity of the existing network for both daily and peak hour volumes;
  - e. proper lighting design for parking areas;
  - f. that proposed use(s) will not have a detrimental effect on the abutting neighborhoods or natural environment;

g. complies with the Lakeville Master Plan.

4. The SPGA shall within five days of receipt transmit to the planning board, the building inspector and the conservation commission six (6) copies of the application and site plan. The boards receiving these copies shall have up to 30 days to make recommendations to the SPAG.

## 2. Aquifer Protection District By-law (7.02)

### 7.02.1 Statement of Purpose

The purposes of this by-law are to protect public health from the contamination of existing and potential public and private water supplies and to protect the general welfare by preserving limited water supplies for present and future use.

### 7.02.2 Delineation of Ground Water Protection District

1. For the purposes of this by-law there is hereby established within the town of Lakeville an overlay district consisting of certain ground water protection areas, including aquifers and recharge areas, which are delineated on the zoning map dated \_\_\_\_\_, entitled "Aquifer Protection District, Town of Lakeville" and which shall be considered as superimposed over other districts established by the zoning by-laws of this town. This map, as it may be amended from time to time, is on file with the office of the town clerk, and, with any explanatory material thereon, is hereby made a part of this by-law.
2. Where the bounds of the Aquifer Protection District, as delineated on the Aquifer Protection District map, are in doubt or in dispute, the burden of proof shall be upon the owners of the land in question to show where they should properly be located. At the request of the owners, the town may engage a professional hydrogeologist or soil scientist to determine more accurately the location and extent of an aquifer or recharge area and may charge the owners for all or part of the cost of the investigation.

### 7.02.3 Permitted Uses

Within the Aquifer Protection district, the following uses are permitted, provided that all necessary permits, orders and approvals required by local, state and federal law are also obtained:

1. conservation of soil, water plants and wildlife;
2. outdoor recreation, not involving the use of motor vehicles or motor boats, including boating, fishing, nature study and hunting where otherwise legally permitted;
3. foot, bicycle and horse paths and bridges;
4. maintenance and repair of any existing structure, provided there is no increase in impervious pavement;
5. normal operation and maintenance of existing water bodies and dams, splash boards, and other water control, supply and conservation devices;

6. residential development, permitted in the underlying district, provided that no more than 10 percent of a building lot (including the portion of any new street abutting the lot) is rendered impervious and that in unsewered areas minimum required lot area per dwelling unit shall be one acre or the minimum required in the underlying district, whichever is greater.
7. farming, gardening, nursery, conservation, forestry, harvesting and grazing uses, provided that fertilizers, herbicides, pesticides, manure and other leachable materials are not stored outdoors and that the use of such materials in non-domestic applications is approved by special permit.

7.02.4

Prohibited Uses

Within the Aquifer Protection District, the following uses are prohibited:

1. storage of liquid petroleum products of any kind except for storage in a free-standing container within a building of fuel for the heating of that building;
2. disposal of hazardous materials;
3. storage of hazardous wastes, as defined in Mass. Gen. Laws Ch. 21C, as amended;
4. disposal of solid wastes other than brush or stumps;
5. disposal of leachable wastes except for subsurface waste disposal from one-family residential units.
6. storage of road salt or other deicing chemicals;
7. disposal of snow that contains deicing chemicals and that has been brought in from outside the District;
8. industrial uses that discharge process wastewater on site;
9. outdoor storage of fertilizers, herbicides and pesticides, and outdoor uncovered storage of manure;
10. animal feedlots;
11. dry cleaning establishments;
12. chemical and bacteriological laboratories;
13. metal plating establishments;

14. boat and motor vehicle service, washing and repair establishments;
15. junk and salvage yards;
16. the rendering impervious of more than 10% of any lot;
17. mining of land except as incidental to a permitted use.

