Town of Durham
MASTER PLAN UPDATE

FINAL REPORT

May, 1989

MASTER PLAN

FOR THE

TOWN OF DURHAM, NEW HAMPSHIRE

May, 1989

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EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

The 1989 Durham Master Plan is an update of two earlier Master Plans prepared in 1969 and 1980. Although the 1989 Plan is an update of the previous two efforts, it was developed following an entirely new process and is organized in a new format. The process of preparation included a thorough data collection effort, analysis of the data, development of alternatives and formulation of goals and recommendations.

The development of the Plan involved a significant amount of local input with professional assistance provided by Rist-Frost Associates. One of the first steps undertaken was a opinion survey of randomly-selected town residents. The results of this survey are printed in the Appendix of the technical report. To guide the development of the Plan, a Master Plan Technical Advisory Committee was formed. The Committee was comprised of town officials, including members of the Planning Board and Town Council, as well as members of the Conservation Commission, UNH, and the Oyster River School District. Also included on the Technical Advisory Committee were citizens representing a diversity of interests.

In order to ensure development of the most realistic recommendations possible, the planning process also involved substantial discussion with town Department Heads, as well as a thorough review of all pertinent studies relating to each Department. A bibliography of all the studies used during the preparation of the Plan is also contained in the Appendix of the technical report.

The intent of a municipal Master Plan is two-fold. First, it serves as a policy document to provide the town with a directive for future growth trends. Second, it functions as a document that provides the town a foundation on which to base land use regulations. Land use regulations are the primary means by which future land use growth patterns are achieved.

The following key points played an important part in the development of most of the Master Plan recommendations:

1. Durham's population growth is projected to remain reasonably constant, at a rate consistent with recent trends. The town is not growing as fast as other nearby seacoast municipalities, perhaps at least in part due to the fact that most new housing development in Durham has been aimed at the more expensive end of the market.

2. The University of New Hampshire will remain as a primary economic force within the town. The interrelationship between UNH and the town in terms of providing community facilities and infrastructure as well as concerns relating to transportation, housing, recreation and conservation will continue to involve interplay between both the town and the University.

3. The town should take steps to capitalize upon and expand the economic potential to the town which the existing UNH population represents. The primary opportunity is the potential for private development of off-campus student housing in appropriate areas of the Town.

4. UNH is expected to grow both in terms of student population and facility-development needs. This, when combined with the expected net increase in town population, will continue to place an increased demand on both shared and individually-provided services and community facilities.

5. The town should support the development of additional office and research facilities similar to Data General.

6. In order to help preserve open space within the town, incentive zoning should be considered to assist in guiding residential

development to desired areas. This could include the concept of density bonuses, as well as transfer of development rights.

7. New areas recommended for intensive residential development were identified in part based on the feasibility of water and sewer extensions. The cost of this new infrastructure should not be the sole responsibility of the town. Methods such as impact fees should be pursued as a means to offset the cost of these improvements.

In analyzing specific growth and development issues in Durham, it became readily apparent that many of the problems identified in earlier studies are still the same problems facing the town today. Unfortunately, however, those same problems have been exacerbated by increased demand.

One of the prime examples of this situation relates to traffic flow, particularly on the Main Street corridor. Previous studies had identified the need to redirect traffic accessing the campus and the downtown area to an approach from the west. A solution offered previously (and reiterated in this Plan) is construction of an extension off of the Bypass tying in with Old Concord Road. This proposal contains even more validity today in light of the fact that UNH will be expanding in a westerly direction and can benefit from a new access off the Bypass.

Another critical land use issue, and one that has been facing the town for some time, relates to the adequacy of town infrastructure, including water, sewer, and roads. In this Plan, areas recommended for new residential expansion include areas to the east along Piscataqua Road, south along the Newmarket Road corridor, and southwest along Mill Road. These areas are intended to accommodate a higher density of development which can reduce some of the scattered development currently occuring throughout the town. However, in order to accommodate a higher density, it will be necessary to service these areas with municipal water and sewer. The cost of providing new utility systems should be borne more by developers than the town. In addition to new distribution systems, the question of both water and

wastewater capacity needs to be addressed as well. Currently, domestic water treatment is the weak link in the supply and distribution of potable water for the Town. In terms of wastewater treatment, the plant capacity has not yet been reached, but there are capacity problems in existing collection lines. If both systems are to be expanded, these deficiencies will have to be addressed by the town.

Implementation of many of the recommendations contained in the Plan will not be easy due to a number of factors, not the least of which is cost. Nonetheless, the town will have to take the lead. As identified in the Implementation Strategies presented in the Technical Report, many of the town boards and committees will need to take an active role in prioritizing and following through on these recommendations. This will also necessitate continued and strengthened communication between the UNH and the town, as well as cooperation from all other affected parties, including regulatory agencies on the local, regional and State level, and private land developers.

POPULATION RECOMMENDATIONS

1. Adopt as a policy, planning for anticipated growth in Durham based on historical and existing patterns (as indicated in the "as-is" growth scenario).

2. Plan for an increased student population, which could serve to benefit the town as well as assist UNH in meeting its goal of providing educational opportunities for students from the State (as stated in growth scenario #3).

3. Pursue an economic development program which will not accelerate population growth and generate more residential development.

HOUSING RECOMMENDATIONS

1. New housing development should initially be encouraged to occur on already approved lots and in the area accessed by Route 108 and north of the Oyster River, excluding lands which are to be retained for conservation and restricted from development. Methods include the extension of water and sewer, zoning changes and Transfer of Development Rights.

2. Cluster development should be encouraged in future subdivision proposals.

3. Adopt a policy for long term housing development to be encouraged in three areas in the following priority: (1) the area accessed by Route 108 and north of the Oyster River which remains available, (2) a portion of the area south of the Oyster River and east of Route 108 accessed by Durham Point Road, and (3) the Mill Road area.

4. Explore the possibility of using Transfer of Development Rights (TDR's) to relieve development pressures in areas along the Great Bay and Little Bay shore, and other environmentally sensitive areas.

5. Prepare a long range water and sewer plan for portions of the areas described in 1 and 3 above so that the infrastructure can be properly sized for long range development needs.

6. In conjunction with 5 above, formulate programs in which private developers will be responsible for the cost of installing the new infrastructure; however, covering only the costs they should appropriately absorb.

7. In anticipation of municipal water and sewer development, rezone areas over time to appropriately allow for smaller lot sizes, so that roadways and infrastructure will be minimized. This will also help to reduce housing costs and attract development which may otherwise be more scattered throughout the town.

8. Work to develop more privately owned off-campus student housing in an area west of the main campus.

9. Maintain the "R" zone throughout the southern half of the town where soils do not permit extensive development and it would be difficult to extend water and sewer.

10. Explore impact fees for future subdivision approvals.

11. Encourage the development of some assisted housing units for the elderly and low/moderate income families.

12. Enforce existing codes to insure safe & sanitary housing conditions and to help control overcrowding of existing housing units.

13. Review the manufactured housing (mobile home) provisions in the Zoning Ordinance to ensure that they comply with current State statutes.

14. Employ incentive zoning to assist in guiding residential development to desirable areas in town while aiding in the preservation of open space (i.e., allowing density bonuses, etc.)

ECONOMIC BASE RECOMMENDATIONS

1. Work with developers to construct off-campus student housing west of the campus to expand the town's tax base and capitalize on the University as a "basic industry", bringing income into the community.

2. Enforce the existing codes for health and safety purposes so that buildings are not overcrowded. This may also help make downtown buildings more attractive for office and commercial use again, by allowing retail uses to be more financially competitive with student housing.

3. Make parking requirements in the zoning ordinance less stringent for downtown businesses, while reevaluating the current parking requirements for housing purposes.

4. Study and organize a downtown revitalization effort so that businessmen and property owners can realize a reasonable return by attracting business & professional offices downtown.

5. Organize merchants to develop a unified promotional campaign to attract local residents downtown, particularly in summer months when fewer students are in town and businesses are in need of greater local resident patronage. The Downtown Marketplace in Burlington, Vermont serves as a good model.

6. Allow for commercial/professional offices along Dover Road, Route 108, south of the Route 4 interchange.

COMMUNITY FACILITIES RECOMMENDATIONS

1. Fire Department

   (1) Consider development of a satellite station near the Longmarsh Road/Newmarket Road intersection.

   (2) Consider a full time, professional Emergency Medical Technician (EMT) staff under the jurisdiction of the Fire Department.

   (3) Continue to work with UNH on an equitable funding ratio of the Fire Department based on a pro-rated calls for service formula.

2. Police Department

   (1) Consider development of a shared facility between the Durham Police Department and UNH Police Department.

3. Wastewater

   (1) Extend sewer service area east along Canney Road/Dover Road.

   (2) Consider sewer extensions south of the Oyster River along Newmarket Road.

   (3) Extending sewer across Thompson Lane/Orchard Drive when the bridge is built.

4. Water

   (1) Work with the University to upgrade the treatment plant capacity and improve water quality.

(2) Consider water service extensions south along the Newmarket Road corridor.

(3) Encourage regional cooperation for water supply distribution and protection.

5. Buildings

(1) Develop a master plan for projected improvements to the town-owned buildings.

(2) Improve functionality of Town Hall. Consider relocation of Police Department and Department of Public Works Administration.

6. Roadways and Intersections

(1) Develop a twenty-year town roadway and bridge rehabilitation plan with required annual appropriations to undertake such tasks from the town capital budgeting process.

(2) Prioritize intersection improvements, working with the State Department of Transportation where applicable.

7. Sanitation

(1) Begin preparing a closure plan for the landfill. Establish groundwater monitoring stations within the existing landfill site.

(2) Continue the recycling efforts currently underway through the Department of Public Works.

8. Schools

   (1) The town should continue to work with the Oyster River School District to plan for Oyster River Phase II recommendations after completion of the Moharimet Elementary School.

   (2) Encourage the Oyster River School District to develop plans for the Foss Farm site.

   (3) Establish participation of town planners with the ORSD long-range planning committee.

TRANSPORTATION RECOMMENDATIONS

1. Work with both UNH and State Department of Transportation officials towards construction of a new interchange and access road directly west of the railroad tracks connecting the Route 4 Bypass with Old Concord Road.

2. Maintain the concept of a Southern Link Road between Newmarket Road and Mill Road. Consider extension of the Southern Link Road from Mill Road across the railroad tracks extending northerly to tie in with the proposed access road from the bypass.

3. Work with Strafford Regional Planning Commission to incorporate 1 and 2 above into the State Ten-Year Highway Plan.

4. Study the feasibility of extending Longmarsh Road in an easterly direction to tie in with Dame Road.

5. Study the feasibility of extending Orchard Drive across the Oyster River to tie in with Thompson Lane.

6. Study the feasibility of improving access to Mill Road Plaza.

LAND USE RECOMMENDATIONS

1. New housing development should initially be encouraged to occur on already approved lots and in the area accessed by Route 108 and north of the Oyster River, excluding lands which are to be retained for conservation and restricted from development.

2. Adopt a policy for long term housing development to be encouraged in three areas in the following priority: (1) the area accessed by Route 108 and north of the Oyster River which remains available, (2) a portion of the area south of the Oyster River and east of Route 108 accessed by Durham Point Road, and (3) the Mill Road area.

3. In concert with municipal water and sewer extensions, rezone areas over time to appropriately allow for smaller lot sizes, so that the need for new roadways and utilities will be minimized. This will also help to reduce housing costs and attract development which may otherwise be more scattered throughout the town.

4. Work to develop more off-campus student housing in an area west of the main campus. Revise permitted uses in the O/R and adjacent zones to allow for student housing development.

5. Identify, prioritize, and preserve properties which the town Conservation Commission has determined require protection by such methods as setback requirements, fee simple purchase of properties, acquisition of development rights, transfer of development rights and density bonuses.

6. Work with the University to determine existing and potential deed restrictions which may protect certain University properties for conservation purposes.

7. Encourage UNH to expand westerly and use high rise facilities where practical. A westerly expansion will help preclude incompatible land use between UNH and established residential neighborhoods.

8. Employ methods such as the extension of water and sewer, zoning changes, transfer of development rights and clustering to guide development and minimize any adverse impacts which may result.

9. Establish new shoreline protection zones that distinguish between major and minor water bodies. Adjust existing setback distances for these new zones.

10. Establish an aquifer overlay protection zone to minimize intensive development on environmentally sensitive aquifers and aquifer recharge areas.

11. Establish a watershed overlay protection zone along rivers serving as existing and potential domestic water supply.

12. Continue town participation in the New Hampshire Coastal Program administered through the Office of State Planning.

13. Obtain conservation easements to complete preservation of the Crommett Creek/Durham Point corridor for conservation and passive recreation purposes.

14. Support the recommendations of the Conservation Commission and the Ad Hoc Committee on Conservation Lands aimed at preserving both active and inactive farms and conservation corridors within the town. Consider conservation easements, fee simple purchase and transfer of development rights. Further, explore all outside funding sources, including the State Land Conservation Investment Program.

15. Develop a rating system for prioritizing undeveloped land for conservation and recreation needs.

16. Continue cooperative efforts between the town, UNH, Oyster River School District, and the Oyster River Youth Association in planning use of recreation facilities and programming for recreational needs.

17. Develop new active and passive recreational facilities in areas recommended for future residential development. Consider use of impact fees and land set-asides for new major subdivisions.

18. Make the park system in Durham accessible to all residents through various recreational facilities which address the needs of each neighborhood and the entire community.

IMPLEMENTATION STRATEGIES

SUMMARY OF RECOMMENDATIONS

IMPLEMENTATION STRATEGIES

IMMEDIATE IMPLEMENTATION STRATEGIES

1. The Planning Board, along with the Technical Advisory Committee, upon adoption of this Master Plan, should conduct joint workshops to review and revise applicable zoning ordinances which reflect the goals addressed. The final revisions should be in place prior to the termination of the Interim Growth Ordinance.

2. The Planning Board should look at establishing a formal technical review process within the subdivision regulations which would allow for formal written recommendations on each subdivision proposal from the Conservation Commission, Parks and Recreation Committee and Department Heads. This process should be in place prior to the expiration of the Interim Growth Ordinance.

3. Revise the existing preliminary application requirements to permit the opportunity for modifications to a proposal during the technical review and planning board processes.

4. The Planning Board should continuously monitor the progress of the various bills now before the Legislature (NB 758, 744, 588, 572) dealing specifically with the assessment of impact fees on developers. If and when they are passed, the Planning Board should recommend them to Council for adoption.

5. Recommend through the Town/Gown Committee the need to coordinate the University Master Plan with the goals and objectives outlined in this plan. Also recommend that the Town of Durham be represented during this process.

6. Planning Board and Technical Advisory Committee should contact the Conservation Commission early on during the zoning change process to

establish minimum setback requirements along shorelines, aquifer and watershed protection areas, etc.

7. Recommend the Conservation Commission establish a priority system, similar in nature to the Land Conservation Investment Program on the land which they want to conserve. This system should keep in mind priorities for open land, aquifers, shore front areas, wildlife, etc.

ONGOING/SHORT TERM IMPLEMENTATION STRATEGIES

1. This document should be reviewed on an annual basis at the time new members are appointed or elected to Town Boards or Councils:

   a. Allow new members the opportunity to become familiar with the overall policies guiding the development of the town.

   b. Evaluate the overall effectiveness of the Master Plan and the associated changes implemented to reach the goals.

2. Town Administrator, along with all Department Heads, should establish a long-term Capital Improvement Program consistent with goals outlines in this plan.

3. Establish a review committee to explore and implement in greater detail specific issues outlined in the master plan not assigned to other committees.

4. The Planning Board, along with the Town Council, should study the need for a long-range planning committee.

LONG TERM IMPLEMENTATION STRATEGIES

1. The issue of the southern link and Route 4 interchange have been addressed during the 1969 and 1980 Master Plan with little effort made to implement these proposals. They are recommended in the 1989 update because the problems these proposals intended to solve still exist. This Committee understands that these proposals are long term in nature and, because of economic constraints, may not be implemented during the time span of this update. However, this committee does recognize the need to take at least the following steps to insure ongoing support.

   a. Encourage the University to emphasize these proposals in their Master Plan.

   b. Work with Strafford Regional Planning Commission to gather the support data necessary for the State Department of Transportation to consider this on their 10 year plan.

   c. During the annual review process by the Planning Board, review the progress being made on these proposals.

POPULATION

INTRODUCTION

In this chapter, population data for Durham, surrounding communities and the region are compared. Selected population characteristics are presented to identify patterns and sources of growth, and special emphasis is placed on the impact of University in Durham. Long term projections have been formulated and specific scenarios which would impact on Durham's future growth have been developed.

POPULATION OF DURHAM AND SURROUNDING COMMUNITIES

The Town of Durham has experienced considerable growth since 1980, when its population was recorded at 10,652 in the U.S. Census. Shown in Table 1-1 are population estimates for 1987 and 1988 as developed independently by three separate sources, using differing methodologies. The population estimates ranging from a low of 11,484 by the Office of State Planning, to a high of 12,713 by Rist-Frost, represent approximately a 10% difference in estimates. The Strafford Regional Planning Commission estimate of 12,393 falls within 3% of the Rist-Frost estimate. The Rist-Frost estimate will be utilized as the basis for future projections. Appendix 1 describes the methodology used to arrive at this estimate.

The graph in Exhibit 1-1 shows that Durham has experienced a 2.61% annual average increase in population when using the Rist-Frost estimate. Using the OSP estimate, Durham has an annual average growth rate of 1.1%. In either case the population increase has not been rapid.

When compared to other communities, Durham's growth is generally consistent with the growth that has occurred in the Portsmouth-Durham-Rochester (P-D-R) Metropolitan Statistical Area, comprised of 28 communities in New Hampshire and Maine within the seacoast region. This region experienced a 1.90% annual average increase. In comparison to Strafford County, Durham's population has been increasing at nearly half the rate.

TABLE 1-1

POPULATION ESTIMATES

	1980 (1) POPULATION	1988 SRPC (2) ESTIMATE	1987 OSP (1) ESTIMATE	1988 RPA ESTIMATE
DURHAM	10,652	12,393	11,484	12,713
STRAFFORD COUNTY	85,408	116,186	93,998	N/A
PORTSMOUTH-ROCHESTER-DOVER MSA	100,639	115,958	N/A	N/A
LEE	2,111	3,139	2,883	N/A
MADBURY	987	1,368	1,189	N/A
NEWMARKET	4,296	7,279	6,336	N/A

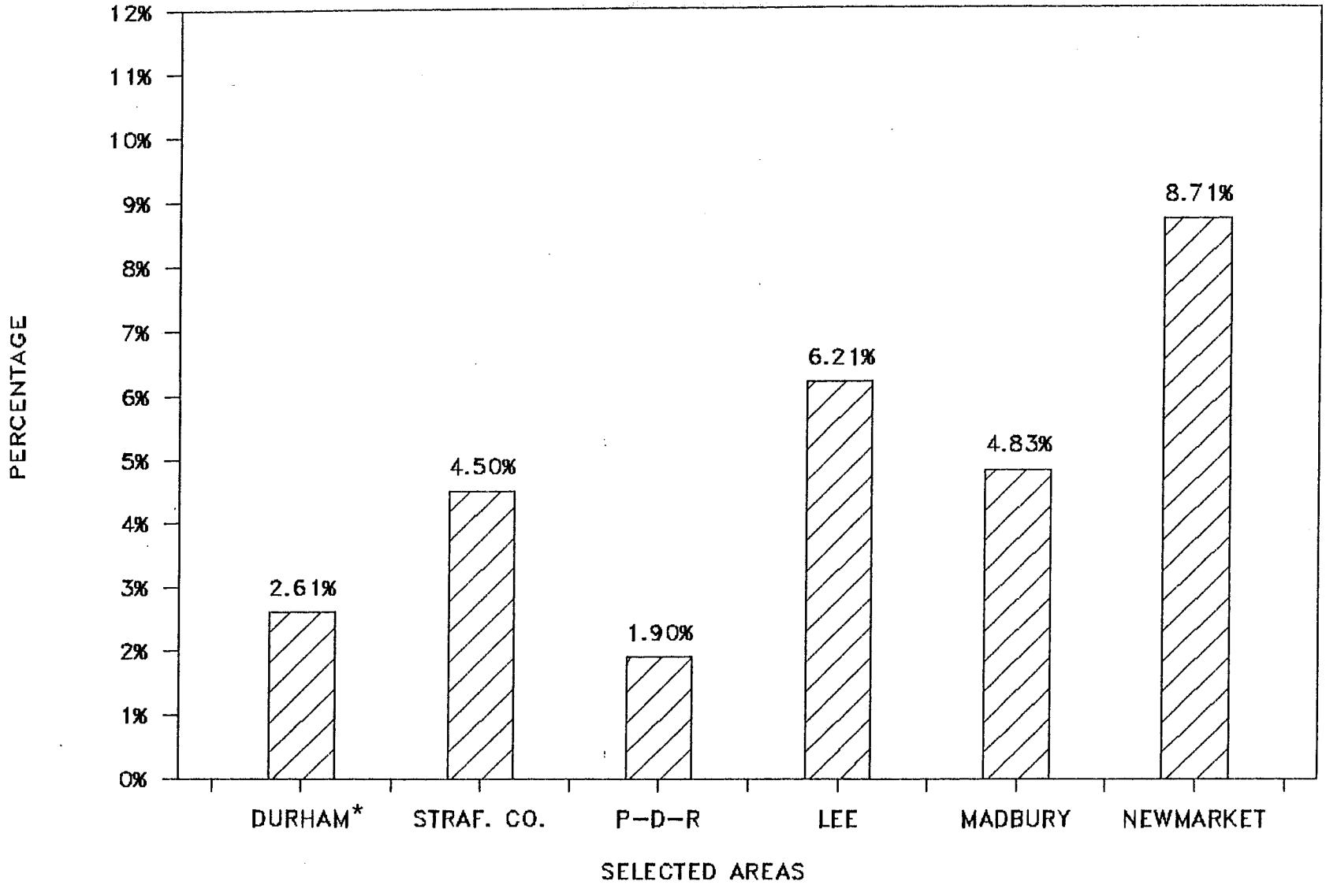
SOURCES:

1. "1987 POPULATION ESTIMATES OF NEW HAMPSHIRE CITIES AND TOWNS", AUGUST 1988, OFFICE OF STATE PLANNING

2. "DEMOGRAPHIC PROFILES - STRAFFORD PLANNING REGION, N.H." MAY 1988, STRAFFORD REGIONAL PLANNING COMMISSION

ANNUAL AVERAGE GROWTH RATES

BETWEEN 1980 AND 1988



*Based on Rist-Frost population estimates.

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1-3

Finally, in comparing Durham's population increase to that of the adjoining communities of Lee, Madbury, and Newmarket, Durham's annual average rate of increase is significantly lower; however, in actual numbers Durham has increased more than either Lee or Madbury.

DURHAM POPULATION

Composition

The composition of Durham's population is unique in comparison to other towns in the region and in New Hampshire. As the location for the University of New Hampshire, the State's largest institution for higher education, university students comprise over half of the town's total population, as shown in Exhibit 1-2 and Table 1-2. Of the University's total enrollment of approximately 11,000 students, 65%, or approximately 7,200 students reside in Durham during the school year.

Due to the policies of the UNH Board of Trustees, this special population segment has not displayed the same growth as the general population. In effect, the Trustees have maintained a cap on the number of students housed in Durham since the 1970's, so that this population segment has remained about the same between 1980 and 1988. With this large a segment of the total population held constant in comparison to general growth trends, the lower annual average growth rate in Durham is understandable.

Components of Change

With more than half of the town's population held essentially at a constant level since 1980, (due to student housing policies at UNH), the primary source of change has come from the permanent resident population segment. The change in this segment can be analyzed in terms of the "natural change" resulting from the net gain or loss which may occur due to births and deaths, and the "migrational factor" which is the net gain or loss due to in-migration and out-migration patterns.

EXHIBIT 1-2

DURHAM POPULATION

1988 ESTIMATE

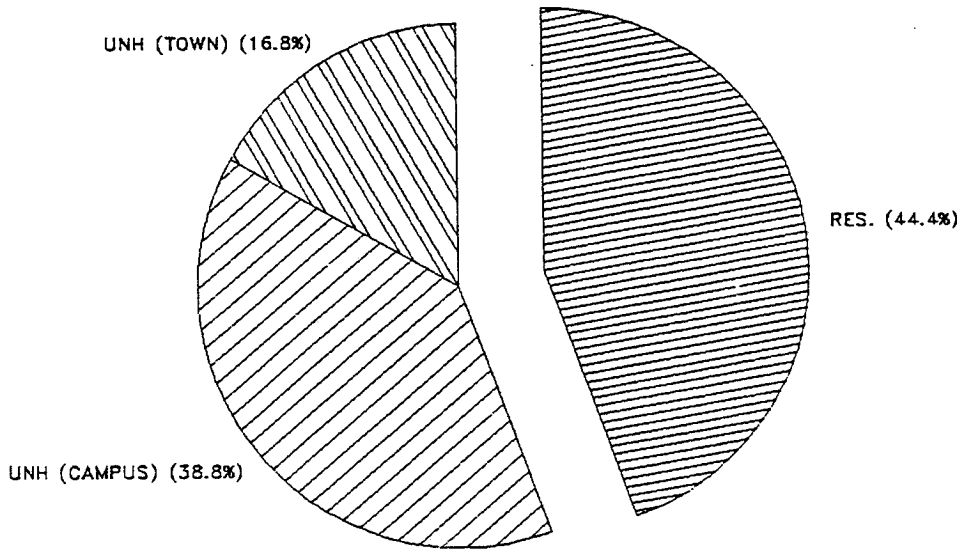


TABLE 1-2

	1988 ESTIMATED POPULATION	PERCENT OF DURHAM
TOWN RESIDENTS	5,495	43%
UNH STUDENTS ON-CAMPUS	5,000	39%
UNH STUDENTS LIVING IN DURHAM OFF-CAMPUS	2,218	17%
TOTAL	12,713	100%

Looking at annual birth and death statistics for Durham between 1980 and 1988 as shown in Table 1-3, the net gain in Durham resulting from births and deaths is approximately 170. This number shows that only a small proportion of the population change is due to natural factors - about 10-20% of the total change in population since 1980, depending on which estimates are used.

As is typical for most New Hampshire communities, the largest component of change in population is migration. In the case of Durham, this migrational change has occurred within its permanent resident population segment.

POPULATION PROJECTIONS

Durham

As with the population estimates discussed in the previous sections, population projections are also available from the Office of State Planning, the Strafford Regional Planning Commission and Rist-Frost. These projections are shown in Table 1-4 and in graphic form in Exhibit 1-3.

The range of 15,000 to approximately 16,000 provides a realistic indication of Durham's projected population for the year 2010. Implicit in these projections are a number of assumptions. The general assumptions for the three Rist-Frost projections are described in Appendix 2.

From this point it is possible to consider several alternative scenarios which would affect Durham's population growth. These are discussed later in this Chapter.

Population Projection Comparisons

To compare Durham's future population growth to that of other surrounding communities the projections developed by OSP provide some perspective for Strafford County. The three decade projection from 1980 to 2010 shows that

TABLE 1-3

TOWN OF DURHAM
VITAL STATISTICS

BIRTHS		DEATHS	
1980	50	1980	32
1981	38	1981	28
1982	36	1982	17
1983	55	1983	16
1984	49	1984	17
1985	36	1985	21
1986	48	1986	31
1987	44	1987	24
	356		186

SOURCE: Town of Durham, Annual Town Reports

TABLE 1-4

POPULATION FOR DURHAM
1990-2010

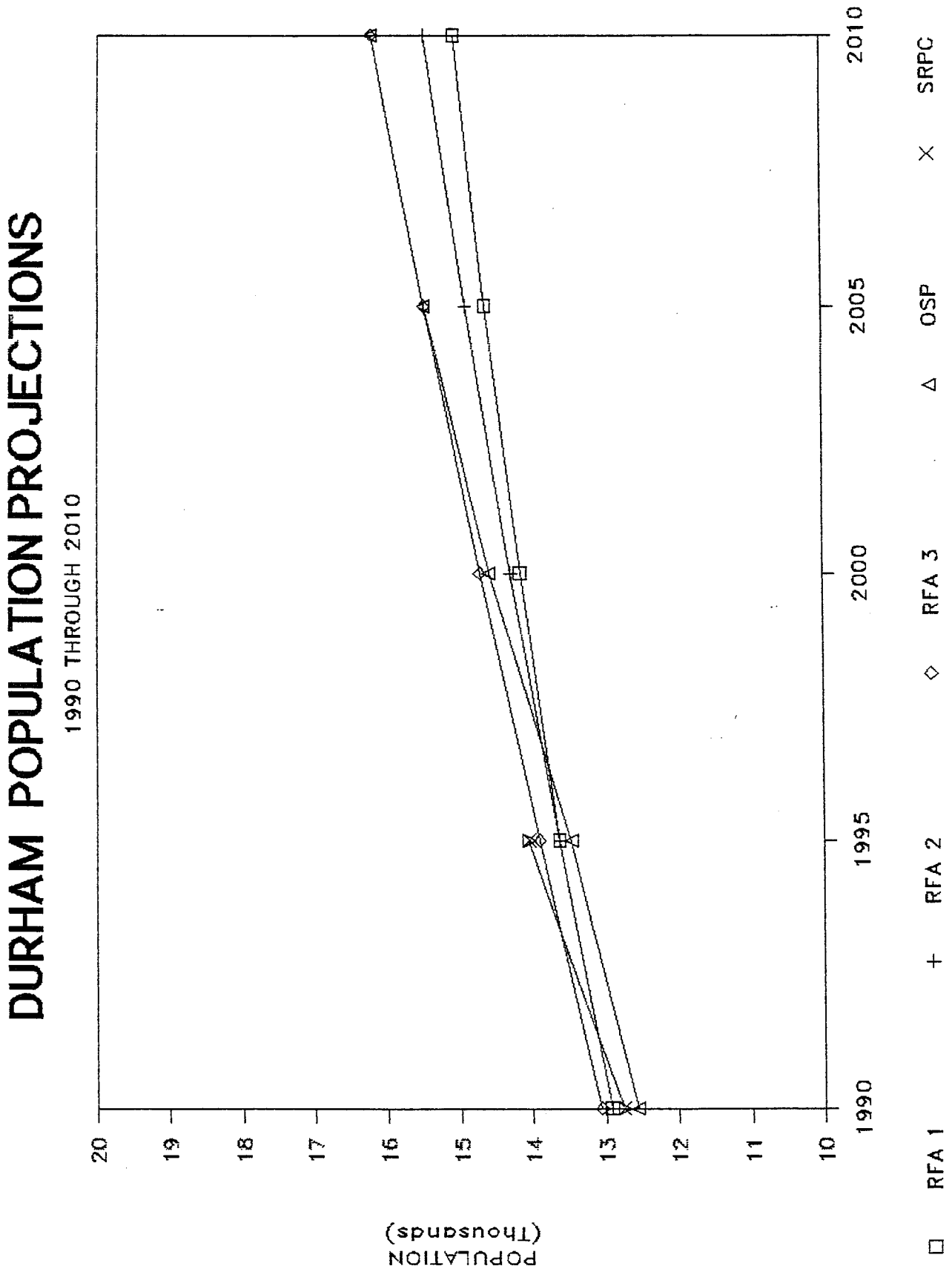
	RIST-FROST PROJECTIONS			OSP	SRPC
	1	2	3	PROJECTIONS	PROJECTIONS
1990	12,921	12,921	13,056	12,562	12,758
1995	13,618	13,618	13,894	13,457	14,046
2000	14,154	14,289	14,711	14,586	N/A
2005	14,641	14,917	15,487	15,487	N/A
2010	15,073	15,494	16,213	16,216	N/A

SOURCE:

1. "NEW HAMPSHIRE POPULATION PROJECTIONS - TOTAL POPULATION FOR CITIES AND TOWNS, 1980-2010", MAY 1987, OFFICE OF STATE PLANNING

2. "DEMOGRAPHIC PROFILES - STRAFFORD PLANNING REGION, N.H." MAY 1988, STRAFFORD REGIONAL PLANNING COMMISSION

EXHIBIT 1-3



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Durham's population increase is anticipated to be the lowest in the county with an increase of 52% or approximately 1.7% per year. Growth in Lee and Madbury is projected to be among the highest in Strafford County, with both towns more than doubling in population. Strafford County in total is expected to grow by 68% over its 1980 population level.

One explanation for Durham's low projections (the other projections suggest it might be even lower) is that the cap on UNH's student housing in Durham has served as a growth control mechanism covering more than half of the town's current population.

SCENARIOS FOR POPULATION GROWTH

Baseline "As-Is" Scenario

Using the RFA cohort-component projection model, and assuming that Durham allows growth to continue as it has in the past, the RFA1 projection seems the most likely. This model assumes that the increase in new occupied dwelling units will continue on an average of approximately 40 dwelling units per year as it has in the past eight years. The University population in Durham will remain constant due to a continuation of the current cap which has been the policy of the UNH Board of Trustees for some time. There are assumed to be no new office/research type of facilities developed during this period and the new Data General employees transferring their work location from Portsmouth to Durham will not cause any significant population increase since most employees live within an acceptable commuting distance and will probably not relocate to Durham. The growth in this scenario would result primarily from the "bedroom community" impact of people working in other locations wanting to live in Durham. The resulting increase would be approximately 2,200 to 2,300 in population between 1988 and 2010, arriving at a total population of approximately 15,000 as shown in the RFA1 projection.

This will serve as the "baseline" projection, and marginal population increases or decreases will be factored in from this baseline figure.

Expanded Research Center Scenario

To diversify and strengthen the town's tax base, Durham officials have the option of encouraging additional corporate facilities such as the Data General research and light manufacturing facility which located there in 1986. This would result in an increased population growth.

Given Durham's limited area to support large facilities, as is outlined in the Economic Base chapter, it has been determined that Durham could potentially attract 3-4 new facilities during the time frame of this Master Plan with employee ranges between 100 and 200 each with one-third to one-half of the employees potentially residing in Durham. With the assumed average family size of 2.7 persons the low side of the growth generated would be a population increase of 270 and the high side would be 1,080.

Using the high side increase, Durham's 2010 population projection would be 16,000, approximately the same as the upper range projection found in the RFA3 model.

Raised UNH Cap Scenario

For over a decade the UNH Board of Trustees has maintained a cap on student enrollments and the amount of UNH housing in Durham. The town may need to be able to respond to the possibility that this cap could be raised at some time in the future, and may find that it is also in Durham's best interest to do so.

In this scenario, the assumption has been made that approximately 1,000 more students would be housed in Durham beyond the 7,200 students who are currently housed in Durham, both on-campus and off-campus.

Growth Control Scenarios

The town has adopted an interim growth management ordinance which expires at the end of July, 1989. At that time, one option for the town will be possible adoption of a permanent growth management ordinance and/or other policies which will serve to restrict growth. While it is impossible at this time to know exactly what the parameters of such policies and ordinance adoption would be, a slower rate of growth has been assumed to determine what the impact of growth controls might be. The assumption is made that restrictive growth and development policies would result in the development of 10 to 20 fewer building permits per year. This would in turn reduce the population increase by approximately 500-1000 over the next two decades.

These population growth scenarios represent four possible approaches which are essentially independent of each other. There are also possible combinations of these four which may be considered. For the purposes of this analysis, these have been structured so that the marginal impact of implementing each scenario has been determined. In this manner the quantitative impact of each of the three variations is additive to the baseline scenario to determine what resulting combinations may occur. While this is not precise, it gives a reasonable indication of what may be expected.

In the following chapters these scenarios are considered in the projections of future needs, to show impacts based on these varying assumptions. Also included in the following chapters are some discussions of specific issues and possible development alternatives for resolution of those issues. Some of those will be directly related to the four growth scenarios; however, some of the development alternatives shown may be implemented independently from the population growth factor, and may work within one or more of the four scenarios.

GOALS AND RECOMMENDATIONS

Goal: Plan for growth which will maintain a high quality of life and sense of community.

Objectives:

1. Plan for anticipated growth so that development will not adversely impact the Town's ability to provide services, or adversely impact on the Town's environmental resources.

2. Plan for an increased UNH student population in Durham which can eliminate conflict with the existing population base, while meeting the State's needs to provide educational opportunities for New Hampshire students.

Analysis:

Of the four growth scenarios previously outlined, planning for the population growth projected in the "As-is" scenario and an increase in student population in the "Raised UNH Cap" scenario provides the most realistic approach in planning for the town's future. The increase of town residents and students as quantified under these scenarios will result in a total town population of 16,000 by the year 2010. The combination of these will allow for an improved tax base with a lesser impact from development than would be the case as was discussed in the "Expanded Research Center" scenario. Since there is no need for expanding employment opportunities (a need sometimes required in other municipalities), an increase in O/R facilities is not mandatory.

The alternative of adopting policies and ordinances to discourage growth, which is the premise of the "growth management" option is not recommended. At some point in the future, restricting growth might result in a "pent-up" demand which, when the restrictions were removed or relaxed (as the statutes indicate they would have to be), would result in an inordinately high rate of growth for a period of time.

In New Hampshire, the most widely used tool which municipalities enact to restrict growth is some form of growth management ordinance. This type of tool, however, is limited in duration by State statute, and is primarily designed to temporarily relieve growth pressures so that the Town can catch up and prepare to accommodate growth. Perhaps a better alternative would be to direct and guide anticipated growth through the use of land use regulations (zoning ordinance, subdivision regulations, site plan review regulations) and through careful planning of capital expenditures.

Recommendations:

1. Adopt as a policy, planning for anticipated growth in Durham based on historical and existing patterns (as indicated in the "as-is" growth scenario).

2. Plan for an increased student population, which could serve to benefit the town as well as assist UNH in meeting its goal of providing educational opportunities for students from the State (as stated in growth scenario #3).

3. Pursue an economic development program which will not accelerate population growth and generate more residential development.

HOUSING

INTRODUCTION

This chapter on housing in Durham provides an inventory and analysis of selected housing characteristics with a special emphasis on the impacts of off-campus student housing. Responses relating to housing and residential development from the 1988 Community Opinion Survey are analyzed. Housing projections have been developed based on the four scenarios presented in the Population chapter. Lastly, other major development issues relating to housing have been presented with alternatives on how these issues may be resolved.

INVENTORY OF HOUSING IN DURHAM

Housing Changes between 1980 and 1988

Durham's increase in its non-institutional housing stock since 1980 (i.e., not including dormitories, fraternities or sororities) has come primarily in the form of single-family dwelling construction, as shown in Table 2-1. The total stock of dwelling units now exceeds 2,400, an increase of approximately 300 since 1980.

While the annual average rate of growth for the total housing stock is recorded at 1.6% over the eight year period, the number of new units has been increasing at a greater rate, from 12 in 1980 to as high as 85 in 1986. Although the number of new units dropped to 52 in 1987, that level was significantly higher than in earlier years.

Types of Housing

The 1988 housing stock of 2,430 dwelling units provides housing for Durham's permanent residents and students living off-campus in other than group quarters (i.e., excluding fraternities and sororities). In terms of the overall composition of Durham's housing stock, single-family dwelling units represent 57% of the total, an increase from 54% in 1980. Since the

TABLE 2-1

HOUSING UNITS IN DURHAM

BUILDING PERMITS ISSUED:	SINGLE FAMILY	%	MULTI-FAMILY	%	MOBILE HOMES	%	TOTAL	
1980 CENSUS	1,158	54.5%	957	45.1%	9	0.4%	2124	100.0%
1980	12		0		0		12	
1981	15		0		0		15	
1982	12		0		0		12	
1983	22		3		0		25	
1984	30		24		0		54	
1985	43		8		0		51	
1986	58		27		0		85	
1987	46		6		0		52	
TOTAL CHANGE	238		68		0		306	
TOTAL UNITS 1988 ESTIMATE	1,396	57.4%	1,025	42.2%	9	0.4%	2,430	100.0%
% TOTAL INCREASE	17.0%		6.6%		0.0%		12.6%	
ANNUAL AVE. RATE OF INCREASE	2.1%		0.8%		0.0%		1.6%	

SOURCE: Town of Durham, Building Permit records.

multi-family dwelling units represent the only other significant portion of the total, there has been a concurrent drop in the proportion of this type of housing from 45% to 42%.

This trend may generally be attributed to several factors. First, the University has limited the student housing in Durham, which predominantly occupies the multi-family units, so that the market for this type of unit is in effect, controlled to some degree. Secondly, as will be discussed later, housing costs have risen dramatically so that natural market forces also are a factor. Most of those persons with the ability to afford housing are prefer single-family type dwellings over a multi-family living environment.

University of New Hampshire Student Housing

Approximately 7,200 students attending UNH are living in Durham, as shown in Table 2-2. Nearly 70% of this total reside in student housing on-campus, with the remaining 30% off-campus.

To focus in closer on the off-campus student residents, approximately 500, or slightly more than 20%, live in a group quarter environment - more specifically, fraternities and sororities which are concentrated in an area adjacent to the campus.

This leaves approximately 1,700 students residing in housing throughout Durham. However, the greatest portion of these students live in apartments generally concentrated in two areas, as shown in Table 2-3 and Exhibit 2-1. As would be expected, most of the housing is concentrated within walking distance of the campus.

As a result of this sizeable amount of the student population residing in Durham off-campus, housing costs have risen due to the additional demand placed on the housing stock, and the differing lifestyles of Town residents and University students have from time-to-time come into conflict.

TABLE 2-2

STUDENT HOUSING IN DURHAM — 1988

		NO. OF STUDENTS	% OF STUDENTS
ON-CAMPUS		5,000	69.3%
OFF-CAMPUS			
FRATERNITY / SORORITY	500		
OTHER HOUSING	1,718		
TOTAL - OFF-CAMPUS	2,218		30.7%
TOTAL STUDENTS		7,218	100.0%

SOURCE: UNIVERSITY OF NEW HAMPSHIRE, DEPARTMENT OF CAMPUS PLANNING.

TABLE 2-3

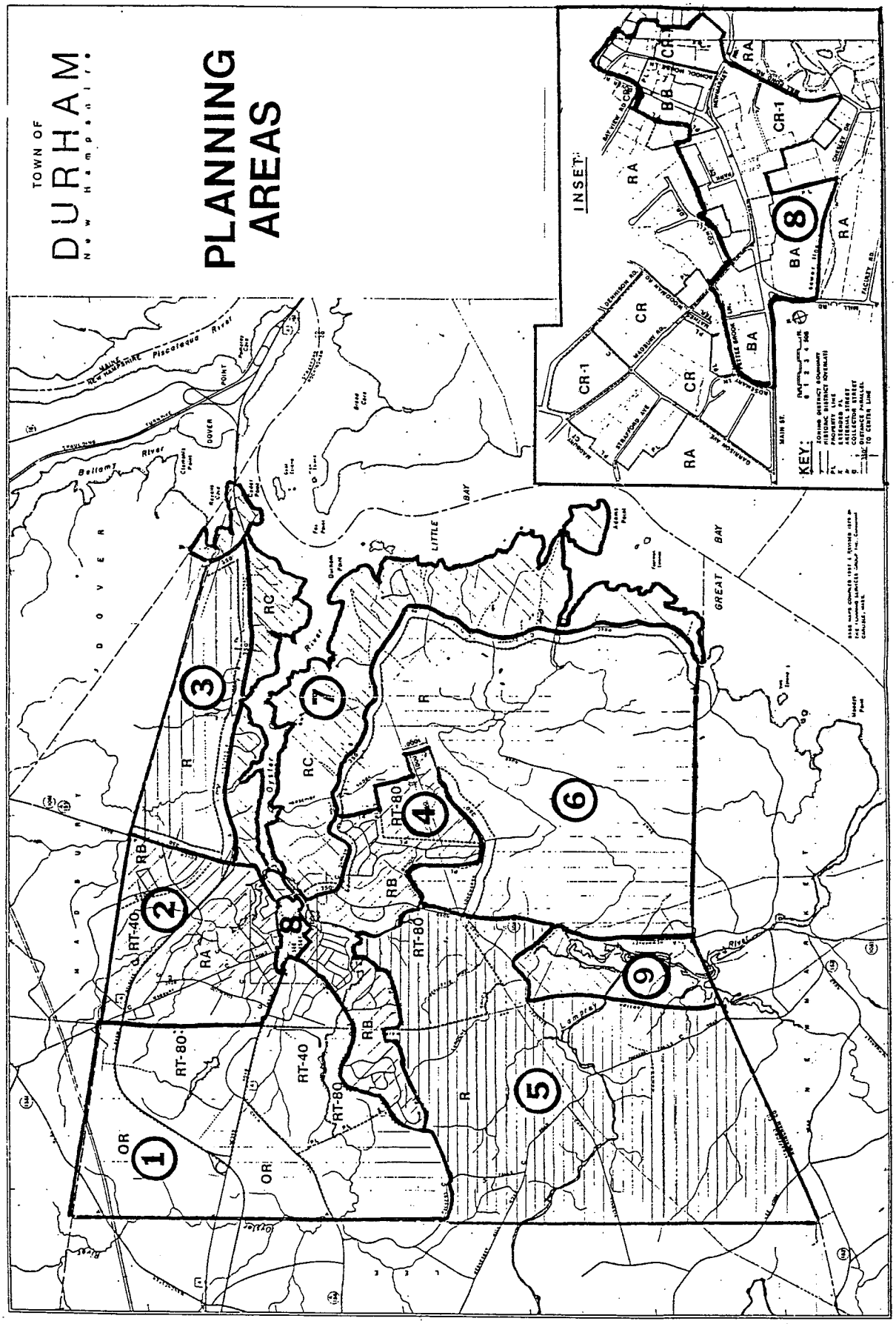
OFF-CAMPUS STUDENT HOUSING BY PLANNING AREA IN DURHAM — 1988

PLANNING AREA	NO. OF STUDENTS	% OF STUDENTS
1	38	2.6%
2	754	51.7%
3	9	0.6%
4	68	4.7%
5	9	0.6%
6	16	1.1%
7	20	1.4%
8	544	37.3%
9	0	0.0%
	1,458	100.0%

SOURCE: BASED ON STUDENT HOUSING LOCATIONS PROVIDED BY THE TOWN OF DURHAM, DEPARTMENT OF PLANNING, OCTOBER 1988.

NOTE: TOTAL ON LIST REPRESENTS 85% OF THE TOTAL 1,718 STUDENTS REPORTED AS LIVING IN DURHAM OFF-CAMPUS IN OTHER THAN FRATERNITY OR SORORITY HOUSES.

EXHIBIT 2-1


TOWN OF
DURHAM
New Hampshire
PLANNING
AREAS
INSET:
KEY:
1
2
3
4
5
6
7
8
9
OR
RA
RB
RC
R
RT-40
RT-80
CR
CR-1
BA
BB
DOVER
Bellamy River
Piscataqua River
MAINE
NEW HAMPSHIRE
Oyster River
Lamprey River
LITTLE BAY
GREAT BAY
MADBURY
MAIN ST.
DENNISON RD.
WADLEIGH RD.
STEEPLE BROOK
STRAFFORD AVE.
CHESTNUT HILL
MAYFLOWER HILL
COLONIAL DR.
FACTORY RD.
MAY VIEW TER.

Housing Prices

According to a recent study of regional housing needs prepared by the Strafford Regional Planning Commission in May, 1988, the 1986 average purchase price for a home in Durham was more than $122,000, the highest in the SRPC planning region. (Refer to Table 2-4.) In comparing the annual household income required to purchase a home for that price to the average annual household income estimates reported by the U.S. Bureau of Census for 1985, Durham had the second largest affordability gap in the Strafford planning region - a gap of more than $15,000 as shown in Table 2-5 and Exhibit 2-2.

In statistics reported by the New Hampshire Housing Finance Authority for 1987 housing prices, single-family housing units in Durham, both existing and new, were 26% higher than for the Portsmouth-Dover-Rochester Metropolitan Statistical Area as shown in Table 2-6 and Exhibit 2-3.

The increase in development and natural market forces which have created high housing costs in southern tier towns and cities have contributed to the high housing costs in Durham. The towns not having an affordability gap were located in the northern portion of the planning region studied by the SRPC.

Although University housing has been controlled to some extent by enrollment caps, the 1,700 students living off-campus represent an additional market segment that further impacts on the demand/supply imbalance in Durham, keeping housing values higher than other Strafford County communities. This lack of affordable housing is a major concern in the Town, especially for the elderly.

Household Size

The housing study completed in May, 1988 by the Strafford Regional Planning Commission showed that households in Durham dropped only slightly in average size from 2.74 in 1980 to 2.7 in 1988.
These figures are consistent with national trends in which the average

TABLE 2-4

AVERAGE PURCHASE PRICE FOR HOMES*

	1982	1984	1986
Barrington	$40,788	$45,639	$53,869
Dover	$50,120	$64,229	$111,572
Durham	$78,662	$88,095	$122,331
Farmington	$33,719	$36,911	$55,058
Lee	$42,584	$56,063	$93,624
Madbury	$72,266	$74,583	$103,565
Middleton	$30,200	$35,719	$38,514
Milton	$32,140	$35,610	$47,962
New Durham	$30,418	$49,190	$55,198
Rochester	$41,388	$50,283	$74,384
Rollinsford	$43,760	$70,183	$97,253
Somersworth	$47,241	$54,804	$75,715
Strafford	$31,946	$45,112	$56,483
Newmarket	$65,680	$63,673	$91,217
Northwood	$31,714	$59,058	$80,250
Nottingham	$60,255	$46,850	$75,095

Source: Sales: Statistical breakdown by location and price range, Multiple Listing Service.
Homes* includes single family, mobile homes, townhouses and condominiums.

TABLE 2-5

HOUSING AFFORDABILITY IN THE STRAFFORD REGION (1986)

Municipality	Avg Price of Houses Sold in 1986/a	Avg Annual Hhld Income in 1985/b	Annual Income Required/c	Afford-ability Gap/d
New Durham	$55,198	$28,653	$22,208	$6,445
Farmington	$55,058	$24,341	$23,282	$1,059
Middleton	$38,514	$23,220	$16,300	$6,920
Milton	$47,962	$28,300	$19,811	$8,489
Northwood	$80,250	$29,458	$32,517	($3,059)
Strafford	$56,483	$33,584	$23,079	$10,505
Barrington	$53,869	$33,381	$22,292	$11,089
Rochester	$74,384	$27,325	$30,578	($3,253)
Nottingham	$75,095	$33,322	$30,210	$3,112
Lee	$93,624	$34,619	$38,142	($3,523)
Newmarket	$91,217	$27,782	$37,581	($9,799)
Durham	$122,331	$37,039	$52,182	($15,143)
Madbury	$103,565	$34,607	$42,657	($8,050)
Dover	$111,572	$29,082	$47,303	($18,221)
Somersworth	$75,715	$27,947	$32,575	($4,628)
Rollinsford	$97,253	$32,747	$39,456	($6,709)

/a Multiple Listing Service; includes all types of single-family housing: detached, attached (townhouse), condominium, and mobile home

/b U.S. Census, 1980 and 1985 Per Capita Income Estimates

/c Where Principal, Interest, Taxes, and Insurance (PITI) equals 28 percent of gross income

/d Average income less income required to purchase average priced home. Numbers in parentheses show insufficient average income.