#### 7.02.5

##### Special Permit Uses

The following uses may be permitted by a special permit from the Special Permit Granting Authority (SPGA), under such conditions as the SPGA may require:

1. commercial and industrial activities permitted in the underlying district and involving the manufacture,
2. the application of pesticides for uses that are non-domestic provided that all necessary precautions shall be taken to prevent hazardous concentrations of pesticides in the water and on the land within the Aquifer Protection District as a result of such application, such precautions to include, but not be limited to, erosion control techniques, the control of runoff water (or the use of pesticides having low solubility in water), the prevention of volatilization and redistribution of pesticides and the lateral displacement (i.e. winddrift) of pesticides; and
3. the application of fertilizers for uses that are nondomestic provided that such application shall be made in such a manner as to minimize adverse impacts on surface water and ground water due to nutrient transport and deposition or sedimentation;
4. nonconforming uses existing at the effective date of this by-law may be expanded only to the extent allowed by special permit, and then only if the proposed expansion shall not be more detrimental to the water supply than the existing use;
5. one nonconforming use of a structure, building, or property may be changed to another nonconforming use only by special permit and only if the proposed new use shall be less detrimental to ground water than the prior use;
6. if any nonconforming use ceases for any reason for a period of two years, such land and buildings shall thereafter be used and developed only in accordance with the terms of this Aquifer Protection By-law;
7. wherever a nonconforming use is changed to a permitted use, such use shall not thereafter revert to a nonconforming status.



7.02.6

Procedures for Issuance of Special Permits

\*See procedures for Special Permits under MGL 40A, Section 9.

### 3. Residential Cluster Development (7.03)

#### 7.03.1: Statement of Purpose:

A residential cluster development may be authorized by special permit in the Town of Lakeville in order to achieve the following objectives:

1. Flexible and sensitive site design;
2. Promotion of measures to ensure compatibility of growth and sensitivity to the natural environment;
3. Enhancement of residential and community amenities by provision of open space;
4. Promotion of economical and efficient use of roads, water and sewer lines and other related infrastructure;
5. Promotion of diverse and energy-efficient housing at a variety of costs; and
6. Protection of water bodies and supplies, wetlands, floodplains, agricultural lands, wildlife, and other natural resources.

#### 7.03.2 Definition and Applicability:

Residential cluster development means a residential development in which the buildings and accessory uses are clustered together into one or more groups separated from adjacent property and other groups within the development by intervening open land, unless deemed otherwise by the special permit granting authority.

A Residential Cluster Development shall conform to the following conditions:

1. Contain a minimum tract size of twenty (20) acres.
2. The maximum number of dwelling units shall conform to the existing zoning area requirements of said property. Except for proposals which include an Inclusionary Housing Element. (See 7.03.3)
3. No more than four (4) dwelling units may be attached within a building.
4. There shall be a minimum width of 30 feet of buffer area between attached cluster buildings, and a minimum width of 50 feet of buffer area between any clusters and the abutting property lines or public ways. These buffer areas are not to be counted as a portion of the dedicated open space. These buffer areas shall provide suitable landscaping to screen the cluster buildings from each other, abutters, and the street year round.

5. Streets, ways, parking, drainage and utilities shall be designed and constructed in accordance with the SPGA rules and regulations for residential cluster developments.

6. Required Open Land:

a. At least 40% of the tract (exclusive of land set aside for roads and parking) shall be open lands. At least 75% of the open land shall be suitable for passive or active recreations use, and shall not be wetlands or land subject to seasonal flooding.

b. The open land, and such other facilities as may be held in common, shall be conveyed to one of the following, as determined by the Planning Board, subject to the following guidelines:

In general, valuable natural resource land, such as wetlands not suitable for any public use or suitable for extensive public recreational use, should be conveyed to the Town or to a trust; whereas land which will be principally used by the residents of the cluster should be conveyed to a homes association.

i. To a corporation or trust comprising a home association whose membership includes the owners of all lots or units contained in the tract. The developer shall include in the deed to owners of individual lots beneficial rights in said open land, and shall grant a conservation restriction to the Town of Lakeville over such land pursuant to General Laws, Chapter 184, Sections 31-33, to ensure that such land be kept in an open or natural state and not be built upon the residential use or developed for accessory uses such as parking or roadways. This restriction shall be enforceable by the Town through its Conservation Commission in any proceeding authorized by Section 33 of Chapter 184. In addition, the developer shall be responsible for the maintenance of the common land and any other facilities to be held in common until such time as the homes association is capable of assuming said responsibility. In order to ensure that the association will properly maintain the land deeded to it under this section, the developer shall cause to be recorded at the County Registry of Deeds a Declaration of Covenants and Restrictions which shall, at a minimum, provide for the following:

1. Mandatory membership in an established homes association as a requirement of ownership of any lot in the tract.

2. Provisions for maintenance assessments of all lots in order to ensure that the open land is maintained in a condition suitable for the uses approved by

the homes association. Failure to pay such assessment shall create a lien on the property assessed, enforceable by either the homes association or the owner of the lot.

3. Provision which, so far as possible under the existing law, will ensure that the restrictions placed on the use of the open land will not terminate by operation of law.
  - ii. To a nonprofit organization, the principal purpose of which is the conservation of open space. The developer shall grant a conservation restriction as set out in (a) above.
  - iii. To the Conservation Commission of the Town for park or open space use, subject to the approval of the Selectmen, with a trust clause ensuring that it be maintained as open space.
7. Subject to the above, the open space may be used for recreational purposes, including golf courses, riding trails, tennis courts, gardens, swimming pools, and temporary structures.
8. A site plan and supporting data as required by the rules and regulations for residential development.

7.03.3 (Open)

7.03.4 Administrative Procedures:

The Planning board as the Special Permit Granting Authority (S.P.G.A.) for Residential Cluster Developments shall adopt rules relative to the issuance of spacial permits and file a copy with the Town Clerk.

7.03.5 Review Procedures:

The S.P.G.A. shall review all applications for a residential cluster development to determine the sensitivity of the site to the following criteria:

1. Compatibility with existing developments;
2. Compliance with adopted plans;
3. Acceptable design and layout of ways, streets, drainage and paving;
4. That the projected traffic increase to the local road(s) is within the capacity of the existing network;
5. Compliance with environmental standards; and
6. Appropriateness of building and site design.

SECTION 7.03 INCLUSIONARY HOUSING

1. Statement of Purpose:

An inclusionary housing element may be authorized as a condition to a Residential Cluster Development Special Permit by the Planning Board in the Town of Lakeville in order to achieve the following objectives:

- a. Promotion of different types of housing stock within Lakeville.
- b. To allow residents of different ages and income to remain in Lakeville.
- c. To assist the town in achieving a permanent percentage of subsidized housing stock for the town's residents.

2. Definition and Applicability:

An Inclusionary Housing Element is a provision which allows an applicant to request an increase in the density of a Residential Cluster Development proposal from the Planning Board in order to create affordable units within the development.

An Inclusionary Housing Element proposal shall conform to the following conditions:

- a. Applicant shall submit the Inclusionary Housing Element proposal with supporting information as part of the submittal for a Residential Cluster Development Special Permit.
- b. The Inclusionary Housing Element proposal shall comply with the requirements for Residential Cluster Developments (See Section 7.03.02) and the requirements set forth in rules and regulations for Residential Cluster Development Special Permit.
- c. No Inclusionary Housing Element proposal shall be allowed in areas delineated for water resource protection (Zone III).
- d. The level area used for the calculation of the proposed density shall not include land required for open space and buffer zones (See 7.03.02.4 and 703.02.6).
- e. 30,000 square feet is the minimum lot area allowed for calculation of the density of an Inclusionary Housing element.
- f. All Housing units must contain a minimum size of 800 square feet of living area. (This provision does not apply to single family detached dwelling units.)

- g. Ten (10%) percent of the developments total units shall be donated to the Lakeville Housing Authority to be used for subsidized housing.
- h. Units for the Housing Authority shall include a mix of one, two and three bedrooms as well as Handicapped units. The Planning Board shall determine the amount and types of units based on the Recommendation of the Housing Authority.
- i. The units donated to the Housing Authority shall be dispersed throughout the site and be of the same design and construction of the marked rental units.
- j. The Planning Board shall not approve more than one Inclusionary Housing Proposal for the town, during each calender year.

3. General Procedures:

The Board should review the Inclusionary Housing Element as a Component of the Residential Cluster Development applicant which may be granted as a condition to the Special Permit. An applicant for a residential cluster proposing a density bonus under this provision shall submit a site plan showing the development as permitted under Section 7.03 (Residential Cluster Development) and a separate site plan, including all other required information, showing the developmnt as proposed with the density bonus under Section 7.03.03 (Inclusionary Housing).

5. Accessory Apartments (7.04)

7.04.1 Statement of Purpose

The purpose of this bylaw is to provide housing opportunities in existing single residences; to permit the economic use of existing large single homes and non-residential buildings by providing an opportunity for income assistance to owners/occupants; to encourage investment in renovation and maintenance; and to conserve property values and the visual character of residential districts.