EXHIBIT 2-2

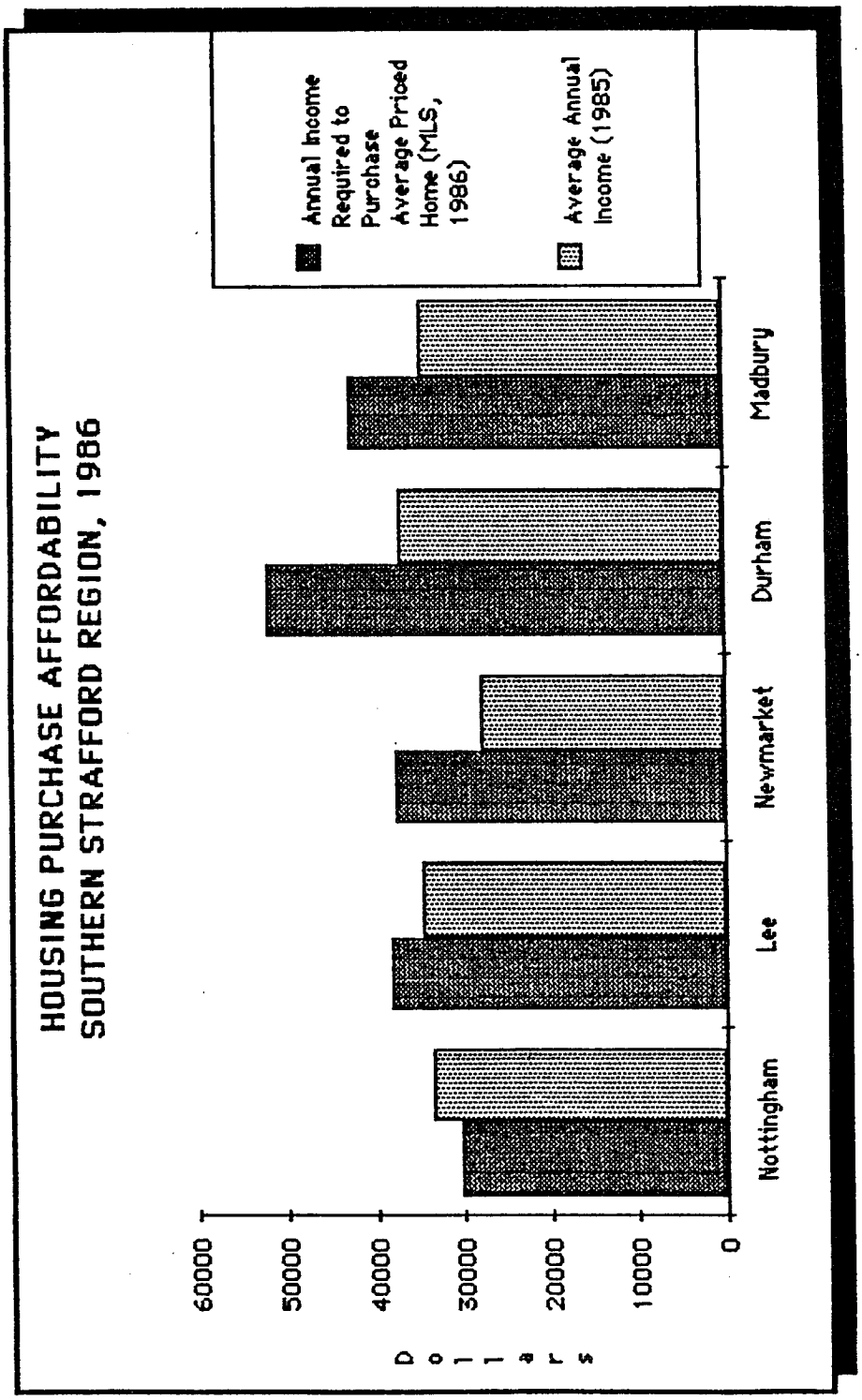
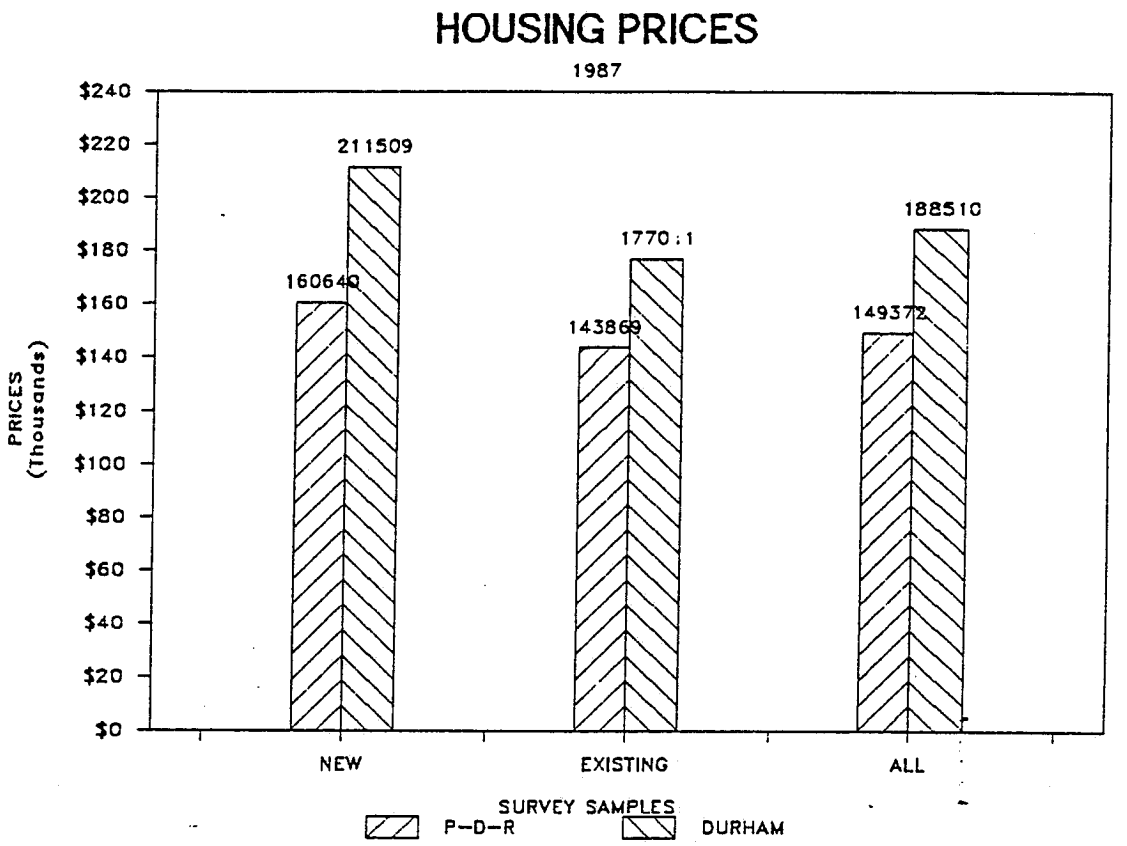

HOUSING PURCHASE AFFORDABILITY
SOUTHERN STRAFFORD REGION, 1986
Annual Income Required to Purchase Average Priced Home (MLS, 1986)
Average Annual Income (1985)
Dollars
60000
50000
40000
30000
20000
10000
0
Nottingham
Lee
Newmarket
Durham
Madbury

EXHIBIT 2-3



NEW HOUSING PRICES - 1987

TABLE 2-6

	PORTSMOUTH-DOVER-ROCHESTER MSA	TOWN OF DURHAM
NEW	$160,640	$211,509
EXISTING	$143,869	$177,011
ALL	$149,372	$188,510

SOURCE: HOUSING PRICE INFORMATION COLLECTED BY THE NEW HAMPSHIRE HOUSING FINANCE AUTHORITY AS REPORTED BY SURVEYS TAKEN FROM THE DEPARTMENT OF REVENUE ADMINISTRATION THROUGHOUT 1987, OCTOBER,1988.

household size dropped dramatically during the decade of the seventies, but the decline has virtually leveled off with only slight declines reported thus far through the 1980's.

Comparative figures for Durham and the other SRPC planning region communities are presented in Table 2-7.

REGIONAL ASSISTED HOUSING COMPARISONS

The housing affordability gap which was previously discussed indicates that housing affordability is a major concern within the region, and many news accounts attest to the fact that housing affordability is a major issue throughout the state. It is an issue which obviously has no easy solution. To help bridge the gap, some communities have supported the construction of assisted housing units.

The New Hampshire Housing Finance Agency reports that in 1988, Durham housing stock includes 76 units of assisted housing for the elderly. Table 2-8 shows the percentage of assisted housing in Durham and other surrounding communities. These figures provide some indication of the communities' commitment to providing assisted housing for their residents. A word of caution - these figures in and of themselves do not establish a "fair share" of assisted housing that a community should provide to demonstrate a satisfactory commitment in supporting assisted housing units. As a result of New Hampshire court cases, a complex formula involving various housing, economic, and land use factors has been developed to determine assisted housing standards. In several towns local zoning ordinances have been challenged as being exclusionary and contributing to the high cost of housing.

HOUSING PROJECTIONS

If growth continues as discussed in the "baseline scenario" in the Population Chapter, between 1,100 and 1,200 new dwelling units will be needed to house the projected population by 2010, provide for some

TABLE 2-7

AVERAGE HOUSEHOLD SIZE

Municipality	average persons per household 1980	1988
Barrington	2.91	2.80
Dover	2.67	2.55
Durham	2.74	2.70
Farmington	2.91	2.80
Lee	2.79	2.70
Madbury	2.88	2.80
Middleton	2.95	2.85
Milton	2.99	2.85
New Durham	2.77	2.70
Rochester	2.74	2.70
Rollinsford	2.96	2.85
Somersworth	2.71	2.60
Strafford	2.95	2.85
Strafford County	2.74	----
Newmarket	2.45	2.40
Northwood	2.79	2.70
Nottingham	3.03	2.90
Strafford Region	----	----

Source: "Demographic Profiles, Strafford Planning Region, N.H.," Starfford Regional Planning Commission, May 1988.

TABLE 2-8

ASSISTED HOUSING
IN
DURHAM AND THE REGION

	NO. OF UNITS	TOTAL UNITS	% OF TOTAL
DURHAM			
BAGDAD WOOD	40		
CHURCH HILL APTS.	36		
	76	2,430	3.1%
LEE	0	1,319	0.0%
MADBURY	0	509	0.0%
NEWMARKET	77	3,405	2.3%
DOVER	756	10,900	6.9%
FARMINGTON	109	2,021	5.4%
ROCHESTER	488	10,652	4.6%
SOMERSWORTH	199	4,532	4.4%

SOURCE: "DIRECTORY OF ASSISTED HOUSING - 1988"
NEW HAMPSHIRE HOUSING FINANCE AUTHORITY

replacement of existing units that will be removed from the current stock, and allow for an adequate vacancy rate of 3% of the total dwelling units. This results in an average annual increase of 57 units per year, as shown in Table 2-9.

The impact of encouraging additional office/research facility development in Durham, as described in the second growth scenario, could add between 100 and 400 new units by 2010, or an additional 5-19 dwelling units per year, depending on the size of the business attracted and the proportion of employees who would actually reside in Durham.

Should the Town encourage additional student housing as suggested in the third population scenario, an estimated 250-370 new dwelling units or an average of 12-18 dwelling units per year could be added. These would be of a different type, however, since this would be primarily high-density residential development.

The last growth scenario previously discussed, that of a growth management ordinance adoption, along with other legislative revisions to restrict growth, would result in a fewer units being developed. A reduction of 10-20 per year would have an effect of decreasing the total housing stock by 210 to 420 units lower than it otherwise would be.

COMMUNITY OPINIONS ON HOUSING

The general belief of those responding to the 1988 opinion survey indicated that there is a great need for low-moderate income housing in Durham with support to a lesser degree for elderly/"Lifecare" housing. The two taken together seem to indicate that assisted housing is needed, much of which would house the elderly; however, there is a lesser need for "life care" facilities in Durham.

At the other end of the spectrum, there was strong opposition to having more condos/townhouses and mobile homes.

TABLE 2-9

PROJECTION OF FUTURE HOUSING DEMAND FOR GROWTH
SCENARIO 1.

Demand				Supply				
Occupied Dwelling Units Tp+n	x	Desired 1 + Vacancy Rate	-	# D.U. in stock Tp	-	Loss In D.U. Stock Tp - Tp+n	=	Future Demand D.U. Demand Tp+n

Where: T = time
p = present
n = number of years (future)

Applying the equation to Durham, the following estimate for the number of new dwelling units needed by the year 2010 under growth scenario #1 is derived:

(3518 x 1.03) - (2430 - 20) = 1,213 or 57 units per year over 21 years.

Where: 3518 = projected total household population (15,000 - 5,500 UNH students in group quarters = 9,500) divided by the projected average household size of 2.7

.03 = desired vacancy rate of 3%

2430 = current year-round dwelling units

20 = estimated number of units either demolished or lost to fire

There was a mixed response to having more single-family units, family-sized apartments and student apartments. On the student apartment issue, the response between "great", "some" and "none" were more evenly balanced than with any other housing type.

In response to where the community would like to see new housing developed, the results were generally predictable. For single-family units there was a slight edge to being located in Planning Areas 5 and 6 in the southern portion of the Town; however, these were generally evenly distributed among the planning areas. There was clearer support for having duplexes and multi-family units in Planning Areas 1 and 2 in the northern portion of Town, as would be expected due to the proximity to the UNH campus. There was also strong support for dormitories to be located in Planning Areas 1 and 2 for the same reasons.

For mobile homes, there was a slight edge for Planning Areas 5 and 6, although the total response was only a third of those responses received for the other types of housing, reinforcing the desire to discourage them.

HOUSING ISSUES AND ALTERNATIVES FOR DEVELOPMENT

Issue 1:

Development patterns of housing for Town residents

Alternative 1 - no change. The development of new housing in Durham has been occurring in a somewhat random fashion with numerous developments scattered throughout the town. This type of development frequently results in inefficient and costly delivery of municipal services.

Continuing the same polices and procedures will likely result in more scattered housing development throughout the town, possibly in locations where marginal land-capability conditions will lead to higher development costs, and in areas which are environmentally sensitive.

Alternative No 2 - Encouraging housing development in the northern half of the town. The town now has approximately 250 approved residential building lots available, located in subdivisions scattered throughout the town. Since these have received formal approvals, housing should be permitted on these lots.

However, under this development alternative, zoning revisions, cluster development provisions and development density incentives would be made to encourage development in the northern portion of the town and in a more orderly fashion. More specifically, three areas may be targeted for concentrated residential development: (1) the area accessed by Route 108 and also north of the Oyster River, (2) a portion of the area south of the Oyster River and east of Route 108 accessed by Durham Point Road, and (3) the Mill Road area. This would permit more efficient delivery of municipal services. It would also be possible to more easily control the extension of water and sewer services into these areas.

This aspect of housing development will be further discussed in the Land Use Chapter.

Issue 2:

The Affordability of Housing in Durham for Town Residents

Alternative No. 1 - no change. The data shows that Durham has the second largest housing affordability gap in Strafford County. Past efforts have lead to the construction of 76 assisted housing units for the elderly; however, there are no incentives to encourage this type of assisted housing for the elderly or for low/moderate income families.

Market forces, including the demand for student housing, have undoubtedly been a major factor in creating high housing costs; however, other policies and procedures of the town may either be directly contributing to the problem, or could be revised to help mitigate existing conditions.

Municipalities must demonstrate that their policies, either individually or collectively, have not contributed to excluding a diversity of housing types. In previous New Hampshire court cases, municipalities have been required to show a good faith effort in carrying their "fair share" of affordable housing when compared to the surrounding region.

Alternative No. 2 - Encourage additional assisted housing. Municipalities may take an aggressive approach in encouraging assisted housing in several ways. The most direct is the creation of a housing authority to supervise the development and operation of assisted housing units. Another option is the formulation of incentives to attract developers into making some percentage of a total housing project assisted housing units. In some instances, municipalities have provided land to reduce housing development.

These are all actions which the municipality can take to mitigate market forces that create high housing development costs. By being an active participant in the process, municipalities can help insure that new assisted housing units are of the type that fit within the community and a positive contribution to the total housing stock.

Alternative No. 3 - Relaxation of regulatory controls for housing development. An indirect approach which will not necessarily encourage affordable housing but will nonetheless reduce housing development costs, is the relaxation of land use controls in locations where greater densities may be permitted without detriment to the community or the housing stock.

As an example, in Durham there are currently a total of 9 mobile (manufactured) homes, and none have been added during the 1980's. This is in part due to the town's zoning ordinance which requires that all mobile homes be located in a mobile home park, only allowed by Special Exception in the "R" zone, or in a mobile home subdivision only allowed by special exception in the "BA" district (of which there is only minimal land area).

Issue 3:

Student Housing in Durham has contributed to increased housing costs, and the lifestyles of UNH students and town residents have occasionally conflicted.

Alternative No. 1 - No change. With approximately 1,700 students living off-campus in Durham dwellings, primarily in multi-family housing, this extra demand for housing has been a key factor in the affordability gap previously discussed. By agreement between UNH and the town, there has been a cap on student enrollments at UNH, and some town residents have opposed new off-campus housing development for students.

With these policies in place, Durham's student population could continue to be held level; however, the same concerns of inflated housing costs and conflicting lifestyles will most likely remain unresolved. Also, the University is under considerable pressure to at lease raise its enrollment cap.

Alternative No. 2 - Increase in UNH on-campus student housing. Under this alternative, UNH would be encouraged to increase its on-campus student housing capacity. To house the 1,000 students identified in the growth scenario 4 in the Population Chapter, UNH would have to construct dormitory space. Plans for UNH facilities to house an additional 600 students are already underway. This would perhaps help the University in consolidating its student population on-campus and allow some students who now live off-campus and wanting to be on-campus to do so. However, about half of the University's 11,000 students live off-campus. Therefore, creating more on-campus housing most likely will not reduce off-campus housing pressures, and provide no benefit to Durham.

An additional 1,000 students living in Durham would impact upon the UNH/Durham water, sewer and solid waste disposal systems. Although UNH provides its own police and fire services, such a sizeable increase might have some impact on Durham Police and Fire Departments since they are sometimes called to assist the University.

Since the dormitories would be on UNH property and totally under UNH control, there would be no tax benefit to Durham.

Alternative No. 3 - Increase in off-campus student housing. New housing could be privately developed to west of the campus to accommodate the increase of 1,000 students. As with the previous alternative, this would not necessarily relieve the pressures which currently exist. However, there would be an additional benefit. With the new housing located on private property, the tax base would be substantially increased.

In a recent proposal for some privately built "congregate" housing, the projected taxes for a 350 unit development was $268,000. If this return were projected for privately built housing for 1,000 students, the Town would gain between $300,000 and $400,000 in taxes annually.

In comparing this approach for increasing the tax base versus attracting new office/research facilities, it is believed that there would be less of an impact on the school facilities since most students would not bring in families with children.

Goal: Maintain the quality of Durham's existing housing stock, promote the provision of affordable housing for local residents, and continue to encourage healthful, safe, convenient, and attractive neighborhoods for all residents.

Objectives:

1. Encourage new housing development so that it maximizes use of existing infrastructure and minimizes the need for new town roads and public facilities.

2. Allow for the construction of affordable housing which will help meet the needs of the elderly and lower income families.

3. Allow for the development of student housing in locations which will not conflict with residential neighborhoods in the Town.

Analysis:

With a projected population of 16,000 by the year 2010, an estimated 3,500 households will be present in Durham. (This includes students residing off-campus in dwelling units adjacent to the campus, but does not include projected new off-campus housing.) This means an increase of approximately 1,200 units over the next 21 years (including an allowance for a 3% vacancy rate). Based upon an assumption that student household size tends to be larger, the projection may be overstated by as much as 100-200 dwelling units; however, the 1,200 unit projection allows for a more conservative approach in planning for Durham's future development.

Allowing for the existing inventory of approximately 250 lots to be developed and assuming that 100-150 multi-family units were constructed primarily to serve the elderly, an estimated

830 single-family units would be developed on land which is currently not developed or not already approved for development.

Due to soil limitations, other environmental and natural resource constraints, the location of UNH property, and the present service area boundary of the existing municipal water and sewer facilities, new housing development should generally be encouraged in the northern half of the town in three areas: (1) the area accessed by Route 108 and also north of the Oyster River, (2) a portion of the area south of the Oyster River and east of Route 108 accessed by Durham Point Road, and (3) the Mill Road area. Under the existing zoning patterns, the current buildout capacity for these areas is estimated to be approximately 800 dwelling units. Since this is based on soil capacity mapping which is not extensively detailed, this number is probably understating the potential development capacity of the area to some degree. High Intensity Soil mapping would most likely indicate a higher capacity.

However, comparing the mapping of land suitable for development to projected growth estimates does suggest that the most desirable land will be developed during the two decade time frame of this plan. While Durham's population is not increasing at as fast a rate as other surrounding communities, the limited amount of suitable land represents an additional constraint that is creating significant development pressures. The extension of water and sewer facilities and zoning adjustments could permit higher development densities in the longer range future, which could be used to direct development into the preferred areas of the Town.

Within the immediate five year period (the normal length of time before a Master Plan is typically updated), an estimated 200-250 new dwelling units will most likely be added to the housing stock.

Recommendations:

1. New housing development should initially be encouraged to occur on already approved lots and in the area accessed by Route 108 and north of the Oyster River, excluding lands which are to be retained for conservation and restricted from development. Methods which will be discussed later, include the extension of water and sewer, zoning changes and transfer of development rights.

2. Cluster development should be encouraged in future subdivision proposals.

3. Adopt a policy for long term housing development to be encouraged in three areas in the following priority: (1) the area accessed by Route 108 and north of the Oyster River which remains available, (2) a portion of the area south of the Oyster River and east of Route 108 accessed by Durham Point Road, and (3) the Mill Road area.

4. Explore the possibility of using Transfer of Development Rights (TDR's) to relieve development pressures in areas along the Great Bay and Little Bay shore, and other environmentally sensitive areas.

5. Prepare a long range water and sewer plan for portions of the areas described in 1 and 3 above so that the infrastructure can be properly sized for long range development needs.

6. In conjunction with 5 above, formulate programs in which private developers will be responsible for the cost of installing the new infrastructure; however, covering only the costs they should appropriately absorb. (Impact fees, extension agreements, etc. - see #10 below.)

7. In anticipation of municipal water and sewer development, rezone areas over time to appropriately allow for smaller lot sizes, so that roadways and infrastructure will be minimized. This will also help to reduce housing costs and attract development which may otherwise be more scattered throughout the Town.

8. Work to develop more privately owned off-campus student housing in an area west of the main campus.

9. Maintain the "R" zone throughout the southern half of the Town where soils do not permit extensive development and it would be difficult to extend water and sewer.

10. Explore impact fees for future subdivision approvals.

11. Encourage the development of some assisted housing units for the elderly and low/moderate income families.

12. Enforce existing codes to insure safe & sanitary housing conditions and to help control overcrowding of existing housing units.

13. Review the manufactured housing (mobile home) provisions in the Zoning Ordinance to ensure that they comply with current State statutes.

14. Employ incentive zoning to assist in guiding residential development to desirable areas in Town while aiding in the preservation of open space (i.e., allowing density bonuses, etc.)

ECONOMIC BASE

INTRODUCTION

In this chapter the town's employment and economic base is analyzed to identify other factors which either are driving Durham's growth, or could drive future growth and help expand the tax base. Responses to questions relating to economic development issues from the 1988 Community Opinion Survey are analyzed. Employment projections are made based upon the scenarios for growth presented in the Population chapter. Finally, major issues relating to the Town's economic vitality are explored with possible alternatives for their resolution.

EMPLOYMENT

Employment data reported in the 1980 Census is misleading due to the fact that University students are mixed with town residents, creating a somewhat distorted profile of the town's labor force and commuting patterns. However, some of the individual statistics show that in 1979, over 1,000 people in the labor force were in professional occupations, primarily within the "educational" industry classification, and more than 800 worked in administrative support positions, most of whom would also fall under the "educational" classification. See Table 3-1.

In 1980, there were 843 workers in the retail trades, including full and part-time positions (counting University students). Occupationally, this group is classified in the "services" occupations.