7.04.02 District Designations

See Section 4, Use Regulations

7.04.03 Special Permit Uses

The Zoning Board of Appeals, acting as the special permit granting authority, may grant a special permit for the construction of accessory apartments, in the following circumstances:

1. The division of a single family dwelling into two independent dwelling units.
2. The construction of one to four independent dwelling units in a building not presently used for residential purposes in which the structure will be used for a mix of residential and non-residential purposes.

7.04.04 Dimensional Requirement

1. The lot area after the construction of an accessory apartment(s) shall be at least 70,000 square feet per dwelling unit, and the subject lot is suitable for the proposed use.
2. Special Permit Granting Authority shall require a adequate provision for water and sewer.
3. The accessory apartment(s) shall not contain less than 700 square feet of living space per dwelling unit.
4. The accessory apartment shall occupy no more than forty percent (40%) of the floor area of the building. This provision shall not apply to accessory apartments located in non-residential buildings.
5. The SPGA may limit the maximum number of occupants and the maximum area of an accessory apartment(s) to insure that the accessory apartment(s) is clearly subordinate to the principal single family dwelling.

7.04.05 Conditions

Applicants for a special permit shall meet the following conditions:

1. Accessory apartments are only permitted in buildings in existence at the time the Zoning Bylaw was adopted.
2. No accessory apartments shall be constructed unless the lot contains two off-street parking spaces per dwelling unit. All off-street parking spaces shall be paved with a hard, dust free surface. All off-street parking space shall be directly accessible to a street, except where the SPGA determine that the strict enforcement of this provision would be detrimental.
3. Except for safety features required by state regulations, the creation of an accessory apartment(s) shall not result in any significant changes to the exterior of the building and shall preserve the appearance of a single family residence. No major additions or changes may have been made to the building exterior subsequent to \_\_\_\_\_.
4. A site plan and supporting data as required by the rules and regulations for accessory apartments.

7.04.06 Administrative Procedures

The SPGA shall adopt rules and regulations relative to the procedures to be followed, and the criteria and performance standards for the evaluation of special permits, and may provide for informal pre-application hearings for the consideration of preliminary plans. The rules and regulations shall specify any additional information the SPGA deems necessary to make it's review, including the quantities, content, and scale of maps to be presented.



## APPENDIX E

### BOARD OF HEALTH REGULATIONS

#### 1. INSPECTION OF SEPTIC SYSTEMS

##### REGULATION:

The inspection of existing Commercial and Residential sewage disposal systems shall be the responsibility of the owner prior to Real Estate Transfers.

##### PURPOSE:

To determine and to protect the Public Health from potential and present sources of pollution to ground water or surface water from existing sewage disposal systems, the Board of Health requires that the owner(s) of a developed property in Lakeville, Massachusetts order an Inspection of the existing septic system prior to the time of transfer of that property.

For the purpose of this regulation, reference is made to the standards and provisions of title V of the State Sanitary Code, and to the existing regulations of the Lakeville Board of Health Regulations for sub-Surface Sewage Disposal.

After an inspection by a Registered Professional Engineer or Sanitarian that Engineer or Sanitarian shall file a Certificate of Compliance/Inspection Form with the Board of Health with copies to the Seller, Buyer, and Assessor's office stating whether the system is in Good, Marginal, or Failed condition.

If it is determined by the Board of Health that the system constitutes a danger to the Public Health, the board shall order the owner to make repairs/replacement of the system. If the work is not completed within the time designated by the Board of Health, the board may impose fines and/or repair/replace the system at the expense of the owner. Regulations of the Board of Health shall apply to all repairs or replacement of the system.

In additional to any other remedy, the Board of Health may take any enforcement action deemed appropriate, including but not limited to Criminal Prosecution, to seek a fine in accordance with Chapter 111, Section 31, or Civil Action in the Courts of the commonwealth for injunctive relief or money damages or both, or both Civil and Criminal enforcement.

The Board of Health is authorized to issue Notices of Violation, Cease and Desist orders, or other Administrative enforcement orders to compel compliance with the terms of these Regulations.

This regulation, however, shall not be effective at the conveyance or devise of the property to the Surviving Spouse or any of the Decendants

of the Property Owner and further, shall not apply to a sale under power of sale contained in a bonafide mortgage effecting the property.

INSTRUCTIONS:

1. The Inspection by the Registered Engineer or Sanitarian should take place no more than ninety (90) days nor less than thirty (30) days prior to the transfer of property. The Board of Health must receive the Inspection Certificate Form within seven (7) days of the Inspection. In addition, the copies must be given to the Owner, to the Buyer, and the Assessor's Office at that time. Inspection/Certificate Forms are provided by the Board of Health.
2. If the Inspection finds evidence of sewage on the surface or draining into any waterways or wet lands, the board of Health shall determine within fourteen (14) days after receiving the Inspection Forms, whether or not the system constitutes a danger to the Public Health and should be repaired/replaced. By the end of the time period, the Board of Health, or its Agent, must notify the Owner by Certified Mail whether or not the system must be repaired/replaced.
3. If the Inspection finds the system to be "Marginal", the Board of Health will decide within fourteen (14) days after receiving the Inspection Form whether or not the system constitutes a danger to the Public Health and should be repaired/replaced. Before the end of that time period the Board of Health, or its Agent, shall notify the Owner by Certified Mail whether or not the system must be repaired/replaced.
4. The amount of allowable time for the repair or replacement will be determined by the Board of Health and will be contained in the letter of notification to the Owner. A copy of the Notification will be filed at the Town Assessor's Office.
5. If repair/replacement is required, upon completion of that work, the Health Agent must inspect and signify, in written form, that satisfactory repairs have been made.
6. Any system having been installed and having received final inspection approval by the Board of Health or its Agent within 24 months, shall be exempt from this Regulation, provided additional living space has not been added to the residence in question.

## 2. REGULATION OF SMALL WASTEWATER TREATMENT FACILITIES

The Board of Health of the Town of Lakeville, Commonwealth of Massachusetts, acting under the authority of Chapter 111, Section 31 of the Massachusetts General Laws and any amendments and additions thereto, and by any other power thereto enabling, and acting thereunder and in accordance therewith, have, in the interest of and for the preservation of the public health, duly made and adopted the following regulations effective upon publication.

### DESIGN, OPERATION, AND MAINTENANCE OF SMALL WASTEWATER TREATMENT FACILITIES

#### 1.00 Permit Requirements

##### 1.10 Disposal Works construction Permit

No system or facility to be used for treating, neutralizing, stabilizing, or disposing of wastewater from homes, public buildings, commercial or industrial buildings, or any types of establishments, shall be located, constructed, installed operated, altered, or repaired until a DISPOSAL WORKS CONSTRUCTION PERMIT for such shall have been issued by the BOARD OF HEALTH. No construction of any building or facility which rely upon such wastewater system or facility shall be allowed until a DISPOSAL WORKS CONSTRUCTION PERMIT shall have been issued by the Board of Health.

Such system or facility as regulated herein shall include, but not be restricted to, SEWERS serving such facility, WASTEWATER PUMPING STATIONS, WASTEWATER TREATMENT WORKS, ALL WASTEWATER TREATMENT OPERATIONS, SLUDGE TREATMENT AND MANAGEMENT, DISINFECTION, ADVANCED WASTE TREATMENT, SUBSURFACE DISPOSAL AND LAND TREATMENT, WASTEWATER RECYCLING AND RE-USE.

Such system or facility as regulated herein shall be referenced as SMALL WASTEWATER TREATMENT FACILITY.

##### 1.20 Certificate of Compliance and Operations Permit

No SWWTP as permitted herein shall be placed in service, nor shall new buildings or facilities or additions to existing buildings or facilities which rely upon such SWWTP be occupied or used until the BOARD OF HEALTH has issued a CERTIFICATE OF COMPLIANCE AND OPERATIONS PERMIT.

##### 1.30 Service Area and Limitations

The SWWTP shall not serve a volume of sewage flow from any subject project in excess of the aggregate volume that would be generated by each lot, which could have constructed upon it, a septic system installed and operated in full compliance with Title 5, the State Environmental Code and the regulations of the Board of Health.

In order to provide adequate wastewater treatment capacity in the event of a failure of said SWWTP, each residential lot connected to a SWWTP shall be shown to have reserve area adequate to construct a septic system in accordance with Title 5, the State Environmental Code and the regulations of the Board of Health.