In 1988, there are three identifiable sources of employment in Durham, as shown in Table 3-2. The University employs more than 2000. Data General now employs approximately 200, with an anticipated increase of 400 more employees due to consolidations from other plant facilities which are closing down. The balance of other Durham employment is estimated to be about 1,300 permanent and part-time workers within small businesses in Durham, primarily in the town's retail core. Within the regional context, Durham's employment base is a very small part of the overall totals, but it

NEW HAMPSHIRE DEPT OF EMPLOYMENT SECURITY
ECONOMIC ANALYSIS AND REPORTS
32 SOUTH MAIN STREET
CONCORD, NEW HAMPSHIRE 03301-4857

1980 CENSUS DATA

TABLE 3-1

Name of Community - Durham

Population

Total	10,652
Male	5,056
Female	5,596

Education Years Completed

		Percent
Total Reporting	2,874	
0 - 8	65	
9 - 11	46	
12	449	15.6
13 - 15	564	
16 or more	1,750	60.9

Income 1979

Median Family Income	$25,943
Mean Family Income	$30,607

Number of workers in Family by Family (1979)

None	145
One	424
Two or more	637

Poverty Level Status	Above	Below	Total	% Below
Under 55 years	3,597	1,246	4,843	25.7
55 - 59	276	0	276	0.0
60 - 64	182	25	207	12.1
65 and over	327	34	361	9.4
TOTAL	4,382	1,305	5,687	22.9

Employed By - Class

Private	2,146
Fed. Govt.	169
State Govt.	1,580
Local Govt.	189
Self Employed	196
Unpaid Family Wkr.	13

Employment Status

	Total	Male	Female
Labor Force(LF)	4,482	2,320	2,167
Civ. L.F. Emp.	4,293	2,194	2,099
Civ. L.F. Unemp.	189	126	63
Armed Forces	47	38	9
Not in L.F.	4,956	2,101	2,855
Participation Rate 16 and over	47%	52%	43%

Industry

Agri., Forestry, Fishing & Mining	83
Construction	44
Manufacturing-Nondur.	135
Manufacturing-Durable	249
Transportation	99
Comm. & Public Util.	67
Wholesale Trade	82
Retail Trade	843
Fin. Ins. & Real. Est.	149
Bus. Repair Services	168
Pers. Enter. & Rec. Ser.	186
Prof. & Rel. Ser. - Health	175
Prof. & Rel. Ser. - Educ.	1,682
Prof. & Rel. Ser. - Other	205
Public Administration	126

Occupation

Exec. Admin, & Mgmt.	341
Professional Spec.	1,099
Tech. and Rel. Supp.	180
Sales	429
Admin. Support	855
Service Occupation	932
Farm. For. & Fish	75
Preci. Craft & Rep.	91
Oper., Fab. & Labor.	291

Transportation to Work

Drive Alone	1,506
Car Pool	467
Public Trans.	65
Walked	1,916
Other Means	176
Worked at Home	136

Commuting

% Working out of Town	36
% Commuting into Town	53

Number of Firms and Workers in Private Industry Covered by Unemployment Compensation
Based on Place of Work as Reported by Employers

	Units			Employment		
	Total	Manu.	Nonmanu.	Total	Manu.	Nonmanu.
1984	125	*	*	976	*	*
1983	110	*	*	845	*	*
1982	109	*	*	856	*	*
1981	110	*	*	887	*	*
1980	96	*	*	843	*	*

Wages

	All Industry			Manufacturing			Nonmanufacturing		
	Total	Yearly Average	Weekly Average	Total	Yearly Average	Weekly Average	Total	Yearly Average	Weekly Average
1984	$10,407,848	10,664	205.07	*	*	*	*	*	*
1983	8,599,714	10,177	195.72	*	*	*	*	*	*
1982	7,845,093	9,165	176.25	*	*	*	*	*	*
1981	7,601,340	8,570	164.80	*	*	*	*	*	*
1980	6,793,404	8,059	154.97	*	*	*	*	*	*

88-2690-70

TABLE 3-2

TOWN OF DURHAM - 1988 MASTER PLAN

ECONOMIC BASE — DATE OF CALCULATION: 15-Nov-88

MAJOR EMPLOYERS IN DURHAM

	NO. OF EMPLOYEES	
UNIVERSITY OF NEW HAMPSHIRE (1)	2,100	
DATA GENERAL (2)	200	(AN ADDITIONAL 400 EMPLOYEES ARE TO BE TRANSFERRRED FROM PORTSMOUTH)
OTHER (3)	1,300	(TOTAL OF 1,518 REPORTED BY DEPT. OF EMP. SECURITY LESS DATA GENERAL EMPLOYEES)
TOTAL	3,600	

REGIONAL EMPLOYMENT COMPARISONS (3)

	DURHAM	P-D-R	STRAFFORD COUNTY	STRAFFORD PLAN. REGION
UNITS	157	4,868	2,075	2,289
DURHAM AS PERCENT		3.2%	7.6%	6.9%
EMPLOYEES	1,518	70,432	29,906	31,312
DURHAM AS PERCENT		2.2%	5.1%	4.8%
INCOME ALL IND. (WEEKLY)	$301.33	$382.36	$371.95	$371.47
		78.8%	81.0%	81.1%
INCOME NON-MFG. (WEEKLY)	N/A	$343.79	$318.44	$315.79
		87.7%	94.6%	95.4%

SOURCES: 1. UNIVERSITY OF NEW HAMPSHIRE
2. TOWN OF DURHAM, PLANNING OFFICE
3. DEPARTMENT OF EMPLOYMENT SECURITY - 4TH QUARTER,1987 REPORTS

represents a highly specialized employment segment, since it largely centers around the University.

As the population has grown, an increasing number of people now living in Durham work outside the town. Many residents view Durham as a "bedroom community" for people working in the larger employment centers of Portsmouth, Dover, Concord, with some commuting into Massachusetts.

ECONOMIC BASE STRUCTURE

To gain a better understanding of what drives Durham's economy, a simplified approach of a base theory analysis will be used. The base theory concept makes "a distinction between productive activity, which brings new money into the community (basic activity), and productive activity which simply recirculates money which is already there (service or non-basic activity). The concept holds that basic industry is the key to a community's economic strength, and expansion in basic lines usually means growth in service activities and thus, growth in the total economy."[1]

This form of analysis is appropriately applied in Durham due to the fact that the University clearly dominates the town's economic base as the primary basic activity. Stated in more direct terms, Durham is a "University Town". The second most dominant basic activity is, of course, Data General, which will have an increasing role as it expands in Durham. However, activities of this type are attracted to Durham at least in part due to the accessibiliity of University facilities and personnel.

The third element in Durham's economic base is its retail center. To a large degree, this sector of the community is an extension of the University since its targeted market segment is University students, drawing an additional percentage of new money into the community as students purchase additional goods and services. However, a portion of this sector acts as a service, or non-basic activity. The 1988 survey showed local residents purchase such goods and services as hardware, gasoline, drugs, clothes cleaning, books/stationary, and use of restaurants (in that order) in

1. Chapin, F. Stuart, Jr., Urban Land Use Planning, Second Edition University of Illinois Press, Urbanana, 1965., p. 137.

Durham. Though not identified in the survey, other non-basic activities would include doctors, lawyers, dentists and other types of professional offices which service both local residents and students.

Durham is within close proximity to one of New Hampshire's major retail centers which has a large service area influencing a sizeable portion of the state. Therefore, most of Durham's retail businesses are locally oriented. Retail businesses largely serve a specialized market niche of University students and employees, seeking specific types of goods and services.

Durham's economic vitality is clearly linked to its role as the host community for the University. While this relationship is sometimes the source of conflict, the "Educational Services" industry is considered to be one of the industries least sensitive to cyclical fluctuations. The University is the state's leading public institution of higher education, providing a strong degree of stability and economic vitality for Durham.

Therefore, the economic interests of both University and non-University entities essentially go hand-in-hand. Taking this as a "given", the next step is to work toward making the individual economic sectors more smoothly mesh together to the benefit of all parties involved, as will be discussed in the issues and alternatives section that follows.

EMPLOYMENT PROJECTIONS

In the growth scenarios previously discussed in the population chapter of this plan, the "As-Is" scenario (#1) has assumed that UNH will essentially continue at its current level of operations, so that no significant changes are likely to occur and employment will generally stay around its present level. No other scenarios have been presented by the University. The increase in Data General employment is assumed to have little impact on the town's resident population growth since most employees already live within an easy commuting range of the plant. Finally, no new industrial-based office/research facilities are projected. Therefore, this scenario

projects some population growth due to Durham's bedroom community characteristic, but no new employment growth.

Under the second growth scenario an additional 3-4 new office/research or light manufacturing type of industries would be added, resulting in an additional 300-800 employees and further increasing the tax base.

The two remaining scenarios do not include significant job creation since the increase in #3 is primarily due to an increased number of students, and the growth control option is a more restricted version of the first scenario.

ECONOMIC BASE COMMUNITY OPINIONS

Survey respondents to the 1988 community questionnaire showed strong support for the development of additional research and development businesses and nearly as strong of support for the development of an office center. There was a more mixed but somewhat supportive response to providing private educational institutions.

Other forms of economic base development received much less support. The most evenly distributed response between those supporting and those not supporting was for light industry/warehousing. There was some opposition to encouraging the addition of small shopping centers and fairly strong opposition to adding manufacturing or large retail stores. Out of the total, a small but noteworthy group preferred to see no additional businesses encouraged.

As for the location of new stores (should they be developed), the strongest support was for the existing downtown area, followed by the area off Route 108 toward Dover. Other locations including off Route 155 (Mast Road toward Lee), off Route 4 towards Portsmouth, off 108 towards Newmarket, and off 4A (Old Concord Road) received much less support than the two above. However, fairly strong opposition was voiced, again, in regard to not having any new businesses.

ECONOMIC BASE ISSUES AND ALTERNATIVES FOR DEVELOPMENT

There are two broad issues which need to be addressed:

Issue 1:

Strengthening the tax base for the Town of Durham

Alternative No. 1 - No change. Although the town's economic base is generally healthy, with high household incomes, low unemployment and a solid foundation of "basic" industry that offers a high degree of stability, the one factor which has a negative impact is that the large portion of land owned by the University is tax exempt. The University does provide some payments in lieu of taxes, makes direct in-kind contributions of personnel support and provides some services; however, these are all at cost. Even if this results in the University paying an adequate share of the costs, the town is constrained in its ability to expand its tax base. Perceptions seem to vary as to how critical this issue is.

As expressed in the survey, some residents would prefer to allow the business sector to remain essentially as is at this time. This will limit, if not totally preclude, the opportunity to expand the tax base. This alternative would be consistent with the scenarios of allowing some growth or controlling growth.

Alternative 2 - Expanding Office/Research Facilities. One alternative for increasing the tax base would be to encourage more office and research development of the same character as Data General. However, there is limited land in Durham where this type of development may occur.

Assuming land in the O/R zone could be developed and the O/R district could be extended slightly more to the south, the town could realistically absorb 3-4 facilities with a range of approximately 100-200 employees per unit. This would then result in a range of 300-800 new employees. As a broad estimate, these facilities would contribute in the range of $300,000 to $600,000 in taxes. Also, the increased housing resulting from employees

moving into Durham would increase the tax base. On the other hand, there would be some increased costs to the town for services including some impact on the schools as families move into the area.

As a variation to this, to be accomplished either independently or in conjunction with the above, additional professional office facilities may be beneficial. Due to the professional nature of the community, the availability of smaller professional office space in Durham could be attractive to various types of professionals, including doctors, lawyers, dentists, etc. There are two possible locations for this type of space. One location would be within the east end of the downtown core, Planning Area 8, where a number of buildings could be renovated and restored. The second possibility would be in Planning Area 2 on land along Dover Road immediately north of the Bypass. These alternatives will also be discussed in the Land Use chapter.

Alternative 3 - Encourage Student Housing. As has been pointed out in the earlier sections of this chapter, the University provides Durham a stable economic base, but due to the tax exempt status of University property, the town gains little benefit in support of its tax base. The town could benefit to a greater extent from the presence of the University by permitting and encouraging the private development and operation of student housing facilities, and possibly other University related activities which could be developed and maintained in private ownership.

This concept is simply an extension of what is already occurring in Durham. As was previously pointed out, the University has served to help attract the Data General office/research facilities and many of the downtown businesses greatly benefit from the student market.

The University has provided housing for 5,000 students on campus. If the town does not choose to encourage off-campus housing, the University may need to provide more on-campus facilities in the future. In this case, the town will still have to deal with the impacts of this increase without the benefit of increasing the tax base. University officials may also be happy that additional housing could be provided with only a minimal involvement on the University's part.

Although the private development of student housing would impact upon town services and result in some increased costs, this type of housing should be of the highest density in the town. The proper design of these facilities would minimize those costs. Another key factor is that student housing development would not result in a large influx of families so that the schools will feel virtually no impact.

Respondents in the survey were mixed about the need for more student housing; however, this suggests that the need has some public recognition and the construction of student housing had stronger support than several other types of housing where considerable opposition was voiced.

The key to the success of this type of student housing development would be its location. Off-campus student housing has acquired a "bad name" in the minds of a number of Durham town residents due to conflicting lifestyles and the fact that students have lived in older dwellings which command high rents with minimal maintenance occurring. These are located primarily east of the campus in neighborhoods which include a mix of both students and town residents.

The development of new student housing would be best directed to the west of the main campus in complexes specifically designed to house students. This would permit student housing to be separated from town resident housing so that lifestyles don't directly conflict. The concentration of student housing would also permit better monitoring by police and fire officials, and as would be discussed later in more detail, traffic patterns will be improved. When asked where new student housing should be placed, this location received the strongest support in the community survey.

Issue 2:

Improving the downtown and commercial activities

Alternative No. 1 - No Change. Currently, the downtown faces a number of problems. First, studen housing is now more lucrative than retail business to property owners, so that more downtown space is being devoted to student

housing. There are an estimated 500 students living within Planning Area 8 (which is primarily the downtown core). Secondly, most of the businesses now cater to college students, and some in the community are concerned that Durham no longer serves the town residents as it did in the past. Thirdly, traffic and parking concerns are a major problem.

Several of these issues may be resolved in part by taking actions discussed in other chapters of this plan. Traffic and parking problems generally exist during periods when UNH is in full session. The construction of a limited access entrance into UNH as proposed in the Transportation chapter, would go a long way towards eliminating downtown traffic congestion, and the construction of more UNH parking at the terminus of that entrance road should help alleviate parking problems. The development of student housing west of the main campus may be able to attract some students now living in the downtown area. (However, it should be noted that competition from other students living off-campus in Durham and surrounding towns would probably result in continued market pressure to have housing in the downtown area.)

Durham's close proximity to other large retail centers work against the downtown being able to attract a different mix of student and Town resident customers. It may be better for Durham businesses to recognize that they can fill a specific market niche and concentrate on upgrading the downtown to best achieve that goal. Without making major physical changes in the downtown area, some promotional activities may be developed by downtown businesses at specific times of the year when University students are not present in large concentrations, particularly focused on the summer and possibly even during the University's Christmas break. To accomplish this, downtown businesses should work cooperatively to generate some interesting events that will attract local residents. This would help to even out business cash flows and possibly have the added impact that local residents would be reintroduced to what is available in Durham and consider purchasing goods and services at other times throughout the year.

Alternative No. 2 - Improvements to the Downtown Area. As noted in Alternative No. 1, some improvements will occur to the downtown as a result of other actions taken outside this core. However, additional steps may also be taken to improve existing conditions.

Currently, parking requirements in the zoning ordinance encourage housing rather than retail establishments in the downtown area. Revisions can be adopted so that the specific parking requirements for downtown businesses can be established which would better benefit the businesses while continuing to meet the public interest. This may be used as an incentive to encourage business and property owners to improve the appearance and conditions of their buildings.

Alternative No. 3 - Expansion of Downtown. Some downtown business owners have been told by residents that merchandise lines are too much oriented to the students and there is not a sufficient variety of merchandise to attract residents downtown. One member of the business community has proposed that a general merchandise or department store be attracted to Durham to help attract residents to patronize local businesses.

While this concept deserves consideration, several comments are in order. First, the community survey results indicated that most respondents did not believe that large retail stores should be encouraged. Secondly, the chances of attracting larger retail businesses seems unlikely, since Durham probably does not generate sufficient traffic flow to construct a large store, especially with a regional shopping mall less than 10 minutes away in Newington. Most likely, any businesses large or small, which were to locate to Durham would first target at the student market, perpetuating the same shopping patterns which currently exist.

A second possibility exists for expanding the downtown area. In the past, the downtown has been viewed primarily as a retail center. However, professional services frequently make up a larger portion of the commercial trade and services sector of a community's economic base that was the case in the past. With that recognition, more professional offices may be encouraged in the downtown.

Alternative No. 4 - Creating Two Commercial Areas. This proposal has been considered by the town in previous master plans, with recommendations rejecting the concept. The concept still remains a topic for consideration. The purpose of the proposal would be to separate the commercial area serving the University students from a commercial area serving town residents. One of the arguments against the proposal was that a "two-center" concept would only weaken the existing center. This point could be debated, at least in today's environment, since the existing center would continue to serve the student market, which is strong.

The primary concern would more realistically seem to be the viability of the new commercial center. The survey seemed to indicate a lack of support for more retail business in Durham and that the established shopping pattern is, as would be expected, to purchase more immediate need items in Durham, but to shop outside the town for many goods and services. The composition of a new commercial center would most likely have to be designed around those patterns. Should a second commercial area be established the most likely location would be on Dover Road immediately north of the Bypass since sewer and water are available and there would be easy accessibility from the roads carrying the greatest amount of traffic.

An additional variation of this alternative would be to establish a professional office park either in conjunction with or in lieu of the retail establishments, which would attract doctors, lawyers, etc. and allow the downtown area to remain entirely commercial rather than encouraging professional offices in that location as proposed in an earlier alternative.

Goal: Promote the expansion of the Town's tax base to minimize tax rate increases. Encourage the revitalization of Durham's downtown area to best use existing structures and enhance the visual quality of the downtown.

Objectives:

1. Encourage the development of properly designed and located student housing to increase the tax base.

2. Encourage and assist downtown businesses in working together to improve the attractiveness of the Town's commercial center for both student and local resident patronage.

3. Encourage the transition of the downtown residential uses to commercial retail and professional uses.

4. Encourage the expansion of commercial and professional space in Durham.

Analysis:

As the host community to UNH, the Town has available a unique resource which functions as the primary base for Durham's strong economy. The Town could further benefit from this resource by expanding the tax base through the development of off-campus student housing, which would also help the University to serve an unmet demand for more housing. When compared to the alternative of expanding the tax base through the encouragment of more Office/Research facilities (which would encourage additional residential growth) the student housing option appears to provide as good a return without having as much of

an impact on the absorption of land for development or use of municipal services, particularly the school system.

The character, appearance, and vitality of Durham's downtown is a major concern to local business owners and Town residents. Much of the floor space in the downtown area is now utilized for student housing, and some believe the quality of the downtown is deteriorating.

However, major retail expansion of the downtown or the viability of a separate retail center does not seem realistic because of the size of the available market. This is due to the fact that Durham is within 10 minutes of regional shopping centers which have the power to draw patrons from a large portion of the southern half of the State. Durham simply cannot compete at that level. This, however, does not preclude the opportunity for special activities and businesses creating market niches or special promotions to serve local residents.

Expansion of the downtown through the addition of professional office space and supporting service establishments such as restaurants does seem feasible. Focusing expansion along Route 108 between the existing downtown and the Route 4 interchange would also allow an opportunity for riverfront development which could add an interesting dimension to the downtown setting.

Recommendations:

1. Work with developers to construct off-campus student housing west of the campus to expand the Town's tax base and capitalize on the University as a "basic industry", bringing income into the community.

2. Enforce the existing codes for health and safety purposes so that buildings are not overcrowded. This may also help make downtown buildings more attractive for office and commercial use again, by allowing retail uses to be more financially competitive with student housing.

3. Make parking requirements in the zoning ordinance less stringent for downtown businesses, while reevaluating the current parking requirements for housing purposes.

4. Study and organize a downtown revitalization effort so that businessmen and property owners can realize a reasonable return by attracting business & professional offices downtown.

5. Organize merchants to develop a unified promotional campaign to attract local residents downtown, particularly in summer months when fewer students are in Town and businesses are in need of greater local resident patronage. The Downtown Marketplace in Burlington, Vermont serves as a good model.

6. Allow for commercial/professional offices along Dover Road (Route 108) south of the Route 4 interchange.

COMMUNITY FACILITIES

INTRODUCTION

The provision of adequate public services is a critical element in maintaining the health, safety and general welfare of a community. A major premise behind planning for community services and facilities is to keep pace with population growth. The need for adding to or revamping services and facilities increases as population grows and also, as older facilities become outmoded, legal requirements change and living standards and public expectations rise.

Careful facility planning is important to the future orderly growth and development of Durham. Such facility planning also provides the basis for developing a Town Capital Improvement Plan and Capital Budget.

In Durham, because of the unique relationship with some community facilities shared with the University, the situation is somewhat more complicated. As discussed in subsequent sections below, some of the shared facilities can cause unclear lines of demarkation in responsibility, as well as potential overlaps and cost ineffectiveness in providing these services. On the other side of the coin, the relationship between the town and the University results in some facilities being made available that would not be found in other communities.

This chapter on Durham's community facilities is divided into four subject headings: 1) Fire Protection, 2) Police Protection, 3) Public Works, and 4) Schools. Each section contains a brief overview of the existing operational profile of each department, a discussion of existing inadequecies, and options that would be available to mitigate identified problems.

Fire Protection

The Durham-UNH Fire Department provides service to both the town and the University. It is a department of 21 full-time firefighters with 18 volunteers positions. Presently, the Fire Department is administerd by the

Durham-UNH Board of Fire Commissioners that meet on a monthly basis to review the Fire Department's activities and expenditures, in addition to establishing future objectives of the Fire Department's administration.

Based on a memo of agreement established in 1944, the Fire Department was primarily funded by UNH. However, as the town has continued to grow over the intervening period, the calls for service (CFS) have been closer to a 50/50 split between the University and the town. Because of this, the Board of Commissioners has recommended a 3-year phased program where by 1991 the Town will be paying 47-1/2% and the University 52-1/2% of the Fire Department's operating budget. In all likelihood, as part of this reorganization Fire Department personnel will become Town employees, and issues relating to collective bargaining agreements, employee benefits and salaries can be ironed out.

In 1985 the Fire Department moved into its new station located on the campus directly south of Main Street. This is an ideal location to respond to the concentrated areas of population within the town. However, for those areas lying to the south and east, response time is significantly greater then it is for areas in the central portion of the town. With the focus of residential development occurring southerly towards Long Marsh Road, a satellite station near the Long Marsh Road/Newmarket Road intersection would be a viable option for future consideration. A satellite station in this location would also coincide with the proposed extension of Long Marsh Road to Durham Point Road. This would provide significant improvement in response time to the entire southern half of the town.

Also recommended for future consideration is the possible consolidation of the Durham Ambulance Corps with the Fire Department. The Durham Ambulance Corps provides a volunteer emergency ambulance service to the towns of Lee, Durham, Madbury and the University of New Hampshire. A concern of the Corps is the future of volunteerism in emergency medical service. One option for further consideration is a gradual shift to a full-time professional EMT staff under the jurisdiction of the Fire Department. Naturally, this would result in increased operating costs, as well as an increase in manpower requirements.

Police Protection

The Durham Police Department is currently located in the western wing of the Town Hall occupying both the first and second floors. At the present time, there are 15 full-time sworn officers and 8 part-time officers, with 2 secretaries, 2 school crossing guards and 1 animal control officer. The Durham Police Department provides police coverage for the entire Town, excluding UNH property. Based on a memorandum of agreement, the Campus Police provide on-campus coverage, while the Town department covers the remainder of the Town. Dispatch services are a shared, centralized facility between Madbury, Lee, the University of New Hampshire and the Department of Public Works. The Department has 5 cruisers, 3 of which are marked. Currently, the replacement program is 1 per year but due to increased calls for service and use of the existing vehicles, the Department is looking to a 2 vehicle per year replacement schedule. Although this will increase capital costs to replace the cruisers, the benefit to be realized (based on an estimate by the Police Department) is a $5,000 reduction in vehicle maintenance costs.

Unquestionably, the single biggest deficiency currently facing the Police Department is their present location in the Town Offices. Not only is the space cramped and inefficient, it also lacks adequate detention facilities and building security. As discussed in subsequent sections of this chapter, the preferred option would be total relocation of the Police Department out of Town Offices. This then would free up space for use by both the Accounting and Public Works Departments, more in line with what the building was originally designed for. Future study for a new Durham Police Headquarters Building should examine all joint use considerations, including a shared facility with UNH campus police and/or the municipal court. The following 2 tables (Tables 4-1 and 4-2) present the 1987 juvenile report, as well as the update of the 1987 calls for service activity report.

TABLE 4-1

TOWN OF DURHAM
DURHAM POLICE DEPARTMENT
1987 JUVENILE REPORT

Breakdown of Juvenile Cases

Violation Classification	Parent Conference	Court Diversion	Juvenile Court	Adult Court	M/V Action	Admin. Action	Total
Criminal Trespass	11		18			4	33
Theft	1		1				2
Receiving Stolen Property			2				2
Shoplifting	1		1				2
Disorderly Conduct	2						2
Criminal Mischief			1				1
Reckless Conduct	1						1
Simple Assault	1		1				2
False Information to Officer	1						1
Abuse/Neglect Complaints			2			1	3*
Uncontrollable	2						2
Runaways	5		2				7
Missing Person	6						6
Aid to Other Police Departments						5	5
Possession of Alcohol	1			4		1	6
Protective Custody	30						30
Transportation of Alcohol					1		1
Miscellaneous M/V Violations							
TOTALS	64	0	27	8	1	13	113

* Referred to New Hampshire Division of Children and Youth Services for joint investigation.

TABLE 4-2

TOWN OF DURHAM
DURHAM POLICE DEPARTMENT
1987 ACTIVITY REPORT

	1985	1986	1987
Aid to Citizens	1247	1849	1288
Aid to Other Agencies	2611	2169	2029
Aid to Officers	1750	1800	1549
Development Checks	2166	2295	1923
Parking Tickets	3850	5560	4397
Building Checks	1211	1234	893
House Checks	5662	5171	2066
Escorts	374	342	327
Radar Checks	1270	1611	1587
Warnings Issued:			
Motor Vehicles	2331	2417	2433
Criminal	235	251	226
Bicycles	12	2	4
Pedestrians	6	8	10
Citations Issued	1831	2512	1812
Motor Vehicle Arrests	83	139	133
Criminal Arrests	327	317	421
Other Department Arrests	21	39	9
Complaints	2992	2751	2537
Accidents	374	372	350
Criminal Investigations	1277	1149	478
TOTAL	30530	31988	24472

Durham Public Works

The Durham Public Works Department provides basic municipal services in the following 5 categories: 1) Wastewater, 2) Water, 3) Buildings, Recreation and Cemeteries, 4) Highways, and 5) Sanitation. As mentioned in the introduction to this chapter, the discussion of municipal services provided by the town must be viewed in conjunction with those services provided by the University. In some instances, provision of services involves both the town and University together, and in other cases similar services are provided separately. Each basic function is discussed in detail below.