2.00 Submittals

2.10 Applications, Reports, Plans, Data, Documents

A copy of all applications, reports, plans, specifications, data, and supporting documents required by these regulations and by the regulations of any other agency in connection with the approval or operation and maintenance of the subject facility shall be submitted to the Board of Health. In the case of requests for a Board of Health action, such materials shall be submitted a minimum of 90 days prior to the date upon which an action by the Board of Health is desired. In the case of submittals to other agencies, all material shall be submitted to the Board of Health at the time of submittal to that agency. A Board of Health Disposal Works Construction Permit will not be issued prior to approval by the Massachusetts Department of Environmental Quality Engineering. Other submittals shall be made in accordance with schedules as specifically designated by the Board of Health.

3.00 Other Regulations and Guidelines

3.10 Federal, State, and Local Regulations

The applicant for any SWWTP shall comply with all applicable Federal, State, and Town or City regulations as existing and may be amended from time to time. All data, reports, and plans designated by those regulations shall be submitted to the Board of Health. All data required by these regulations shall be promptly submitted to the Board of Health in a timely fashion.

3.20 Standards for Design, Operations, and Maintenance

These regulations herein do not and are not intended to cover all aspects of engineering design, operation, and maintenance of SWWTPs. Rather they outline the specific BOARD OF HEALTH INTERESTS AND POLICIES that may not be adequately reflected in other existing regulations, policies, and manuals. Where local regulations or specifications herein are more strict, they shall prevail. Where regulations or specifications or guidelines of other political subdivisions or agencies of jurisdiction or as included herein are more strict, they shall prevail.

The applicant shall specifically follow the following regulations and guidelines which address the various aspects for the systems and facilities considered herein, and are incorporated as a part of these regulations by reference where applicable.

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL QUALITY ENGINEERING (DEOE)

Guidelines for the Design, Construction, Operation, and Maintenance of  
Small Sewage Treatment Facilities with Subsurface Effluent Disposal  
Title 5 - The State Environmental code  
Ground Water Quality Standards  
Ground Water Discharge Permit Program

NEW ENGLAND INTERSTATE WATER POLLUTION CONTROL COMMISSION (NEIWPC)  
Guidelines for the Design of Wastewater Treatment Works  
1980 Edition TR-16

WATER POLLUTION CONTROL FEDERATION (WPCF - MPO #8)  
MANUAL OF PRACTICE NO. 8 - Wastewater Treatment Plant Design

RECOMMENDED STANDARDS FOR SEWAGE WORKS: GREAT LAKES - UPPER  
MISSISSIPPI RIVER  
BOARD OF STATE SANITARY ENGINEERS (the Ten State Standards)

WATER POLLUTION CONTROL FEDERATION (WPCF MPO - 9)  
MANUAL OF PRACTICE NO. 9 - SEWER DESIGN AND CONSTRUCTION  
(Same as AMERICAN SOCIETY OF CIVIL ENGINEERS Manual and Reports on  
Engineering Practice No. 37)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, MUNICIPAL ENVIRONMENTAL  
LABORATORY, "Design Information on Rotating Biological Contractors  
(EPA-60012-84-106)

For situations not covered by these regulations and guidelines, good  
engineering practice, as determined by the Board of Health, shall  
govern.

While it is recognized that certain modifications or exceptions may be  
necessary where justified in unusual situations, any such modifications  
or exceptions shall only be provided by application for variance to the  
Board of Health. Any variances to these regulations issued by the  
Board of Health shall comply with the provisions outlined in the State  
Environmental Code, Title 5.

#### 4.00 General Project Planning Requirements

Certain basic principles shall be considered early in the planning and  
design process in order to ensure that the SWWTP development process  
will meet all requirements.

#### 4.10 Environmental Compatibility

The plans for the proposed system or facility shall take into account  
all aspects of public health and environmental quality protection.  
Efforts shall be taken to preserve water supply, private property,  
wetlands, wildlife habitat, recreational sites, historic sites, and  
natural beauty.

The design shall be prepared so as to have the least possible adverse  
impact on the public health and the environment.

The project proposal shall include evidence that the wastewater system or facility will result in the least adverse impact on the public health or the environment as compared with other possible wastewater management alternatives for the project.

#### 4.20 General Discharge and Treatment Requirements

No discharge from a SWWTP shall result in degradation of ground or surface waters in a manner inconsistent with their proposed use. There shall be compliance with all applicable water quality standards. The existing characteristics of the receiving waters must be considered to ensure compliance. There shall be no discharge into any wetland, stagnant waters, lakes, or streams.