Wastewater

The existing sewer service area (see Exhibit 4-1) encompasses both the University and central business district, as well as some adjacent residential areas. To the west, sewer service extends to the recently developed Data General complex with the interceptor in place along Old Concord Road. The southern boundary of the existing sewer service area extends down to Oyster River Road along the north side of Oyster River. The northern boundary extends to the Madbury/Route 4 interchange, while the eastern terminus is at the water treatment plant just north of the Oyster River. The current capacity of the wastewater treatment plant as designed is approximately 3.5 million gallons per day (MGD) for a peak period, with the ability to accommodate 2.5 MGD on a continuous basis. Existing demand averages around 1.4 MGD.

In 1975 Camp, Dresser & McKee prepared a plan for the Town of Durham delineating future sewer line extensions, with recommended pipe sizing and pump stations. Extensions to the north were recommended for the Cenney Road/ Dover Road area while extensions to the south were recommended along Newmarket Road down to Long Marsh Road. Because the area recommended for new sewers to the north already has been serviced by municipal water, it would appear that this would be the prime first area to be serviced by new sewer. This would then be followed by the proposed extensions south of Oyster River along Newmarket Road and Mill Road servicing the residential areas recommended for future development.

Water

Water distribution in Durham is another of the services that involves both the town and the University. The University is responsible for maintaining and operating the treatment of the municipal water supply, while the Town provides maintenance and operation of the distribution system. The prime source for the water treatment plant is the Oyster River, directly west of the railroad tracks. A supplemental source to this site is provided in a direct feed from the Lamprey River due south of this site. Based on the findings of a report prepared for the University concerning the treatment plant facility by Dufresne & Henry in 1984, the identified capacity of the treatment plant was 1.4 MGD. However, the same report also noted that raw water and impoundment capacity when combined with the volume of the back-up system out of the Lamprey was closer to 4.2 MGD. However, due to existing treatment plant capabilities, this volume is in actuality unattainable. Another source of water to the town is provided at the recently constructed Lee Five Corners Well. This source was intended to serve the Data General facility, as well as providing domestic water to the western part of the town along Old Concord Road. A study prepared by Groundwater Associates indicated the actual capacity of this new well at .5 MGD.

In terms of providing new service, the primary area focus should be to the south along the Newmarket corridor. This, when combined jointly with the proposed sewer extension, would greatly enhance development capacity for this area.

Buildings, Recreation and Cemeteries

The third primary service provided by the Durham Department of Public Works is maintenance of town-owned buildings, recreation areas and cemeteries. In terms of buildings, the three primary buildings that the town maintains are the Henry Davis Memorial Building, the Municipal Court, and the Town Hall. A list of the other facilities that the town owns and maintains, along with identified recreational areas is presented in Table 4-3.

TABLE 4-3

TOWN OF DURHAM
DURHAM DATA (1987)

SIZE: 25.5 square miles (2.2 of which is water surface).

POPULATION ESTIMATE: 11,416 (1985)

(Effective July 1, 1978, the Federal Population Estimate is official for all purposes and includes resident student population)

TOWN ROADS: 45.8 Miles

STATE ROADS: 19 Miles

SIDEWALKS: 26,489 linear feet, or 5.01 Miles

RECREATIONAL FACILITIES

Skating Rink at Jackson's Landing
Jackson's Landing boating facilities
Cedar Point boat ramp
Tot Lot
Oyster River Park
Recreational walking route via Class VI roads, as seen in "Walking Durham"
Old Landing (both sides of Oyster River bridge)
Town Shipyard boat landing
Mill Pond scenic area
Doe Farm
Bicentennial Park at Main Street and Mill Road
Launching ramp at Adams Point
Woodridge Tennis Courts
Ballard Park
Mill Road Triangle
Woodrige Baseball/Soccer Facilitry

PROPERTY OWNED BY THE TOWN

Town Hall (Durham District Court - Museum)
Highway Department Garage
Highway Department Garage (Sheds)
Sewage Treatment Plant and Addition
Sewage Pumping Station, Dover Road
Solid Waste Disposal Site, Durham Point Road
New Town Office Building -- 13-15 Newmarket Road
Hockey Warming Hut
Grease Handling Facility
Henry A. Davis Memorial Building

TABLE 4-3 (continued)

LAND

Town Cemetery, Old Concord Road
Lot #55, Woodridge Road
Schoolhouse Lane, Town Garage Lot
Old Landing Road, 400' north side, 100' south side
Mill Pond Road Park
Land off Dame Road (approximately 30 acres)
Mill Pond Dam, north side
Police Building Lot 40' x 50'
Tot Lot
Town Lot and land in Provost Development
Oyster River Park
Smith Chapel and two acres, Mill Pond Road
Littlehale Road Lot
Jackson's Landing
Cedar Point, two shallow lots
Durham Point Road at intersection with Langley Road
Lee Pit
Well Site, four acres off Route 4 in Lee
Lot #27, Longmarsh Road - Beaver Pond Conservation Area
Conservation Land adjacent to Lot #27
Wiswall Road Dam Site
Spruce Hole Conservation Area
Doe Farm
Lots Nos. 78-83, Woodridge Development
Conservation Easement -- Pond Area at Durham Point Road and Pinecrest Lane
Conservation Purchase -- Landmaid Farm, Longmarsh Road (Class VI) area
Blackhawk Lot #4
Marion J. Stolworthy Wildlife Sanctuary, off Bagdad Road
Tank Site, Beech Hill Road, 150' x 150'

TOWN OF DURHAM
EXISTING RECREATION FACILITIES

Introduction

The next time you're looking for some outdoor recreation, be it anything from enjoying a scenic view to playing tennis, take a good look at what your own town has to offer. Right here in Durham there are over 900 acres of publicly owned (UNH, Durham, State) outdoor recreation property providing at least sixteen different activities and access to seven different bodies of water. There are nineteen separate sites, each one offering something a bit different from the rest.

Adams Point Wildlife Area-80 Acres (State)
Habitat: Fields, woodlands, tidal marsh and bay
Trails: 0.7 to 1.3 miles, depending on which loop is taken; all clear and dry
Boating: All types in Great Bay-boat ramp
Picnicking: No facilities
Note: N.H. Fish and Game Reserve
Monument in memory of Adam's family
Site of UNH Jackson Estuarine Laboratory
Unique stone bench on the southeast tip
Only waterfowl hunting permitted

Cedar Point (Town and State)
Habitat: Tidal river, bay
Boating: All types in Little Bay and Bellamy River
Boat ramp at end of Cedar Point Road (a)
Picnicking: Three barbecue pits (b)
Note: Two separate sites (a and b)
At corner of Route 4 and Cedar Point Road is a historical marker for the former site of a bridge to Newington via Goat Island, and also once the proposed site of N.H.'s capital.

Colby Marsh-15 Acres (Town)
Habitat: Beaver Pond, wildlife area
Note: Access via Longmarsh Road
No trail. Abuts Langmaid Farm.

College Woods-240 Acres (UNH)
Habitat: Reservoir, freshwater river, extensive woodlands, natural area
Trails: Length estimated 3-4 miles
Picnicking: No Facilities

Davis Park-12 Acres (UNH)
Habitat: Heavily wooded; trees unusual for this area, planted species include: Scotch pine, balsam fir, Eastern larch, white spruce, Norway spruce, Douglas fir
Trails: None developed

Doe Farm Forest-80 Acres (Town)
Habitat: Fresh water river, woodlands, wetlands
Trails: Class VI entrance road, 0.5 miles; two miles additional trails, clear and dry
Boating: Limited to canoes and rowboats-no ramp, launching difficult; one half mile portage required
Picnicking: No facilities
Swimming: River bottom extremely soft; no beach
Note: Site includes moat island to the southeast in the Lamprey River

East Foss Farm-165 Acres (UNH)
Habitat: Field, woodlands, wetlands
Trails: 1.7 miles for loop including Class VI entrance road

Horsehide Creek Area-50 Acres (Town)
(Town Dump Lot and Johnson Lot)
Habitat: Woodlands, marsh, solid fill, steep slopes on Horsehide Creek
Trails: To be developed
Note: Abuts Langmaid Farm

Jackson Landing-4.5 Acres (Town)
Habitat: Tidal river and marsh
Boating: Ramp-access for all boats; boat shed & dock shared by UNH and Town
Picnicking: No facilities
Skating: Municipal outdoor skating rink; small warming hut

Langmaid Farm-46 Acres (Town)
Habitat: Woodlands, field, brook, wildlife habitat, view of Colby Marsh
Trails: One mile lightly marked
Note: Abuts Colby Marsh and Horsehide Creek

Linn Ponds-3 Acres (Town)
Habitat: Two small marsh, freshwater ponds

Mill Pond (Town)
Habitat: Freshwater pond and marsh
Boating: Limited to canoes and rowboats; no ramps
Picnicking: Two benches
Note: Home of Agatha and Hamilton, two locally famous swans

Old Reservoir and Horti Farm Woods-155 Acres (UNH)
Habitat: Freshwater pond and marsh; managed woodland
Trail: Approximate mile
Picnicking: No facilities

Oyster River Landing/Shipyard Landing-3 Acres (Town)
Habitat: Tidal river, and marsh
Boating: Launching limited to canoes and rowboats-no boat ramp; dock provides access to boats moored in river
Picnicking: Six picnic tables, two stone benches
Note: Wooden plaque depicts the area in 1800's when it was the center of activity in the town

Oyster River Park-4.5 Acres (Town)
Habitat: Regularly mowed fields, woodlands along Oyster River
Trails: 0.4 miles along the river; partly grown over but passable
Picnicking: No facilities

Packer's Falls-3 Acres (Town)
Habitat: Freshwater river, with falls
Trails: 0.4 mile network through woods
Boating: Limited to canoes and rowboats downstream from falls; launching difficult-no boat ramp
Picnicking: No facilities

West Foss Farm-93 Acres (UNH)
Habitat: Woodlands, and pasture
Trails: 2 miles for loop at Mill Road entrance; also 1.3 miles for trail from West Foss Farm to Bennett Road; clear, seasonally muddy

Wiswall Dam-2.5 Acres (Town)
Habitat: Freshwater river, woodlands
Trails: Less than ¼ mile on site
Picnicking: No facilities

Woodridge Recreation Area-5 Acres (Town)
Habitat: Regularly mowed open field
Note: Father Lawless Field; baseball diamonds, soccer field, four tennis courts

TABLE 4-3 (continued)

In terms of the town recreation program, the Public Works Department has only maintenance of grounds as its responsibility. The programming of recreational activities is shared by the town Parks and Recreation Committee, the Oyster River School District, and the Oyster River Youth Association. The Oyster River Youth Association, comprising youngsters from Durham, Lee and Madbury, functions as one organization to oversee youth programs, but programs in each of three towns differ greatly in facility usage. The youth program is dependent upon the individual towns, the school district, the University, and private facilities for their playing areas.

As could be expected, much of the recreational maintenance and cemetery maintenance responsibilities of the Department of Public Works is undertaken during the summer months. At this time significant high school and college help is brought on to undertake these tasks.

Highways

As detailed in the Transportation chapter, the town has responsibility for maintenance of approximately 50 miles of town roads. Maintenance tasks include a sand and seal project every 3 years, as well as shimming and resurfacing that is needed. Other tasks undertaken include snow removal, installation of traffic control signs, centerline striping, maintenance of the town street lighting system, and other renovation requirements as needed.

Sanitation

Solid waste disposal in the Town of Durham is another of the municipal services involving several jurisdictional concerns. The town provides weekly curbside trash collection services, with most of the waste taken to the Lamprey Regional Incinerator located on the University campus. The day-to-day operation of the incinerator is carried out under the supervision of the Cooperative's administrator and under the general supervisory control of the 3-member operations committee. The plant personnel, in addition to the administrator, includes 2 mechanics, a truck driver, 2 daily shifts of 12 hours each involving 8 persons plus daily cleanup crew, and a secretary. The Cooperative's organization also handles the collection of refuse from

the transfer stations of the 4 supporting communities (Durham, Lee, Madbury, and Newmarket), as well as handling the ash removal and its transfer to landfill sites.

At the present time the incinerator is operating at full capacity. In 1986 the Lamprey Regional Incinerator processed 37,863 tons of rubbish from member communities, and in 1987 it processed 39,883 tons for a 5.3% increase. It should be noted however, that the contribution from the Town of Durham will likely decrease in the upcoming years. At the present time, the Town is exploring a full scale recycling operation, which should diminish Durham's share.

SCHOOLS

The population projections previously presented for the town provided an overall indication of the growth Durham could anticipate. However, those projections are not sufficient to look at a specific population segment because they are based upon generalized fertility, survival and migrational factors which provide a realistic long-range trend which is "smoothed-out" over five-year intervals.

The Oyster River School Board maintains and tracks highly detailed enrollment trends and has developed ten-year projections for their future space needs based on a system of grade-projection ratios. These projections factor in births reported to the New Hampshire State Bureau of Vital Statistics, and migration patterns as they have impacted the schools.

The Oyster River Cooperative School District provides the education of students in Durham, Lee and Madbury. Enrollments for October, 1988, were at 1,635 students. This represents a decline in enrollments from the 1,706 level in 1980. Durham students account for approximately 50% of the total enrollment.

Looking only at the totals, however, would present a deceiving picture for

school facility needs. While the Middle and High School-aged students have dropped in enrollments, the elementary grades dipped down in the period between 1983 and 1985 but have since rebounded to enrollment levels exceeding those in 1980. Kindergarten enrollments have generally been increasing throughout the eighties.

The school district, through its Long Range Planning Committee, has been developing long-term facility requirements with a number of options considered. Under its current configuration, there are two elementary schools, one each in Durham and in Lee. The Middle School and High School are located in Durham. The two elementary schools (K-5) have a design capacity of 603 students and 1988 enrollment of 728 students. The Middle School has a design capacity of 414 students with 1988 enrollment of 323 students. Lastly, the High School has a design capacity of 604 students and an enrollment of 500.

Projected enrollments for 1997 exceed 2,800, with 49% (1,410) in grades (K-5), approximately 25% (726) in grades 6-8 and 26% (754) in grades 9-12. During the past several years the Committee has studied a range of options with varying combinations of additions to existing facilities and new facilities.

The School Board with the approval of the district, determined a need for a new elementary school. The Moharimet Elementary School is now scheduled for completion in 1989, and is designed for 333 students, expandable to 425.

The next steps in the second phase of development is to refine the remaining options and implement the completion of the plans.

Several options are under consideration, all of which include additional elementary school space. One option includes renovation of both the Middle School and High School to allow for continued use and expanded capacities. Another calls for a new middle school for 550 students converting the present Middle school building for elementary school use. A third option

calls for a new high school. The middle school would move into the present high school building at that time, with the present middle school converted for elementary school use.

Since these facilities serve three communities, Durham cannot look at these issues separately in this plan. Due to the fact that a neighborhood school concept does not apply, these options are less sensitive to the geographical direction or concentration of future growth. It is important, however, to be aware of school facility needs.

GOALS AND RECOMMENDATIONS

Goal: Municipal Services - Provide community facilities and services (including, but not limited to, fire and police protection, solid waste disposal, water supply, sewage disposal, and recreation opportunities) in a timely, equitable and efficient manner to meet the existing and future needs of Durham residents.

Education - Provide a sound education for all students attending the public school system and promote a variety of year-round educational and cultural opportunities for all age groups.

Objectives:

1. Maintain an open dialogue between UNH and the town regarding either shared or parallel municipal services provided by each.

2. Develop an integrated municipal infrastructure expansion plan in order to protect natural resources and encourage development in those areas recommended for future growth.

3. The town should plan for and implement utility extensions in those areas where growth is to be encouraged without placing an unfair burden on the town's financial resources.

Analysis:

As detailed in the alternatives section of this Plan, most of the town's municipal services are either shared with, or provided in a parallel fashion with those of the University. The Fire Department provides coverage for both UNH and the town, while on the other hand, police protection for UNH and Durham is provided by two separate forces. The domestic water system is also a joint operation in that the University is responsible for supply and treatment, while most of the distribution is the responsibility of the town. Sewage is primarily the responsibility of the town, with solid waste disposal being handled in a cooperative manner with the town, University and other neighboring municipalities. The University maintains all on-campus roads, while street maintenance and repair for the balance of the town is a town function.

Based on other recommendations contained in this plan, it is essential that both bodies maintain an open dialogue to ensure efficiency of municipal service operations. Based on input from UNH officials, it is apparent that the University will be growing in a westward direction, while residential growth within the town is recommended to be encouraged to the south and east of the existing central business district. In order to maximize efficiency of land to be developed in proximity to existing concentrated areas of use, utility extensions should be planned for now.

Unquestionably, the issue of providing new municipal infrastructure and services has had, and will continue to have, a direct bearing on any new development proposals. It seems logical that the cost of any new infrastructure associated with University expansion would be the responsibility of UNH. The issue becomes much less clear regarding municipal infrastructure for new areas of residential development. In order to avoid the scattered development that has recently taken place throughout the town, every attempt should be made to encourage new growth in a more unified development pattern, emanating from the

existing center of population. To accomplish this goal, municipal water and sewer extensions will be required.

If municipal water and sewer is considered for those areas recommended for new growth, the town has two basic options to underwrite this cost. The first would be to pass all such costs along to respective developers who, in turn, would pass these costs on to the consumer. This scenario would be more attractive with some other form of economic benefit being made available (such as density bonuses). One such option might include density bonuses beyond those currently in place for development areas currently both watered and sewered. The second option the town has at its disposal to underwrite new municipal infrastructure extensions, would be to pass the cost along to the entire system users. This could be accomplished through either bonding, increased taxes, or increased user fees. Based on the results of the Durham Citizen Survey, it is interesting to note that the majority of respondents felt that both water and sewer lines should be extended to new areas (see Question #25). Further, based on the results of Question #7, it would appear that the majority of the respondents also felt that to provide these new services, tax increases would be required. Thus, it is recommended that the Town take the lead in terms of planning and implementation of new utility extensions.

Recommendations:

1. Fire Department

   (1) Consider development of a satellite station near the Longmarsh Road/Newmarket Road intersection.

   (2) Consider a full time, professional Emergency Medical Technician (EMT) staff under the jurisdiction of the Fire Department.

(3) Continue to work with UNH on an equitable funding ratio of the Fire Department based on a pro-rated calls for service formula.

2. Police Department

(1) Consider development of a shared facility between the Durham Police Department and UNH Police Department

3. Wastewater

(1) Extend sewer service area east along Canney Road/Dover Road.

(2) Consider sewer extensions south of the Oyster River along Newmarket Road.

(3) Extend sewer across Thompson Lane/Orchard Drive when the bridge is built.

4. Water

(1) Work with the University to upgrade the treatment plant capacity and improve water quality.

(2) Consider water service extensions south along the Newmarket Road corridor.

(3) Encourage regional cooperation for water supply distribution and protection.

5. Buildings

(1) Develop a master plan for projected improvements to the town-owned buildings.

(2) Improve functionality of Town Hall. Consider relocation of Police Department and Department of Public Works Administration.

6. Roadways and Intersections

(1) Develop a twenty-year town roadway and bridge rehabilitation plan with required annual appropriations to undertake such tasks from the town capital budgeting process.

(2) Prioritize intersection improvements, working with the State Department of Transportation where applicable.

7. Sanitation

(1) Begin preparing a closure plan for the landfill. Establish groundwater monitoring stations within the existing landfill site.

(2) Continue the recycling efforts currently underway through the Department of Public Works.

8. Schools

(1) The Town should continue to work with the Oyster River School District to plan for Oyster River Phase II recommendations after completion of the Moharimet Elementary School.

(2) Encourage the Oyster River School District to develop plans for the Foss Farm site.

(3) Establish participation of town planners with the ORSD long-range planning committee.

TRANSPORTATION

INTRODUCTION

This analysis focuses on the roadway network for the Town of Durham. Special attention is placed on efficiency of circulation, with subsequent analysis of related parking issues. The first phase of this analysis presents an inventory of the existing roadways, followed by discussion of current traffic volumes, with the next portion exploring previous Master Plan recommendations. This is then followed by an identification of current key issues with presentation of various alternatives to mitigate identified problems. The final phase of this chapter discusses associated benefits and impacts for each alternative.

INVENTORY OF EXISTING ROADWAYS

According to State of New Hampshire Department of Transportation records, there are 72.41 miles of public roadways and highways within the town limits. Based on 1987 data, this total road mileage is broken out into four respective roadway classifications according to state standards.

Class I, defined as Primary State System Highways, is shown to include 12.92 miles within the town boundaries. Class II, defined as Secondary State System Highways, is shown to include 6.15 miles. This equates to slightly over 19 miles of state-owned and maintained highways within the town.

Class V, rural highways, consist of all other traveled highways which the town has the duty to maintain on a regular basis. State records show this to be 47.14 miles, while town records show a slightly different total of 45.8 miles for the same reporting period. Based on examination of existing information, it would appear that the state total is probably closer to actual Class V road mileage within the town. However, even this number is suspect due to the fact that several subdivisions that have been recently

approved and constructed are not shown on current state mapping. It would appear that anywhere from 2 to 5 miles of new subdivision roadways are not included in the state total.

The final road classification using the state highway system is Class VI, which represents all unmaintained highways within the town. Based on 1987 data, there is approximately 6.2 miles of such roadways.

Table 5-1 summarizes the various roadways within the town based on each classification. There are 2 Class I highways in the town, Route 4 and Route 108 heading east-west and north-south respectively. Route 4 connects Durham with Portsmouth to the east and Concord to the west. From the Madbury town line to the Route 108/Route 4 intersection is approximately 3 miles. From the Route 108 intersection, Route 4 becomes the Durham Bypass, a limited access highway swinging around the north edge of town terminating on the Old Concord Road just east of the Lee-Durham town line. The entire length of Route 4 and the Durham Bypass, including 2 interchanges, is approximately 8.2 miles. Route 108 connecting Durham with Dover and the Spaulding Turnpike to the north runs in a north-south direction through the central business district southerly to Newmarket. The entire length of this stretch of Route 108 through the Town of Durham is approximately 4.7 miles.

In terms of Class II roads, the primary roadway in this classification in Durham is Main Street. Main Street, running in an east-west direction, provides access to the central business district, as well as the main campus of the University of New Hampshire. It stretches for 2.46 miles from the Durham-Lee town line to the intersection of Route 108. Between Rosemary Lane and Madbury Road, Main Street runs one way in an easterly direction. This configuration has parallel parking on both sides of the road with 2 lanes of traffic. The westbound portion of the downtown loop is north of Main Street, running from the intersection of Madbury Road along Pettee Brook Lane to Rosemary Lane which then intersects with Main Street. The second major Class II road in Durham is Madbury Road, connecting with Main Street on the south portion and Route 155 just north of the Durham-Madbury

town line. The third significant Class II road is Mast Road (Route 155A). This connects Main Street on the north end of Mast Road to Route 155 in Lee west of the Durham-Lee town line. There are also several other small stretches of Class II roads in Durham.

As shown on Table 5-1, the bulk of other roadways in the town are defined as Class V. For purposes of this analysis, Class V roads have been further subdivided into a new category to assist in the analytical portion of this study. This category, primary local, encompasses approximately 16.62 miles of Class V roads. These roads generally serve as collectors to feed both Class I and Class II roads within the town. Briefly, some of the more important primary local roads include Durham Point Road, approximately 5.3 miles in length intersecting just south of the central business district at Route 108 heading easterly towards Great Bay and then in a southerly direction to Newmarket. Packers Falls Road in the southwest portion of the town connects with Mill Road, which feeds directly into the south side of the UNH campus. The combined length of these two roads is just over 6 miles.

Most of the remaining identified primary local streets are north of Main Street and south of the Durham Bypass serving the central business district and more intensive residential uses within this area. One notable exception identified as a primary local street was not originally designed to serve in this function. This is the Mill Pond Road/Faculty Road configuration just south of Main Street which, due to traffic congestion on Main Street, has been serving as a bypass for traffic coming into the Town from the south, east and north. Although designed as a more local residential street, recent traffic volumes have been such that these two roadways have been included in the primary local category. This situation will be addressed in later portions of this study.

As summarized on Table 5-1, there are 30.52 miles of other Class V roads in Durham, along with 6.2 miles of unmaintained Class VI roads. This equates to the above identified road mileage in the town of 72.41 miles. Figure 5-A presents all of the Class I, Class II, and primary local streets within the Class V categories.

EXISTING DEMAND

Also shown on Figure 5-A are the average daily traffic counts (ADT's) for key points within the existing roadway network. Approximately 15,000 vehicles per day use Route 108 just south of Route 4. From a southerly direction on Route 108 north of Durham Point Road, 11,000 ADT's are realized a day. On the west side of the central business district on Main Street just west of Edgewood, 7,500 ADT's were reported in 1985. Just west of the Route 108-Main Street intersection east of Madbury Road, 24,000 ADT's were counted. These numbers indicate that the bulk of University and downtown traffic is arriving from either the north or the south, with much less demand from the west. This one directional approach from the east of the downtown and University area is one of the major contributing factors to traffic congestion in the central business district. Subsequent portions of this analysis will explore various alternatives to alleviate this problem.

However, prior to discussion of new alternatives, it is essential to understand past recommendations that have been developed for traffic circulation within the town. The following section provides a brief overview of recommendations presented in the 1969 Master Plan, as well as a review of some of the 1980 updated recommendations.

PREVIOUS TRAFFIC CIRCULATION RECOMMENDATIONS

The first Master Plan for the Town of Durham was prepared in 1969 by the Planning Services Group, Inc. That study focused on two primary transportation issues: the central business district, and town-wide traffic circulation concerns. Interestingly enough, many of the same problems identified in that study are still prevalent today but only exacerbated by increased traffic demand.

In 1969 recommendations regarding traffic circulation in the central business district, evolved around the desire to separate through and local traffic. To that end, three primary recommendations were developed.

The first recommendation concerned a new interchange west of the railroad tracks on the Route 4 Bypass to be constructed with a new access road tieing the interchange with Old Concord Road. The second major proposal relating to improved circulation within the center evolved around the recommended construction of a link road leading from Newmarket Road to Mill Road, south of the Oyster River to pick up traffic from the south. The remaining suggestion regarding traffic circulation in the center was a recommendation to re-route local traffic to the rear of the shopping area north and south of Main Street, in order to reserve Main Street for through traffic as far as possible. This, it was felt, would also reduce left turns and jogs.

Other traffic circulation recommendations presented in the 1969 Master Plan were based upon existing deficiencies with outlying roadways, as well as recommendations to accommodate future residential and light industrial growth. At that time, the State was recommending a relocation of Route 108 east of Newmarket Road, crossing the Oyster River south of Coe Corner. That concept was carried forth into the 1980 Master Plan. However, it was recommended in that study that the actual relocation of Route 108 be shifted further east to minimize impacts on residential areas including the Wedgewood development.

Expanding the concept of a southern Bypass from Newmarket to Mill Road, the 1969 study also recommended that this proposed roadway be extended east and west to tie in with Mast Road at the western terminus, and crossing the relocated Route 108 right-of-way, tying in with Durham Point Road. It was also recommended that Long Marsh Road be relocated and extended east to merge with the northern end of Dame Road. The proposed link road and Long Marsh Road extensions, together with the bent portion of Durham Point Road, would at that point, form a useful collector loop road in that part of town.

To the west of Route 108, the 1969 study noted the natural collector loop formed by Mill Road, Packers Falls, and Bennett Roads. As noted, the intersection between Packers Falls and Bennett Roads could have been

improved by swinging Wednesday Hill Road due east to meet Bennett Road, and bringing Packers Falls Road up in a straight line from the south. This would also have enabled traffic to avoid the hazardous section of Bennett Road where it dips alongside the Lamprey River.

In 1980, The Planning Services Group undertook an update of the 1969 Master Plan. Subsequent recommendations in the 1980 effort primarily were a reduction in scope of the 1969 recommendations. This was due to the unlikelihood of development of the earlier recommendations combined with the consideration of funding sources and costs.

Dropped from future consideration in the 1980 update was the proposal to relocate Route 108, as well as the foreclosure by UNH of the concept of a direct connection from the Bypass west of the tracks. Also revised was the proposed Link Road east through Wedgewood. The update recommended a realignment of the unimproved portion of Long Marsh Road to skirt conservation land holdings and to enter Durham Point Road at a safe point. Although the proposed Link Road between Newmarket and Mill Roads still appeared to be a viable option in 1980, the extension to the west connecting with Mast Road was dropped due to unlikelihood of development. Also recommended to be dropped was the proposed link between Cowell Drive and Bay View Road, if the intervening area could be kept open.

It should be noted that the primary recommendations developed in both the 1969 and 1980 Master Plans have not been carried out. The principal cause for inaction has been cost, but this should not be viewed as the only criteria for ruling out old ideas that have the best potential for solving the same problems noted in the earlier studies.

TRAFFIC CIRCULATION ALTERNATIVES

Prior to an updated discussion of existing problems and alternative recommendations to correct these deficiencies, it is essential to understand the inter-relationship of other components developed in this Master Plan. This will be done by identifying certain assumed "givens" that would directly impact discussion of traffic alternatives.

In the preceeding chapters four growth scenarios were presented. This ranged from a do-nothing option to higher-growth scenarios that included lifting of a cap on the University population, and increasing office/research type of development. As discussed below, most alternatives are in response to mitigating existing problems. Whether the town develops along the lower or higher ranges doesn't necessarily dictate the timing of traffic improvements. The problems are already here, and in fact, many are the same as those which were identified in 1969.

Traffic circulation alternatives are based upon the following premises established in part in other sections of the Master Plan:

1. Future residential growth will occur principally in the central portion of town in the area bounded by Newmarket Road and Long Marsh Road, and east along Piscataqua Road. Based on identified land capacity considerations, it would appear that most demand could be accommodated along Route 108 south to Long Marsh Road. To the east along Piscataqua Road, most such development would be to the north of the Oyster River developing easterly from Route 108.

2. Justification for a second central business district does not appear viable at this time. However, a professional office/retail complex might be suitable north of the Route 4/Route 108 interchange along Dover Road.

3. Additional office/research land will be recommended with such recommendations focusing on the western portion of the town along the Old Concord Road/Mast Road area. Also recommended within this area will be development of student housing.

4. The proposed east/west state highway will not directly impact Durham. This includes the fact that there will be no consideration of a southern terminus for this highway in Durham.

5. The southern portion of the town (south of Long Marsh Road) will remain as the less intensively developed portion of the community.

6. Although public transportation already plays a role in transportation within Durham, and will likely play an increased role, the automobile will still remain as the primary means of personal transportation.

The primary focus of the alternatives for improving traffic circulation in Durham are two-fold. The first is the need to minimize the strain on Main Street in the central business district/University area. The second objective is to minimize adverse impacts caused by through traffic on residentially developed streets.

In terms of meeting the first objective, the most obvious solution would be the need to redirect traffic coming to and going out of the CBD area from the east. As shown on Figure 5-A, a very small percentage of the total volume currently uses Old Concord Road to access the downtown area. However, even if existing demand could be shifted to access downtown from the west, the problems of parking and circulation would still essentially be the same. Thus, the primary task becomes alleviating automobile traffic all together.

It would appear reasonable to assume that the most likely drivers who would consider other options of driving directly into downtown Durham, would be those who would be there for the longest period during the day. If an adequate parking facility with continuous shuttle service could be developed in close proximity to downtown at little or no cost to the users, it is probable that some retail/commercial employees and many students coming into the downtown area from outlying regions, would utilize this type of facility. Again, to redirect flows more to the west, this type of facility would have to be developed between the Durham Bypass/Old Concord Road interchange and the railroad tracks.

To that end, one viable option would be development of a new access off the Route 4 Bypass tying in with Old Concord Road near, or at, the Mast Road intersection. In conjunction with expanded parking facilities (i.e., UNH Parking Lot "A") this would help redirect traffic accessing UNH to arrive on a westerly approach.

Although the majority of land that would be required for the full development of this proposal is University owned, funding for this proposal would likely be a joint effort, shared between all affected parties. This would include development of the interchange by the state and shared development of the proposed access and parking lot by the town and University.

In terms of benefits of this type of development, not only would the objective of lessening traffic on the downtown be realized, but so too, could other economic benefits. This would include the potential to open up the entire area between Old Concord Road and the Bypass between the old reservoir and the railroad tracks to the previously identified need for new student housing. Obviously, this would necessitate significant discussion and coordination between the town and University in shared expenses and potential revenues, however the concept would appear to benefit all parties involved.

Unquestionably, the development of a new interchange (which had originally been planned), would be a long-range project in terms of State funding. It is realized at this point that the interchange is not included on the current state ten-year plan. However, this does not mean that this type of development proposal could not be resurrected and included in future planning requirements.

Although the entire concept of an expanded parking lot connected directly to a new interchange on Route 4 is long term in nature, this is not to suggest that construction of a parking lot could not be undertaken immediately. In all likelihood, most traffic arriving from the west, as well as significant traffic coming in from the north and east could easily access this new interchange and access road.

The second alternative worthy of reconsideration is the concept of a southern Bypass extending from Route 108/Longmarsh Road in a northwesterly direction towards Mill Road. Again, this proposal is not a new one and, in fact, has been maintained as a right-of-way on the Town Zoning Map. The

primary benefit to be realized from development of such a roadway would be alleviation of UNH traffic accessing the University from the south and arriving through the Route 108/Main Street intersection, or cutting through on Faculty Road.

If a viable crossing can be made of Mill Road and the railroad tracks, the logical extension of the southern Bypass would be to tie in with the proposed Route 4/Old Concord Road concept described above. This would traverse primarily UNH property but should be viewed as a joint effort between all affected parties since all will benefit.

The third alternative available for consideration (also recommended in the 1980 study) is the continuation of Long Marsh Road where it presently ends at its eastern most terminus to a point connecting with Dame Road. Based on recommended and likely residential development, this would form a natural collector loop to service future residential development.

The final proposed traffic circulation improvement is also intended to benefit local traffic patterns. This would involve an extension of Orchard Drive across the Oyster River to tie in with Thompson Lane to the north. Not only would this additional river crossing improve residential traffic movements in this area, but also provide access for sewer and water extension into the currently unused Oyster River School District parcel on the south side of the river. ORSD has been reluctant to propose school development on this site because Orchard Drive is a dead end and since the property lacks infrastructure, this new connection would alleviate both problems.

SUMMARY OF TRAFFIC CIRCULATION ALTERNATIVES

As stated above, most of the alternatives to improve traffic circulation in Durham are not new ideas. All have been discussed, examined, endorsed, and some even dropped from consideration in previous planning efforts. However, if the town is to come to grips with existing traffic problems, primarily in the downtown and University area, it will have to face some hard decisions as to whether to actively pursue a program of improvements.

The first alternative presented, the concept of an expanded parking lot tied to direct access with an interchange off of Route 4, was one analyzed close to twenty years ago. In all likelihood, the primary reason for it being dropped was lack of funding. However, in today's environment there are many more creative avenues which can be considered that may not have been available earlier. Today, the potential exists for publicly financed projects to be undertaken in part or in total by the private sector. This potential could exist for the connector roadway. If the land between the old reservoir and the railroad tracks were to be rezoned to allow student housing development, it might be possible to share some of the costs of the proposed connector road with the developers of new facilities. Obviously, the situation is somewhat clouded by the fact that most of the land in question is owned by the University. However, a cooperative effort and/or acquisition of this land by the Town could resolve this problem.

The second alternative presented is also one that has been under long consideration. The concept of a new southern Bypass tieing Route 108 to Mill Road directly to the UNH campus would help minimize adverse impacts of through traffic using residential streets, as well as reduce existing demand on the Main Street corridor.

The third traffic improvement alternative discussed above would have no impact on traffic circulation in the downtown area. This recommendation is aimed at encouraging residential development in areas identified as being the most suitable for this type of development. The extension of Long Marsh Road to Dame Road could serve as a stimulus to residential development. Roadway improvement costs could conceivably be partially offset by any new development which would directly benefit by improved access.

Goal: Promote the improvement of all public ways in the Town with emphasis on major roads and encourage a system of transportation which will meet the mobility needs of all local residents by providing for the efficient movement of people, goods, and services within Durham and throughout the region.

Objectives:

1. Develop and maintain a highway and street system which will provide for the safe and efficient movement of people and goods throughout Durham.

2. Work to minimize traffic strain on Main Street in the central business district/University area.

3. Minimize adverse traffic impacts caused by through traffic on residentially developed streets wherever viable alternatives are available.

4. Identify and prioritize intersections in town which need improvement.

5. Promote public transportation to minimize the increase of private traffic movements.

Analysis:

In the Alternatives section of the Transportation chapter, the single greatest traffic circulation problem facing Durham today is one that has also been identified in the two previous planning documents. That issue focuses on the need to alleviate traffic volume on Main Street, primarily from the Main Street/Route 108 intersection westward to Garrison Avenue. In effect, traffic accessing the downtown/University

area arriving from either a northerly, southerly, or easterly direction passes through the Main Street/Route 108 intersection and proceeds westerly on Main Street. This is borne out by the 1985 traffic volumes which showed an average daily traffic count of slightly over 24,000 movements between Madbury Avenue and the Main Street intersection.

In order to alleviate this situation, the focus should be on developing more of a circular pattern where traffic accesses downtown and the University on a westerly approach as opposed to the predominantly easterly approach in place now. To that end, a concept developed in both this study and earlier planning documents relating to traffic improvements, identified a new access off the Bypass directly west of the railroad tracks tieing the northern loop of the Bypass southerly through UNH land connecting with Old Concord Road at the southern terminus.

In discussions with UNH officials, this concept was deemed as being compatible with likely UNH expansion plans. However, it was noted that this concept was dropped for further consideration for a number of reasons. In all likelihood, many of the same arguments presented against this proposal would still be present today. Obviously for this proposal to succeed, it will necessitate an active posture on the part of UNH officials to accommodate displacement of existing uses resulting from this construction of the proposed link road to other locations on UNH property.

As previously noted, the development of a new interchange would likely be the financial responsibility of the State. At this point in time, this concept is not even on the current State ten year plan. Again, this will necessitate strong cooperation between Town and UNH officials to insure that this concept is favorably received by State highway planners. Development of the connecting road would likely be jointly undertaken by the Town, UNH and the State.

The second major objective presented above identifies the need to redirect through traffic from purely residential streets whenever viable alternatives are available. In the Alternatives analysis it was noted that many traffic movements through residential neighborhoods such as those along Faculty Road are, in effect, bypassing the congestion on Main Street to reach various parking lots on the University campus. In order to alleviate this situation, particularly caused by traffic accessing the University from the south, it is proposed that the right-of-way labeled Southern Link Road as presented in the 1980 update of the comprehensive plan, be maintained as a viable alternative to provide a southern bypass of the most congested areas of the Town. As shown on the 1980 plan, the Southern Link Road connected Long Marsh Road with Mill Road and terminated at the Mill Road intersection. However, based on University expansion plans to the west, consideration should be given to planning an additional railroad crossing north of Mill Road to allow the Southern Link Road to extend north and west and tie in with Old Concord Road at the point where the Bypass link discussed above would intersect from the north.

Recommendations contained in other chapters of this Master Plan Update suggest that residential growth be encouraged to occur north of Long Marsh Road. In order to encourage and facilitate this desired growth pattern, it is recommended that an extension of Long Marsh Road tieing in with Durham Point Road be undertaken. Although it is intended that Long Marsh Road would be the southern boundary of more intensive residential development in the future years, this is not to indicate that Long Marsh Road would be an actual point of demarkation of this type of growth. Certainly, some residential development would occur to the south of it, but the intent is to have Long Marsh Road upgraded to a collector, which could then form a natural loop with Newmarket and Durham Point Roads. It should further be noted that the conservation corridor connecting existing conservation holdings along Crommet Creek would be traversed by the Long Marsh Road extension.

The final major traffic improvement consideration that the Town should take steps towards implementing is one that may, at first glance, appear to contradict an already established objective. This concept involves an extension of Orchard Drive from where it currently deadends, across the Oyster River to tie in with Thompson Lane on the north side. This particular extension would, in fact, form a natural loop and provide a two-way traffic flow for the subdivision along the south side of the river. This would improve the one-way flow in and out of this subdivision that currently uses Mill Road. With this extension of Orchard Drive to tie in with Thompson Lane, it would appear reasonable to assume that an increased demand would be placed upon these residential streets. This would especially hold true for Faculty Road, which was previously identified as currently receiving unacceptable levels of traffic. However, it should be stressed that this proposal will not encourage an increased volume of through traffic. In all likelihood any realized increase would be from local residents entering and exiting this already residentially developed area. There would be other benefits from this extension. This would include the ability to facilitate the extension of the sewer line across the river at this point, not only to sewer the residential uses south of the river, but also to provide sewer service to the Oyster River School District parcel which up to this point was deemed as being unsuitable for school development due to the lack of adequate traffic flow and sewer service.

Recommendations:

1. Work with both UNH and State Department of Transportation officials towards construction of a new interchange and access road directly west of the railroad tracks connecting the Route 4 Bypass with Old Concord Road.

2. Maintain the concept of a Southern Link Road between Newmarket Road and Mill Road. Consider extension of the Southern Link Road from Mill Road across the railroad tracks extending northerly to tie in with the proposed access road from the bypass.

3. Work with Strafford Regional Planning Commission to incorporate 1 and 2 above into the State Ten-Year Highway Plan.

4. Study the feasibility of extending Longmarsh Road in an easterly direction to tie in with Dame Road.

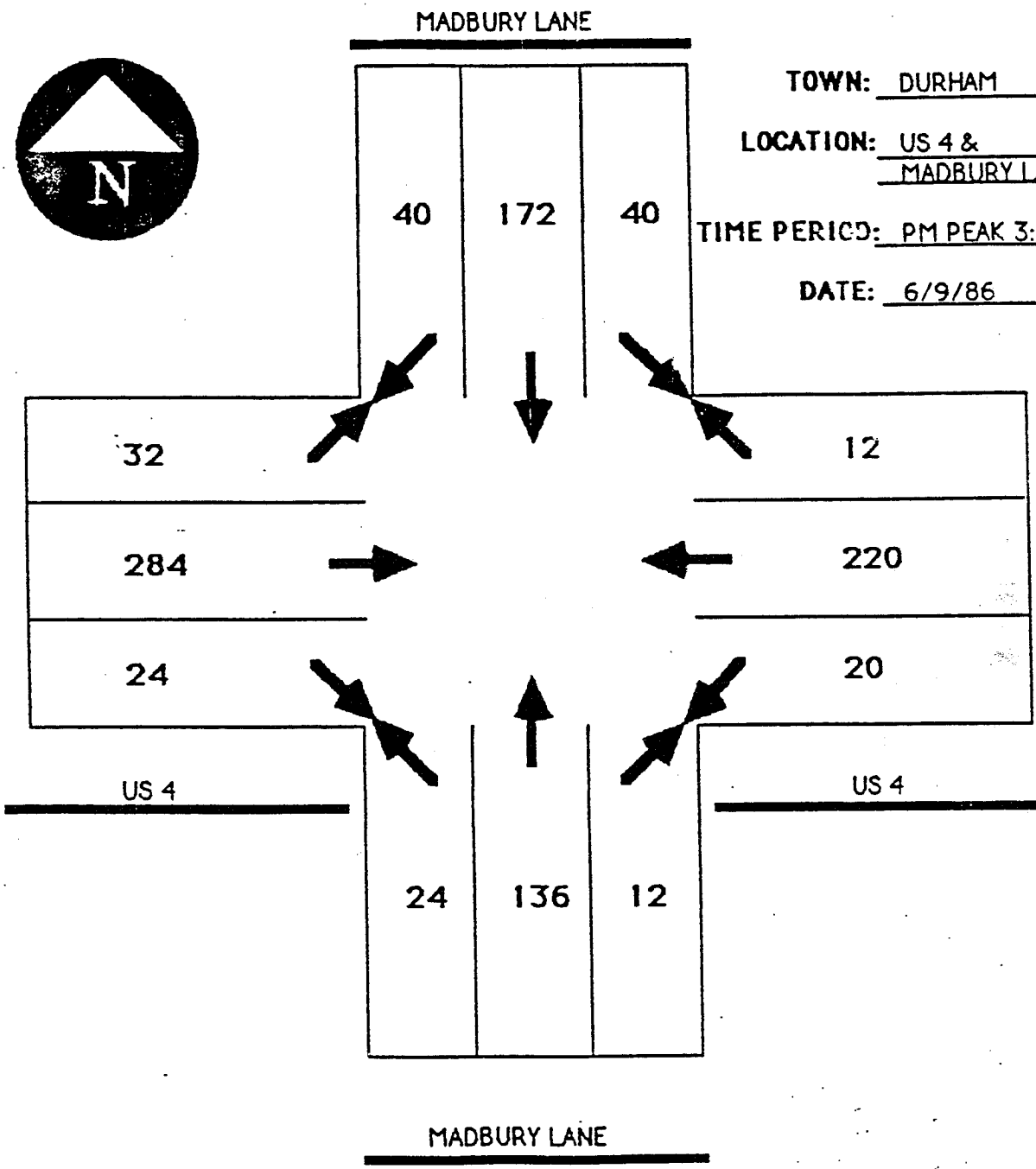
5. Study the feasibility of extending Orchard Drive across the Oyster River to tie in with Thompson Lane.

6. Study the feasibility of improving access to Mill Road Plaza.

TABLE 5-1
Town of Durham
Existing Road Classification

		Miles
Class I		
Route 4 - Madbury to Route 108		3.01
Route 108		4.68
Route 4 Durham Bypass		3.52
Route 4 Interchange (UNH)		.93
Route 4 108 Interchange		.78
	Subtotal:	12.92
Class II		
Mast Road 155A		1.20
Lee to Madbury 155		.41
Lee Hook Road		.51
Madbury		1.57
Main Street		2.46
	Subtotal:	6.15
Class V (primary local)		
Durham Point Road		5.30
Packers Falls Road/Wednesday Hill		3.54
Mill Road		2.48
Edgewood Road		.91
Emerson Road		.51
Bagdad Road		1.54
Garrison Avenue		.28
Strafford Avenue		.34
Coe Drive		.70
Mill Pond/Faculty Road		1.02
	Subtotal:	16.62
All other local Class V		30.52
	Subtotal:	47.14
Class VI		6.20
	TOTAL:	72.41