#### 4.30 Hydrogeological Investigation

The applicant shall submit a hydrogeological survey report, prepared by a qualified geotechnical engineer or hydrogeologist, to show the impact of the subsurface discharge of the SWWTP on ground water. The report shall include a determination of the flow direction, contaminant levels, extent of wastewater discharge plume, ground and surface waters affected, and any interaction with water supply, public or private. This analysis shall be performed for the SWWTP design plan and also for any other viable wastewater treatment or disposal strategy for the project to be served.

#### 4.40 Wetlands and Flood Plains

No portion of the SWWTP shall be within 100 feet of wetlands or the "100 year" flood plain.

No portion of the subsurface disposal works for a SWWTP shall be located less than 200 feet from a wetland or the 100 year "Flood Plain". No component of the treatment plant, except for underground piping, shall be constructed less than two (2) feet above the high water level in any area subject to flooding. Such distances are considered "minimum" and may be increased by the Board of Health if site specific conditions warrant.

#### 4.50 General Siting and Design Requirements

SWWTP design shall include attenuation of odor or noise problems, and shall satisfactorily address the general aesthetic appearance, to both protect the operator and to satisfy neighborhood environmental requirements.

#### 4.51 Distances

No portion of the SWWTP shall be located less than the following distances stated to the components listed as follows:

MINIMUM ACCEPTABLE SEPARATION DISTANCES IN FEET

COMPONENT	Plant Buildings	Pumping Station	Subsurface Tank	Leaching Area	Sewer or Force Main
Well*	100	100	100	400	50
Water Supply Line	---	10	10	25	10
Dwelling Unit	100	50	50	100	---
Subsurface Drain	---	25	25	50*	5
Property Boundary	150	50	50	100	10
Surface Water*	100	100	100	200	50
Wetland*	100	100	100	200	50

\*This distance may be required to be greater if the hydrogeological evaluation indicates that contamination will occur at the stated distance.

4.60 Ultimate Disposal of Sludge and Solids

Provision for final or ultimate disposal of sludge and solids shall be clearly indicated and established. The estimated quantity must be stated. If sludge and solids are to be disposed of off-site, the final destination must be established prior to issuance of any permit. The applicant must demonstrate, to the satisfaction of the Board of Health, that the destination for the sludge and solids is in compliance with all applicable federal, state, and local regulations and also that it will reliably be available for such purpose for the length of time that its use is required for the SWWTP.

If disposal is to be on-site, it must comply with the terms of the section above "General Discharge and Treatment Requirements".

4.70 Treatment Plant Reliability

The SWWTP shall be planned and designed so as to provide for maximum reliability at all times. The facility shall be capable of operating satisfactorily during power failures, flooding, peak loads, equipment failure, and maintenance shutdowns. Such reliability shall be obtained through the use of various design techniques which will result in a facility which is virtually "Fail-Safe".

Multiple units or dual compartments with unit drains shall be provided for all processes, including disinfection facilities, so that draining, cleaning, repairing, or replacing, and other maintenance can be provided without omitting any treatment processes.

4.80 By-Passes and Overflows

No by-passes, either upstream of or at the SWWTP shall be permitted.

4.90 Disinfection

Disinfection of the SWWTP effluent by ultraviolet irradiation or zonation shall be required.



5.00 Subsurface Disposal Facilities

5.10 Ground Water

The bottom interface of any subsurface disposal or leaching facilities shall be located a minimum of five (5) feet above the MAXIMUM ELEVATION OF THE GROUND WATER OR SATURATED SOIL ZONE. This elevation shall include consideration of the mounding effect of the ground water caused by the discharge of the SWWTP effluent. Such analysis shall be calculated using generally acceptable analytical or numerical methods. When geologic conditions permit, the "Hantush" formula and procedure may be used. When the assumptions of that procedure cannot be met to derive a reliable result, it shall be required to utilize such method as finite difference equations for ground water flow and elevation.

5.20 Distance to Bedrock

The bottom interface of any subsurface disposal or leaching facilities shall be located a minimum of ten (10) feet above the elevation of bedrock or impervious soil layer. Impervious soil shall be defined as having a percolation rate of greater than 20 minutes per inch.

5.30 Thickness of Permeable Soil

A depth of at least five (5) feet of naturally occurring permeable soil shall be maintained below the bottom of the leaching area. To be considered permeable, the soil shall have a percolation rate of 20 minutes per inch or less.