SRPC TRAFFIC COUNTING PROGRAM



TOWN: DURHAM

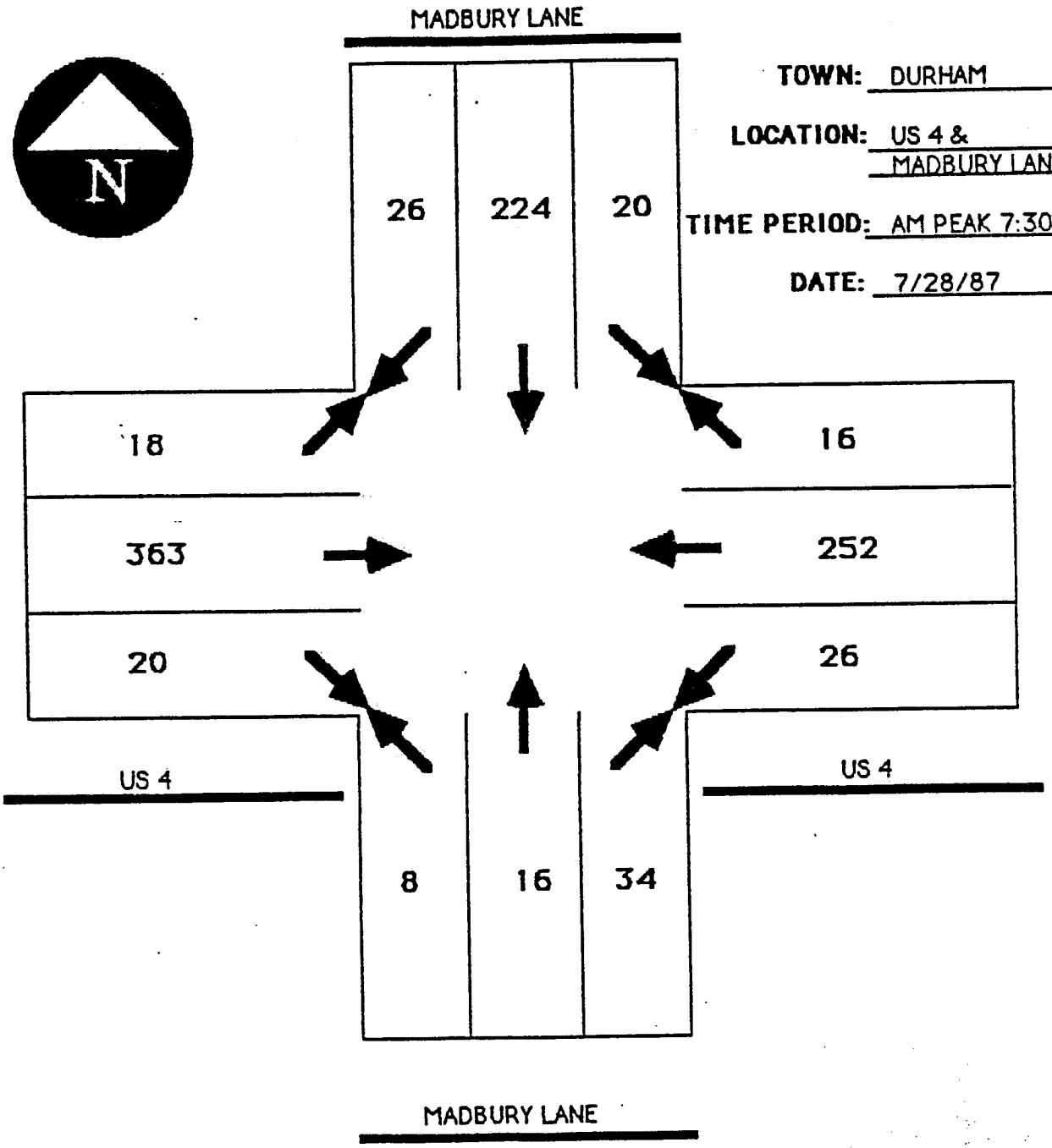
LOCATION: US 4 & MADBURY LANE

TIME PERIOD: PM PEAK 3:30-4:30

DATE: 6/9/86

SOURCE: SRPC

SRPC TRAFFIC COUNTING PROGRAM



TOWN: DURHAM

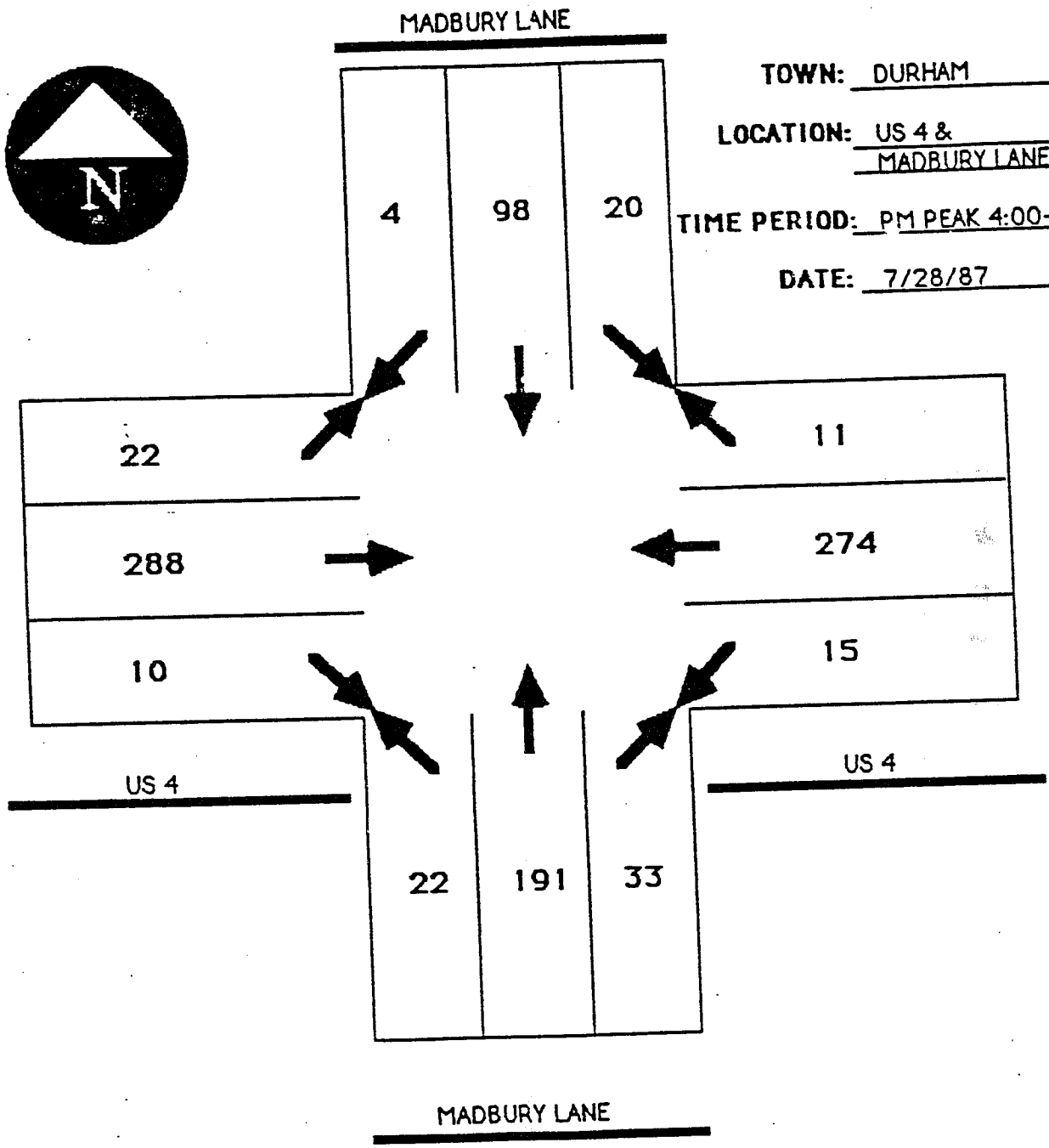
LOCATION: US 4 & MADBURY LANE

TIME PERIOD: AM PEAK 7:30-8:30

DATE: 7/28/87

SOURCE: SRPC

SRPC TRAFFIC COUNTING PROGRAM



TOWN: DURHAM

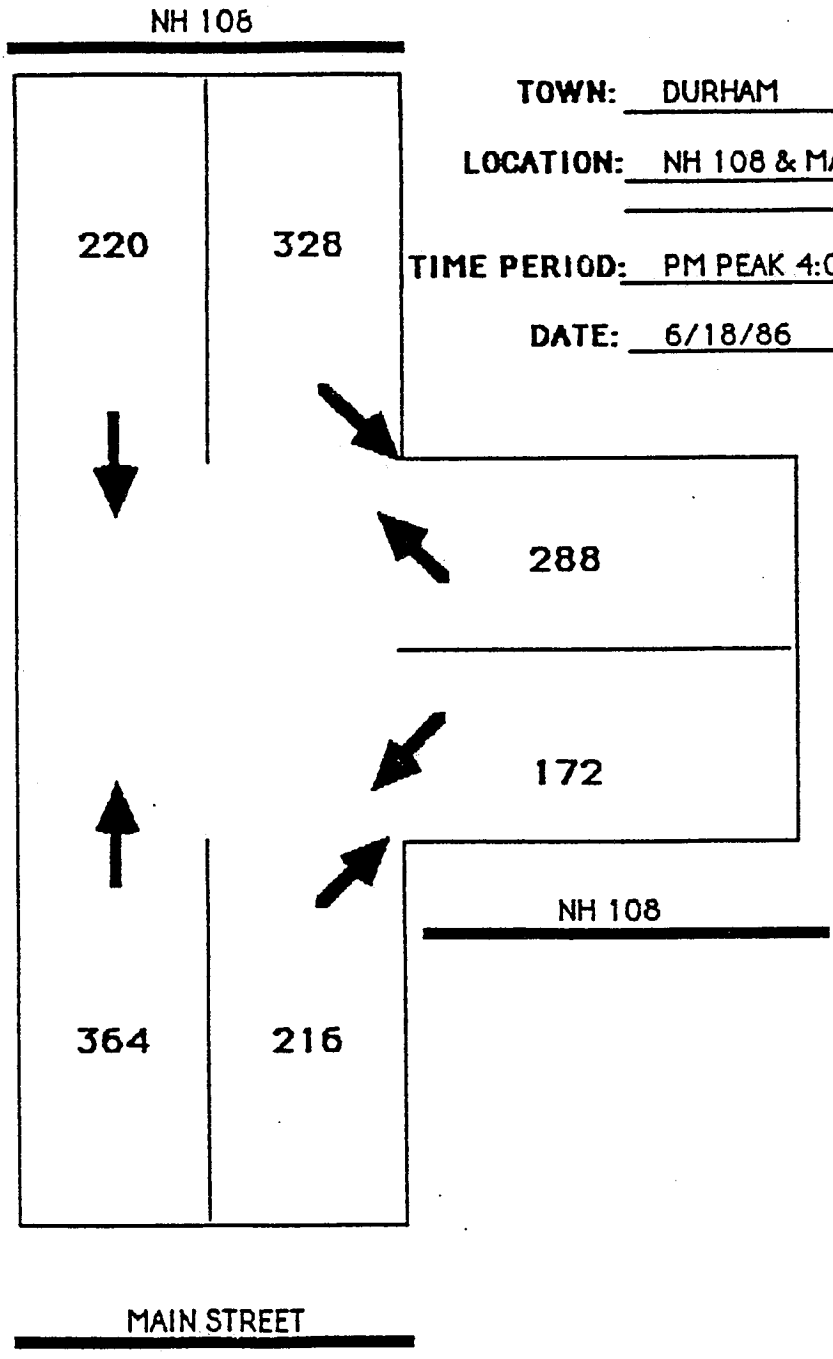
LOCATION: US 4 & MADBURY LANE

TIME PERIOD: PM PEAK 4:00-5:00

DATE: 7/28/87

SOURCE: SRPC

SRPC TRAFFIC COUNTING PROGRAM



TOWN: DURHAM

LOCATION: NH 108 & MAIN ST.

TIME PERIOD: PM PEAK 4:00-5:00

DATE: 6/18/86

SOURCE: SRPC

MAJOR STREET N/S
MINOR STREET APPROACH WB

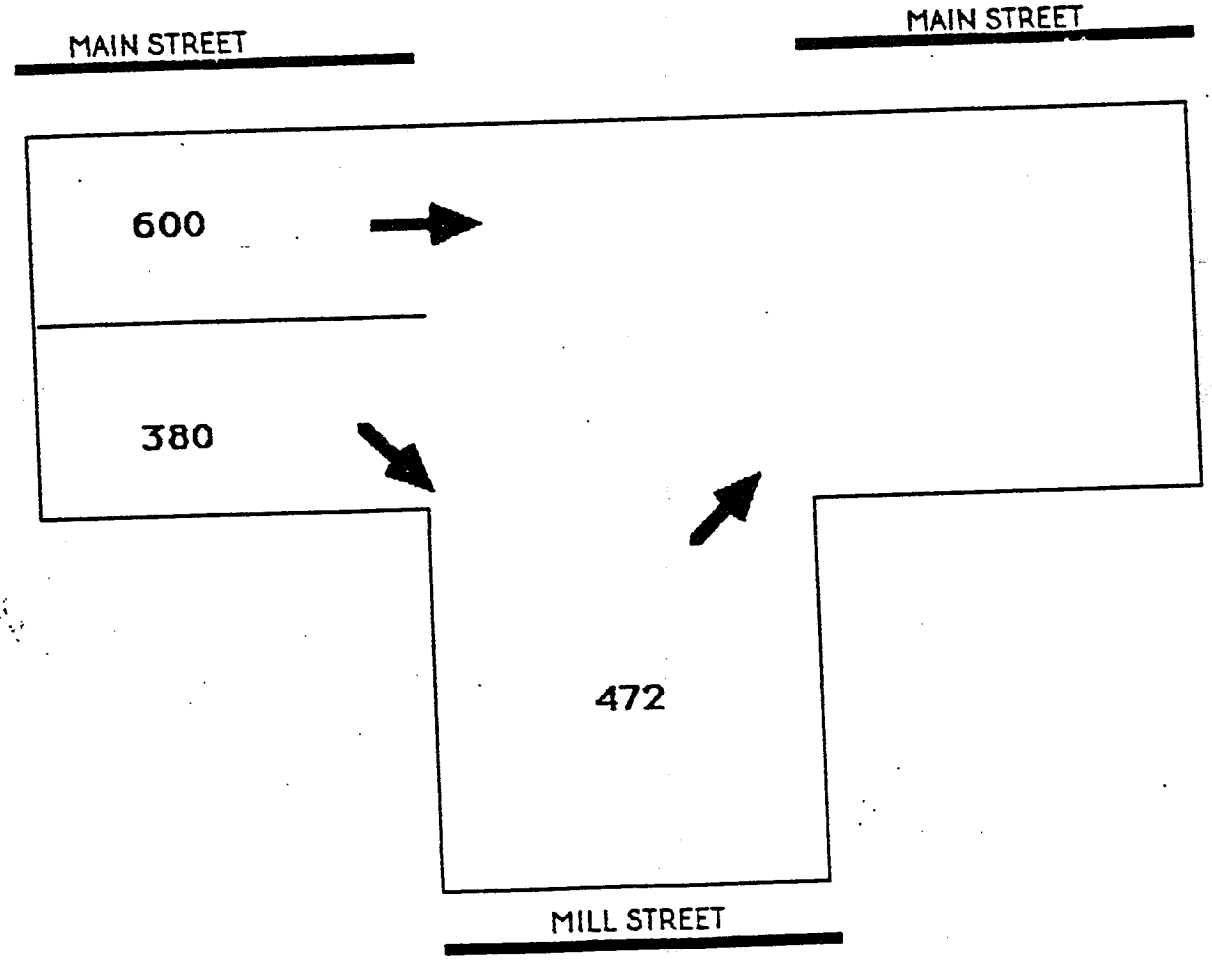
SRPC TRAFFIC COUNTING PROGRAM

TOWN: DURHAM

LOCATION: MAIN STREET & MILL STREET

TIME PERIOD: PM PEAK 3:30-4:30

DATE: 5/29/86



SOURCE: SRPC

MAJOR STREET E/W
MINOR STREET APPROACH NB

LAND USE

INTRODUCTION

The Land Use chapter brings together all of the previously discussed elements of the Master Plan into one future land use plan which provides a guide for future development in the town. In addition to the information presented in this chapter, a parcel-by-parcel map of existing land uses and a series of overlays which show other development constraints has been used to identify the location of future residential, commercial and industrial development. The map and overlays are available at the Durham Town Offices.

In the following text, existing land uses are first analyzed by type, followed by a planning area analysis. Conservation lands are also discussed. The resulting conclusions and major findings in the plan formed the basis for the land use recommendations and future land use plan.

INVENTORY OF LAND UTILIZATION BY FUNCTIONAL USE

The inventory of existing land uses in Durham is summarized below and presented in Table 6-1. This land use categorization should not be confused with zoning districts.

Residential Use

Currently, approximately 5,500 acres of the Town's total 15,000 acres of land area is devoted to residential use. Nearly 3,000 acres support single-family and duplex residences. There are over 100 large lots which already have single-family or duplex dwellings on them but contain approximately 2,500 acres that could potentially be subdivided.

TABLE 6-1
Summary of Land Uses

Existing Land Use	Acres (1)
Residential	
Single-family/Duplex	5,500 (2)
Multi-family/Group Quarters	140
Commercial	60
Office/Research	120
Public/Quasi-Public	
Cemetery	40
Town	390
School	70
State (not including UNH)	70
	6,390
University of New Hampshire	1,800
Total Town Acreage	16,450
Land	15,000
Water	1,450
Land Developed	3,500
Land Undeveloped	
Unsuitable for Development	6,400
Suitable for Development	5,100
TOTAL:	15,000

Notes:

(1) Acreages rounded
(2) Of total land area for single-family and duplex use, approximately 2,500 acres of large lot area undeveloped.

Commercial Use

The town's commercial base is almost entirely located in the downtown area. However, the 52 acres shown in Planning Area 8, the downtown area, does include high density student apartments on the second floors of commercial properties and some buildings are now devoted entirely to apartments.

Office/Research

The 120 acres shown is the Data General site, which is the only facility in this category in Durham.

Public

Including the 1,835 acres which belong to the University of New Hampshire, there is a total of more than 2,400 acres of publicly owned tax-exempt property, representing 16% of the total amount of land in Durham.

Undeveloped Land

Of the 15,000 acres of land in Durham, approximately 3,500 acres, is developed. The remaining 11,500 acres, primarily located in the lower half of the town, remains undeveloped. Contained in this figure is an estmiate of the potential development capacity of large lots on which single-family residences are located, however the lot could be further subdivided. An assumed 1.5 acres per unit was deducted for each large lot, leaving an approximate 2,500 acres which could potentially be developed.

Of the 11,500 acres total, approximately 6,400 acres are not suitable for any kind of development because of the limitations presented by soils, flood plains, wetlands, aquifers or other environmental concerns. The remaining 5,100 acres could be developed within varying degrees of intensity depending on the soils capabilities, availability of sewer and water, and zoning requirements.

All of the above land use categories are further detailed within specific areas as discussed in the next section.

LAND USE BY PLANNING AREA

For the purpose of this Master Plan, Durham has been divided into nine Planning Areas. The selection of these areas was based on a number of factors including general character, identifiable areas as perceived by town residents, special features (e.g., salt water frontage) and zoning district delineations. The total acreages for each Planning Area are summarized in Table 6-2, and the Planning Areas are delineated in Exhibit 6-1.

Each area has been inventoried and profiled in the following pages, with specific constraints and problems identified.

Land areas shown in the profile were electronically planimetered off of the 1"=1,000' scale base map provided by the town, using AutoCAD software on an IBM PC. While the accuracy was limited by a number of variables, such as the accuracy of the base map itself and the accuracy of the town line extending into the tidal bay area, the end results came remarkably close, with the total measured area of 25.7 square miles coming within 0.2 square miles of the 25.5 square miles identified in the town reports, or less than a 1% variation.

TABLE 6-2

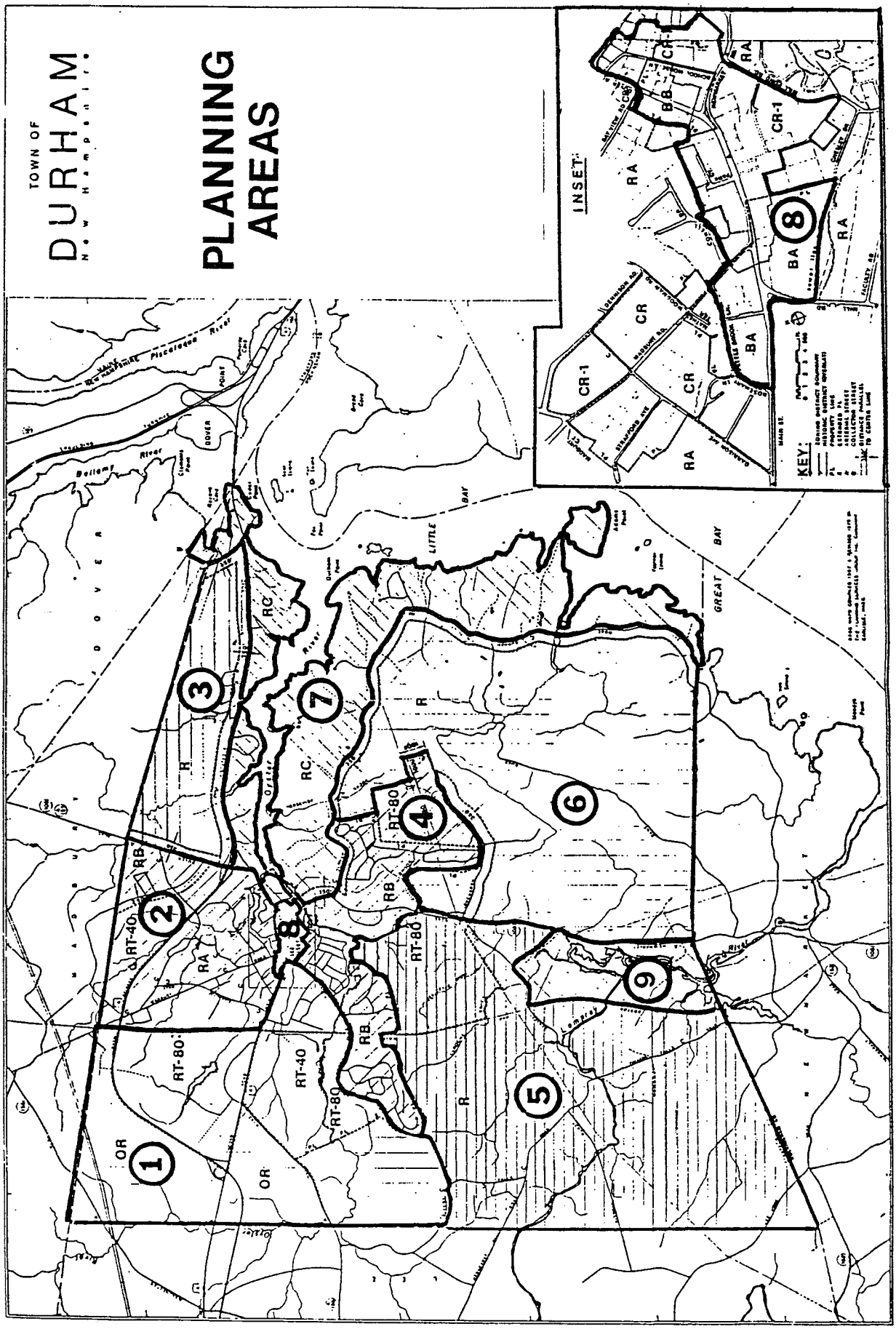
TOWN OF DURHAM - 1988 MASTER PLAN

LAND USE TOTAL TOWN ACREAGE BY PLANNING AREA DATE OF CALCULATION: 22-Nov-88

TOTAL TOWN ACREAGE BY PLANNING AREA

PLANNING AREA	ACREAGE	
1	2,492	15.15%
2	1,068	6.49%
3	908	5.52%
4	1,225	7.45%
5	3,498	21.27%
6	3,350	20.36%
7	3,391	20.61%
8	65	0.39%
9	455	2.77%
TOTAL	16,451 ACRES	100.00%
	25.70 SQUARE MILES	

EXHIBIT 6-1


TOWN OF
DURHAM
N. H. HAMPSHIRE
PLANNING
AREAS
INSET:
KEY:
1
2
3
4
5
6
7
8
9
OR
RA
RB
RC
R
RT-40
RT-80
CR
CR-1
BA
BB
DOVER
GREAT BAY
LITTLE BAY

Planning Area 1

The primary feature of this area is the large portion of main campus of UNH located in the southeast corner, east of the B&M railroad tracks. Less intensive UNH activities, including agricultural facilities, continue to the west and UNH property is a dominating category encompassing nearly half of the area. See Table 6-3.

The second most prominent development is the 120 acre site for Data General.

Although there is a sizeable amount of land area shown as single-family housing, there are only a small number of housing units on some larger lots. In effect, much of this land must be viewed as potentially developable where other constraining factors do not preclude this from happening. The housing is scattered and there are no recent residential subdivisions.

Approximately half of the area has both water and sewer so that the area can support more intensive future development.

The upper two-thirds of the area which is in private ownership is currently zoned as O/R, Office/Research.

Major routes of access in and out of the area are Concord Road and the Route 4 Durham Bypass which has a major interchange just before the Lee town line. The B&M Railroad, which remains active, runs along the east border of this area.

TABLE 6-3

TOWN OF DURHAM - 1988 MASTER PLAN

LAND USE PLANNNING AREA 1 DATE OF CALCULATION: 22-Dec-88

TOTAL ACREAGE: 2,492 AC. 15.14% OF TOWN
LAND 2,467 AC.
WATER 25 AC.

EXISTING LAND USE	ACRES	% PLAN AREA	% TOWN
RESIDENTIAL			
SINGLE FAM.	321.9	12.92%	1.96%
DUPLEX	6.9	0.28%	0.04%
MULTI-FAM./ GROUP QTR.	46.9	1.88%	0.29%
COMMERCIAL	0.0	0.00%	0.00%
INDUSTRIAL/RESEARCH	120.8	4.85%	0.73%
PUBLIC/QUASI PUBLIC			
CEMETERY	13.8	0.55%	0.08%
TOWN	11.5	0.46%	0.07%
SCHOOL	0.0	0.00%	0.00%
STATE	2.2	0.09%	0.01%
TOTAL DEVELOPED (NOT INCL. UNH)	521.8	20.94%	3.13%
UNIVERSITY OWNED LAND	1,058.3	42.48%	6.43%

PARCEL DATA	NUMBER	% TOTAL
LESS THAN 1 ACRE	30	39.5%
1AC. TO 3 AC. LOTS	11	14.5%
3AC. TO 6 AC. LOTS	4	5.3%
LOTS WITH 6 ACRES OR MORE	31	40.8%

NO. DWELLING UNITS	D.U. NUMBER
SINGLE FAMILY	24
DUPLEX/ACC. APT.	3
TOTAL	27

INVENTORY OF AVAILABLE SUBDIVISION BUILDING LOTS	LOTS AVAIL.	WATER SOURCE	WASTE WATER
1. NONE	0		
2.			
3.			
4.			
5.			
TOTAL	0		

SPECIAL CONSIDERATIONS

TABLE 6-3
(continued)

TOWN OF DURHAM - 1988 MASTER PLAN

LAND USE PLANNING AREA 1 DATE OF CALCULATION: 22-Dec-88

TOTAL LAND ACREAGE:	2,467	AC.	100 % OF PLANNING AREA	16.5% OF TOWN
DEVELOPED ACREAGE:	508	AC.	20.6% OF PLANNING AREA	3.4% OF TOWN
UNDEVELOPED ACREAGE NOT DEVELOPABLE:	1,310	AC.	53.1% OF PLANNING AREA	8.7% OF TOWN
POTENTIALLY DEVELOPABLE ACREAGE:	649	AC.	26.3% OF PLANNING AREA	4.3% OF TOWN

RESIDENTIAL BUILDOUT CAPACITY

ZONE	LOT SIZE PER UNIT (SF)	TOTAL AREA (ACRES)	NUMBER OF UNITS	PERSONS PER UNIT	POPULATION
RT-40	40,000	39	42	2.7	115
RT-80	80,000	143	78	2.7	210
R	120,000	155	56	2.7	152
OR	80,000	312	170	2.7	459
TOTALS:	N/A	649	346	N/A	936

UNDER ZONING ORDINANCE IN EFFECT AS OF OCTOBER 1988

Planning Area 2

Planning Area 2 contains the balance of the main campus not included in Planning Area 1. However, less than 10% of this Planning Area is University property. See Table 6-4.

Over half of this area is intensively developed with residential neighborhoods and there are a relatively small number of larger lots which could be further developed in the future. There are also a small number of scattered building lots. Included in this area is the Oyster River Middle High School site which comprises about 5% of the land in this area.

This area is one of two which provides a large concentration of housing for University students living off-campus. This concentration has two significant impacts. First, though some of the housing is older and maintenance has been deferred, the demand for the housing by students has kept rental and housing values high. Secondly, the differing lifestyles of the University students and town residents has created conflicts. Also, the town has had a large percentage of police and fire calls in this area.

The area is serviced almost entirely by water and more than half by sewer. Water has recently been extended to the north side of the Bypass where there is a potential for additional development. However, due to the current intensity of development in this area, only a moderate amount of future development can occur.

Primary access routes in the area are the Route 4 Bypass, and its interchange with Dover Road (Route 108) along the east border. Concord Road runs along the south boundary, which intersects the UNH campus. Madbury Road is also a major traffic carrier from this area into the downtown.

The area contains three residential zoning classifications: Residence A (RA)-the highest density permitted, Residence B (RB)-a medium density zone;

and a transition residential zone (RT-40), another medium density area. The area along the east side of Dover Road (which has the highest potential for development), is divided between two classifications: the RT-40 immediately north of the Bypass, and the RB, which extends to the town line.

TABLE 6-4

TOWN OF DURHAM - 1988 MASTER PLAN

LAND USE PLANNNING AREA 2 DATE OF CALCULATION: 22-Dec-88

TOTAL ACREAGE: 1,068 AC. 6.49% OF TOWN
LAND 1,052 AC.
WATER 16 AC.