6.00 Sewers

The lateral sewer system serving the SWWTP shall be of a design and construction in accordance with Water Pollution Control Federation Manual of Practice #9. Adequate capacity shall be provided for peak flow rates and shall provide for a cleansing velocity of at least two (2) feet per second at 75 per cent of the estimated peak discharge. For low service connection areas, peak flow rate shall be calculated by the fixture unit method as described in MOP #9. The minimum pipe size allowed shall be eight (8) inches in diameter.

7.00 Ground Water Monitoring

7.10 Installation

The permittee shall install, at a minimum, ground water monitoring wells in accordance with the following:

One up-gradient cluster of three monitoring wells

Two down-gradient clusters of three monitoring wells

One monitoring well for ground water level only near the center of the leaching works.

Screen depths for the cluster wells shall be set at elevations such that at least two screen depths will yield samples at time of seasonal low ground water (e.g. September sampling period)

Such locations shall be as approved by the Board of Health and as indicated appropriate from the results of the hydrogeological investigation. Monitor wells shall be installed and in place prior to issuance of the CERTIFICATE OF COMPLIANCE AND OPERATIONS PERMIT.

7.20 Ground Water Elevation

The permittee shall determine and provide the Board of Health with elevations of the water table to the nearest one-hundredth of a foot in all monitor wells on a monthly basis.

8.00 Effluent Limits and Testing Requirements

Effluent limitations shall be as required by DEQE regulations for Class I and Class II ground waters. All ground waters are considered to be in this classification unless proved to be otherwise following procedures set forth by DEQE.

8.10 Wastewater

8.11 Treatment Plant Influent

The effluent from the treatment plant shall be sampled and tested as follows:

Daily	Flow	
	Specific Conductance	
	PH	
Weekly	5-Day Biochemical Oxygen Demand (B.O.D.)	
	Total Suspended Solids (T.S.S.)	
	Coliform Bacteria	
	Fecal Coliform Bacteria	
Monthly	Total Kjeldahl Nitrogen	
	Ammonia Nitrogen	
	Nitrate Nitrogen	
	Total Dissolved Solids	
	Sodium	
Semi-Annually	Oil and Grease	
	Volatile Organic Compounds (USEPA Procedure #624)	
Annually	Arsenic	Copper
	Barium	Zinc
	Cadmium	Mercury
	Chromium	Total Trihalomethanes
	Fluoride	Selenium
	Lead	Silver
5 Years	Pesticides	
	Radioactivity	

All sampling and analyses, except for the daily and weekly frequency tests which will commence at time of plant startup, shall be performed initially at 60 days after plant startup and at the stated frequency thereafter.

#### 8.20 Ground Water Monitor Wells

Monitor well testing in the upgradient and down gradient wells shall be performed semiannually in the months of April and September for all parameters designated above as semiannually or more often. Testing for other parameters shall be at the stated frequency, either annually or every 5 years during the month of April.

On an annual basis, the Board of Health, either on its own motion or upon written request from the permittee, may review the sampling frequency and the tested parameters and may modify either or both if it deems it necessary.

#### 9.00 Operation

##### 9.10 Operator

A Certified Waste Water Treatment Plant Operator having the Grade appropriate for the plant as determined by the regulations of the Board of Certification of Operators of Waste Water Treatment Facilities shall be retained by the permittee. Such operator shall spend a minimum of three (3) hours per day at the plant. When conditions warrant as may be determined by the Board of Health, additional hours shall be required. Such operator shall be designated by the Chief Operator and shall be responsible for the operation of the SWWTP.

##### 9.20 Back-up Operator

A second Certified Waste Water Treatment Plant Operator, having the same grade as the Chief Operator shall be available in the absence of the Chief Operator.

##### 9.30 Operational Guarantee

Prior to issuance of the Certificate of Compliance and Operations Permit, the permittee shall provide security in an amount specified by the Board of Health to guarantee the operation of the SWWTP for a period of at least one year. The security shall provide for salaries, operational costs, and cost for immediate replacement, if necessary, of a major unit operation of the plant, or in the event of plant failure to operate, an amount sufficient to cover the costs of hauling 100% of the waste water to another facility for disposal for a one year period.

#### 10.00 Severability

If any part or portions of these regulations should be adjudicated as invalid, the adjudication shall apply only to the material so adjudged, and the remaining Rules & Regulations shall be deemed valid and of full force and effect.