EXISTING LAND USE	ACRES	% PLAN AREA	% TOWN
RESIDENTIAL			
SINGLE FAM.	403.8	37.83%	2.45%
DUPLEX	82.7	7.75%	0.50%
MULTI-FAM./ GROUP QTR.	82.5	7.73%	0.50%
COMMERCIAL	0.0	0.00%	0.00%
INDUSTRIAL/RESEARCH	0.0	0.00%	0.00%
PUBLIC/QUASI PUBLIC			
TOWN	4.6	0.43%	0.03%
SCHOOL	47.5	4.45%	0.29%
STATE	0.0	0.00%	0.00%
TOTAL DEVELOPED (NOT INCL. UNH)	573.6	53.73%	3.44%
UNIVERSITY OWNED LAND	100.7	9.43%	0.61%

PARCEL DATA	NUMBER	% TOTAL
LESS THAN 1 ACRE	459	84.7%
1AC. TO 3 AC. LOTS	51	9.4%
3AC. TO 6 AC. LOTS	15	2.8%
LOTS WITH 6 ACRES OR MORE	17	3.1%

NO. DWELLING UNITS	D.U. NUMBER
SINGLE FAMILY	386
DUPLEX/ACC. APT.	114
TOTAL	500

INVENTORY OF AVAILABLE SUBDIVISION BUILDING SUBDIVISION	LOTS AVAIL.	WATER SOURCE	WASTE WATER
1. SCATTERED	31	TOWN	TOWN
2.			
3.			
4.			
5.			
TOTAL	31		

SPECIAL CONSIDERATIONS

CONSERVATION AREA - 49.0 ACRES

TABLE 6-4
(continued)

TOWN OF DURHAM - 1988 MASTER PLAN

LAND USE PLANNING AREA 2 DATE OF CALCULATION: 22-Dec-88

TOTAL LAND ACREAGE:	1,052	AC.	100 % OF PLANNING AREA	7.0% OF TOWN
DEVELOPED ACREAGE:	797	AC.	75.8% OF PLANNING AREA	5.3% OF TOWN
UNDEVELOPED ACREAGE NOT DEVELOPABLE:	63	AC.	5.9% OF PLANNING AREA	0.4% OF TOWN
POTENTIALLY DEVELOPABLE ACREAGE:	192	AC.	18.3% OF PLANNING AREA	1.3% OF TOWN

RESIDENTIAL BUILDOUT CAPACITY

ZONE	LOT SIZE PER UNIT (SF)	TOTAL AREA (ACRES)	NUMBER OF UNITS	PERSONS PER UNIT	POPULATION
RA	20,000	69	150	2.7	406
RB	40,000	31	34	2.7	91
RT-40	40,000	92	100	2.7	271
TOTALS:	N/A	192	284	N/A	767

UNDER ZONING ORDINANCE IN EFFECT AS OF OCTOBER 1988

Planning Area 3

This area contains primarily residential development on parcels which cover nearly half of the area. However, the relatively small number of dwelling units are primarily concentrated in one subdivision along Route 4 (Piscatqua Road) with the remainder scattered on large lots. See Table 6-5.

One major subdivision is in place with approximately 25 building lots available. There are also a number of larger parcels, either undeveloped or with single-family residences, which could be further developed.

The entrance to the sewage treatment plant lies along the south boundary though lines have not been extended eastward to date. Water is also now available along the southwest corner of this area but has not been extended into the area.

Currently the zoning for the entire area is Rural Residential (R). The primary access route is Route 4 (Piscatqua Road), which is highly traveled. Dover Road serves as the west boundary. With a large portion having soils suitable for development, the relative ease of extending water and sewer into the area, and good accessibility, there is a high degree of potential for future development.

TABLE 6-5

TOWN OF DURHAM - 1988 MASTER PLAN

LAND USE PLANNNING AREA 3 DATE OF CALCULATION: 22-Dec-88

TOTAL ACREAGE: 908 AC. 5.52% OF TOWN
LAND 892 AC.
WATER 16 AC.

EXISTING LAND USE	ACRES	% PLAN AREA	% TOWN
RESIDENTIAL			
SINGLE FAM.	407.0	44.84%	2.47%
DUPLEX	14.7	1.62%	0.09%
MULTI-FAM./ GROUP QTR.	0.0	0.00%	0.00%
COMMERCIAL	4.0	0.44%	0.02%
INDUSTRIAL/RESEARCH	0.0	0.00%	0.00%
PUBLIC/QUASI PUBLIC			
CHURCH	7.3	0.80%	0.04%
TOWN	3.9	0.43%	0.02%
SCHOOL	0.0	0.00%	0.00%
STATE	0.0	0.00%	0.00%
TOTAL DEVELOPED (NOT INCL. UNH)	436.9	48.13%	2.62%
UNIVERSITY OWNED LAND	0.0	0.00%	0.00%

PARCEL DATA	NUMBER	% TOTAL
LESS THAN 1 ACRE	30	30.3%
1AC. TO 3 AC. LOTS	40	40.4%
3AC. TO 6 AC. LOTS	11	11.1%
LOTS WITH 6 ACRES OR MORE	18	18.2%

NO. DWELLING UNITS	D.U. NUMBER
SINGLE FAMILY	53
DUPLEX/ACC. APT.	8
TOTAL	61

INVENTORY OF AVAILABLE SUBDIVISION BUILDING SUBDIVISION	LOTS AVAIL.	WATER SOURCE	WASTE WATER
1. N. SIDE OF PISCATAQUA RD.	25	WELL	SEPTIC
2. WILLIAMS WAY	2	WELL	SEPTIC
3. CEDAR POINT	2	WELL	SEPTIC
4. _____	_____	_____	_____
5. _____	_____	_____	_____
TOTAL	29		

SPECIAL CONSIDERATIONS

CONSERVATION AREA - 2.8 ACRES

TABLE 6-5
(continued)

TOWN OF DURHAM - 1988 MASTER PLAN

LAND USE PLANNING AREA 3 DATE OF CALCULATION: 22-Dec-88

TOTAL LAND ACREAGE:	892	AC.	100 % OF PLANNING AREA	5.9% OF TOWN
DEVELOPED ACREAGE:	138	AC.	15.5% OF PLANNING AREA	0.9% OF TOWN
UNDEVELOPED ACREAGE NOT DEVELOPABLE:	294	AC.	32.9% OF PLANNING AREA	2.0% OF TOWN
POTENTIALLY DEVELOPABLE ACREAGE:	460	AC.	51.6% OF PLANNING AREA	3.1% OF TOWN

RESIDENTIAL BUILDOUT CAPACITY

ZONE	LOT SIZE PER UNIT (SF)	TOTAL AREA (ACRES)	NUMBER OF UNITS	PERSONS PER UNIT	POPULATION
R	120,000	413	150	2.7	405
RC	120,000	47	17	2.7	46
TOTALS:	N/A	460	167	N/A	451

UNDER ZONING ORDINANCE IN EFFECT AS OF OCTOBER 1988

Planning Area 4

This extensive area incorporates the bulk of the residential development which lies to the south of the downtown and the UNH main campus and extends east of New Market Road between Dover Point Road and Longmarsh Road. It is generally characterized by single-family residential dwellings, the total area being about 65% developed. See Table 6-6.

The town's landfill occupies the northeastern corner of this area and several other town properties are scattered throughout.

A sizeable portion of the undeveloped land in the area has already been subdivided, with about 37 building lots now available. With other scattered lots available and some larger lots which could be subdivided (primarily east of Newmarket Road), this area offers a considerable potential for new development. Both water and sewer are available in the center portion of this area.

Main routes of access include Newmarket Road (Route 108), which bisects the area, Durham Point Road and Mill Road along the north, and Longmarsh Road along the southeast boundary. The area is zoned Residence B (RB) and RT-40, both medium density residential districts.

TABLE 6-6

TOWN OF DURHAM - 1988 MASTER PLAN

LAND USE PLANNNING AREA 4 DATE OF CALCULATION: 22-Dec-88

TOTAL ACREAGE: 1,225 AC. 7.45% OF TOWN
LAND 1,187 AC.
WATER 38 AC.

EXISTING LAND USE	ACRES	% PLAN AREA	% TOWN
RESIDENTIAL			
SINGLE FAM.	607.9	49.63%	3.70%
DUPLEX	91.2	7.45%	0.55%
MULTI-FAM./ GROUP QTR.	0.0	0.00%	0.00%
COMMERCIAL	9.4	0.77%	0.06%
INDUSTRIAL/RESEARCH	0.0	0.00%	0.00%
PUBLIC/QUASI PUBLIC			
CEMETERY	20.2	1.65%	0.12%
TOWN	76.7	6.26%	0.47%
SCHOOL			
STATE	0.0	0.00%	0.00%
TOTAL DEVELOPED (NOT INCL. UNH)	805.4	65.76%	4.83%
UNIVERSITY OWNED LAND	11.9	0.97%	0.07%

PARCEL DATA	NUMBER	% TOTAL
LESS THAN 1 ACRE	428	67.2%
1AC. TO 3 AC. LOTS	145	22.8%
3AC. TO 6 AC. LOTS	54	8.5%
LOTS WITH 6 ACRES OR MORE	10	1.6%

NO. DWELLING UNITS	D.U. NUMBER
SINGLE FAMILY	464
DUPLEX/ACC. APT.	52
TOTAL	516

INVENTORY OF AVAILABLE SUBDIVISION BUILDING SUBDIVISION	LOTS AVAIL.	WATER SOURCE	WASTE WATER
1. HAMEL BROOK DR.	37	WELL	SEPTIC
2. SCATTERED	28		
3.			
4.			
5.			
TOTAL	65		

SPECIAL CONSIDERATIONS

HISTORIC AREA

TABLE 6-6
(continued)

TOWN OF DURHAM - 1988 MASTER PLAN

LAND USE PLANNING AREA 4 DATE OF CALCULATION: 22-Dec-88

TOTAL LAND ACREAGE:	1,187	AC.	100 % OF PLANNING AREA	7.9% OF TOWN
DEVELOPED ACREAGE:	730	AC.	61.5% OF PLANNING AREA	4.9% OF TOWN
UNDEVELOPED ACREAGE NOT DEVELOPABLE:	159	AC.	13.4% OF PLANNING AREA	1.1% OF TOWN
POTENTIALLY DEVELOPABLE ACREAGE:	298	AC.	25.1% OF PLANNING AREA	2.0% OF TOWN

RESIDENTIAL BUILDOUT CAPACITY

ZONE	LOT SIZE PER UNIT (SF)	TOTAL AREA (ACRES)	NUMBER OF UNITS	PERSONS PER UNIT	POPULATION
RA	20,000	4	9	2.7	24
RB	40,000	44	48	2.7	129
RT-80	80,000	193	105	2.7	284
RC	120,000	20	7	2.7	20
R	40,000	37	40	2.7	109
TOTALS:	N/A	298	209	N/A	565

UNDER ZONING ORDINANCE IN EFFECT AS OF OCTOBER 1988

Planning Area 5

This area is rural in character, yet it contains a sizeable dwelling unit count of approximately 150 single-family and 2-family units essentially strung along the few roadways which exist in the area. Many of these units are on larger lots. There are several smaller subdivisions in which concentrations of houses exist and one subdivision which contains approximately 25 approved building lots that are not yet developed. See Table 6-7.

The University owns 650 acres in this area, most of which is either undeveloped or used for agricultural research purposes, and provides passive recreational opportunities for the town.

Poor soils dominate the area, however, an aquifer which serves as a water source for the Town of Newmarket is located in the southwest corner. Most portions are a considerable distance from the downtown core and not readily accessible to sewer and water. Therefore, major development should not be encouraged in this area.

TABLE 6-7

TOWN OF DURHAM - 1988 MASTER PLAN

LAND USE PLANNNING AREA 5 DATE OF CALCULATION: 22-Dec-88

TOTAL ACREAGE: 3,498 AC. 21.26% OF TOWN
LAND 3,461 AC.
WATER 37 AC.

EXISTING LAND USE	ACRES	% PLAN AREA	% TOWN
RESIDENTIAL			
SINGLE FAM.	1,259.3	36.00%	7.65%
DUPLEX	98.8	2.82%	0.60%
MULTI-FAM./ GROUP QTR.	0.0	0.00%	0.00%
COMMERCIAL	0.0	0.00%	0.00%
INDUSTRIAL/RESEARCH	0.0	0.00%	0.00%
PUBLIC/QUASI PUBLIC			
TOWN	24.1	0.69%	0.15%
SCHOOL	24.1	0.69%	0.15%
STATE	0.0	0.00%	0.00%
TOTAL DEVELOPED (NOT INCL. UNH)	1382.2	39.51%	8.28%
UNIVERSITY OWNED LAND	655.7	18.74%	3.99%

PARCEL DATA	NUMBER	% TOTAL
LESS THAN 1 ACRE	25	12.0%
1AC. TO 3 AC. LOTS	94	45.0%
3AC. TO 6 AC. LOTS	36	17.2%
LOTS WITH 6 ACRES OR MORE	54	25.8%

NO. DWELLING UNITS	D.U. NUMBER
SINGLE FAMILY	141
DUPLEX/ACC. APT.	16
TOTAL	157

INVENTORY OF AVAILABLE SUBDIVISION BUILDING SUBDIVISION	LOTS AVAIL.	WATER SOURCE	WASTE WATER
1. N. SIDE WEDNESDAY HILL RD.	27	WELL	SEPTIC
2. PACKERS FALLS RD.	3	WELL	SEPTIC
3. HOOK RD.	3	WELL	SEPTIC
4. _____	_____	_____	_____
5. _____	_____	_____	_____
TOTAL	33		

SPECIAL CONSIDERATIONS

_____
_____
_____
_____
_____
_____
_____

TABLE 6-7
(continued)

TOWN OF DURHAM - 1988 MASTER PLAN

LAND USE PLANNING AREA 5 DATE OF CALCULATION: 22-Dec-88

TOTAL LAND ACREAGE:	3,461	AC.	100 % OF PLANNING AREA	23.1% OF TOWN
DEVELOPED ACREAGE:	540	AC.	15.6% OF PLANNING AREA	3.6% OF TOWN
UNDEVELOPED ACREAGE NOT DEVELOPABLE:	2,022	AC.	58.4% OF PLANNING AREA	13.5% OF TOWN
POTENTIALLY DEVELOPABLE ACREAGE:	899	AC.	26.0% OF PLANNING AREA	6.0% OF TOWN

RESIDENTIAL BUILDOUT CAPACITY

ZONE	LOT SIZE PER UNIT (SF)	TOTAL AREA (ACRES)	NUMBER OF UNITS	PERSONS PER UNIT	POPULATION
RT-80	80,000	130	71	2.7	191
R	120,000	769	279	2.7	754
TOTALS:	N/A	899	350	N/A	945

UNDER ZONING ORDINANCE IN EFFECT AS OF OCTOBER 1988

Planning Area 6

Like Planning Area 5, this area is rural in character and very sparsely developed with a small amount of housing in the lower southwest corner along Newmarket Road (Route 108). The remaining single-family residences are located on large lots stretched out along Dame Road. See Table 6-8.

For its size and configuration this area has the least developed roadway system, with the perimeter roads of Route 108, Longmarsh Road, and Dover Point Road defining the area. Dame Road, which is virtually the only interior road (outside of those for the subdivisions in the southwest corner) is a narrow, winding, gravel road. Because of the large size of the area and limited roadway system, there are a number of landlocked parcels.

Though the soils are better than in Planning Area 5, some are still marginal, placing many constraints on potential development. Driving down Dame Road, bogs and marshes are apparent.

Due to a recent subdivision in the southwest corner near the existing residential concentration, there are more building lots available than the number of houses which are already located in this area. The entire area is zoned as Rural Residential (R). Due to the soil constraints, this area offers only limited and selective possibilities for future development.

TABLE 6-8

TOWN OF DURHAM - 1988 MASTER PLAN

LAND USE PLANNNING AREA 6 DATE OF CALCULATION: 22-Dec-88

TOTAL ACREAGE: 3,350 AC. 20.36% OF TOWN
LAND 3,342 AC.
WATER 8 AC.

EXISTING LAND USE	ACRES	% PLAN AREA	% TOWN
RESIDENTIAL			
SINGLE FAM.	707.1	21.11%	4.30%
DUPLEX	2.9	0.09%	0.02%
MULTI-FAM./ GROUP QTR.	7.0	0.21%	0.04%
COMMERCIAL	0.0	0.00%	0.00%
INDUSTRIAL/RESEARCH	0.0	0.00%	0.00%
PUBLIC/QUASI PUBLIC			
TOWN	123.3	3.68%	0.75%
SCHOOL	0.0	0.00%	0.00%
STATE	0.0	0.00%	0.00%
TOTAL DEVELOPED (NOT INCL. UNH)	840.3	25.09%	5.03%
UNIVERSITY OWNED LAND	0.0	0.00%	0.00%

PARCEL DATA	NUMBER	% TOTAL
LESS THAN 1 ACRE	37	24.3%
1AC. TO 3 AC. LOTS	42	27.6%
3AC. TO 6 AC. LOTS	21	13.8%
LOTS WITH 6 ACRES OR MORE	52	34.2%

NO. DWELLING UNITS	D.U. NUMBER
SINGLE FAMILY	41
DUPLEX/ACC. APT.	0
TOTAL	41

INVENTORY OF AVAILABLE SUBDIVISION BUILDING SUBDIVISION	LOTS AVAIL.	WATER SOURCE	WASTE WATER
1. ROSS RD.	55	WELL	SEPTIC
2. NEWMARKET RD (SOUTH)	2	WELL	SEPTIC
3. LONG MARSH ROAD.	5	WELL	SEPTIC
4. _____	_____	_____	_____
5. _____	_____	_____	_____
TOTAL	62		

SPECIAL CONSIDERATIONS

_____
_____
_____
_____
_____

TABLE 6-8
(continued)

TOWN OF DURHAM - 1988 MASTER PLAN

LAND USE PLANNING AREA 6 DATE OF CALCULATION: 22-Dec-88

TOTAL LAND ACREAGE:	3,342	AC.	100 % OF PLANNING AREA	22.3% OF TOWN
DEVELOPED ACREAGE:	186	AC.	5.6% OF PLANNING AREA	1.2% OF TOWN
UNDEVELOPED ACREAGE NOT DEVELOPABLE:	1,339	AC.	40.1% OF PLANNING AREA	8.9% OF TOWN
POTENTIALLY DEVELOPABLE ACREAGE:	1,817	AC.	54.4% OF PLANNING AREA	12.1% OF TOWN

RESIDENTIAL BUILDOUT CAPACITY

ZONE	LOT SIZE PER UNIT (SF)	TOTAL AREA (ACRES)	NUMBER OF UNITS	PERSONS PER UNIT	POPULATION
R	120,000	1,643	596	2.7	1,610
RC	120,000	143	52	2.7	140
RT-80	80,000	31	17	2.7	46
TOTALS:	N/A	1,817	665	N/A	1,796

UNDER ZONING ORDINANCE IN EFFECT AS OF OCTOBER 1988

Planning Area 7

This area has been defined to include all coastal properties; therefore, most of the parcels have saltwater, tidal frontage. Residential subdivisions are spotted throughout the area, with the balance of the homes scattered on large lots which extend between the coastline and frontage roadways (Piscatqua Road and Durham Point Road). The entire area is zoned as a Residential Coastal (RC) District. See Table 6-9.

Most of the large lots do have a single-family residence on them because of their tidewater frontage and scenic vistas, which make them attractive to those desiring and able to afford the qualities these properties offer. However, it should be kept in mind that these lots also have the potential for development due to their attractiveness, should the property owners ever elect to do so. The soils do generally offer some capacity for further development, but floodplain limitations add some constraints.

One exception to this description of coastline residential development is the Cedar Point area in which there is a concentration of small dwelling units crowded along the shore. These were originally seasonal units which have been converted to permanent residences.

In addition to the environmentally sensitive lands in the tidal coastline area, a special natural resource is the Great Bay Estuarine Research Reserve which is owned by the state and where UNH maintains a research laboratory for the study of these resources.

TABLE 6-9

TOWN OF DURHAM - 1988 MASTER PLAN

LAND USE PLANNNING AREA 7 DATE OF CALCULATION: 22-Dec-88

TOTAL ACREAGE: 3,391 AC. 20.61% OF TOWN
LAND 2,127 AC.
WATER 1,264 AC.

EXISTING LAND USE	ACRES	% PLAN AREA	% TOWN
RESIDENTIAL			
SINGLE FAM.	1,104.1	32.56%	6.71%
DUPLEX	115.2	3.40%	0.70%
MULTI-FAM./ GROUP QTR.	0.0	0.00%	0.00%
COMMERCIAL	0.0	0.00%	0.00%
INDUSTRIAL/RESEARCH	0.0	0.00%	0.00%
PUBLIC/QUASI PUBLIC			
TOWN	43.9	1.29%	0.27%
SCHOOL	0.0	0.00%	0.00%
STATE	70.7	2.08%	0.43%
TOTAL DEVELOPED (NOT INCL. UNH)	1263.2	37.25%	7.57%
UNIVERSITY OWNED LAND	8.0	0.24%	0.05%

PARCEL DATA	NUMBER	% TOTAL
LESS THAN 1 ACRE	62	24.9%
1AC. TO 3 AC. LOTS	105	42.2%
3AC. TO 6 AC. LOTS	42	16.9%
LOTS WITH 6 ACRES OR MORE	40	16.1%

NO. DWELLING UNITS	D.U. NUMBER
SINGLE FAMILY	146
DUPLEX/ACC. APT.	26
TOTAL	172

INVENTORY OF AVAILABLE SUBDIVISION BUILDING SUBDIVISION	LOTS AVAIL.	WATER SOURCE	WASTE WATER
1. N. SIDE DURHAM PT. RD.	27	WELL	SEPTIC
2. WILY CREED RD.	7	WELL	SEPTIC
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
TOTAL	34		

SPECIAL CONSIDERATIONS

CONSERVATION AREA - 10.8 ACRES
TIDAL WATER SHORE LINE
ADAMS POINT ESTUARY

TABLE 6-9
(continued)

TOWN OF DURHAM - 1988 MASTER PLAN

LAND USE PLANNING AREA 7 DATE OF CALCULATION: 22-Dec-88

TOTAL LAND ACREAGE:	2,127	AC.	100 % OF PLANNING AREA	14.2% OF TOWN
DEVELOPED ACREAGE:	516	AC.	24.3% OF PLANNING AREA	3.4% OF TOWN
UNDEVELOPED ACREAGE NOT DEVELOPABLE:	898	AC.	42.2% OF PLANNING AREA	6.0% OF TOWN
POTENTIALLY DEVELOPABLE ACREAGE:	713	AC.	33.5% OF PLANNING AREA	4.8% OF TOWN

RESIDENTIAL BUILDOUT CAPACITY

ZONE	LOT SIZE PER UNIT (SF)	TOTAL AREA (ACRES)	NUMBER OF UNITS	PERSONS PER UNIT	POPULATION
RC	120,000	713	259	2.7	699
TOTALS:	N/A	713	259	N/A	699

UNDER ZONING ORDINANCE IN EFFECT AS OF OCTOBER 1988

Planning Area 8

This area, the Durham central business district, is fully developed. Currently, it is the only business area in the town. However, many of the buildings either are of mixed use with second floor student apartments or apartment structures fully utilized for student housing. The area is zoned with a combination of Business and Commercial/Residential districts. See Table 6-10.

As has been noted in the Housing and Economic Base chapters, numerous problems have arisen as a result of these conflicting land uses. Because there is virtually no undeveloped land, no significant development potential exists in this area; however, some redevelopment activities and land use conversions may be appropriate.

TABLE 6-10

TOWN OF DURHAM - 1988 MASTER PLAN

LAND USE PLANNNING AREA 8 DATE OF CALCULATION: 22-Dec-88

TOTAL ACREAGE: 65 AC. 0.39% OF TOWN
LAND 65 AC.
WATER 0 AC.

EXISTING LAND USE	ACRES	% PLAN AREA	% TOWN
RESIDENTIAL			
SINGLE FAM.	8.8	13.58%	0.05%
DUPLEX	3.3	5.09%	0.02%
MULTI-FAM./ COMMERCIAL	51.6	79.63%	0.31%
INDUSTRIAL/RESEARCH	0.0	0.00%	0.00%
PUBLIC/QUASI PUBLIC			
TOWN	1.1	1.70%	0.01%
SCHOOL	0.0	0.00%	0.00%
STATE	0.0	0.00%	0.00%
TOTAL DEVELOPED (NOT INCL. UNH)	64.8	100.00%	0.39%
UNIVERSITY OWNED LAND	0.0	0.00%	0.00%

PARCEL DATA	NUMBER	% TOTAL
LESS THAN 1 ACRE	51	86.4%
1AC. TO 3 AC. LOTS	5	8.5%
3AC. TO 6 AC. LOTS	1	1.7%
LOTS WITH 6 ACRES OR MORE	2	3.4%

NO. DWELLING UNITS	D.U. NUMBER
SINGLE FAMILY	9
DUPLEX/ACC. APT.	6
TOTAL	15

INVENTORY OF AVAILABLE SUBDIVISION BUILDING SUBDIVISION	LOTS AVAIL.	WATER SOURCE	WASTE WATER
1. NONE	0		
2.			
3.			
4.			
5.			
TOTAL	0		

SPECIAL CONSIDERATIONS

TABLE 6-10
(continued)

TOWN OF DURHAM - 1988 MASTER PLAN

LAND USE PLANNING AREA 8 DATE OF CALCULATION: 22-Dec-88

TOTAL LAND ACREAGE:	65	AC.	100 % OF PLANNING AREA	0.4% OF TOWN
DEVELOPED ACREAGE:	65	AC.	100.3% OF PLANNING AREA	0.4% OF TOWN
UNDEVELOPED ACREAGE NOT DEVELOPABLE:	(0)	AC.	-0.3% OF PLANNING AREA	0.0% OF TOWN
POTENTIALLY DEVELOPABLE ACREAGE:	0	AC.	0.0% OF PLANNING AREA	0.0% OF TOWN

RESIDENTIAL BUILDOUT CAPACITY

ZONE	LOT SIZE PER UNIT (SF)	TOTAL AREA (ACRES)	NUMBER OF UNITS	PERSONS PER UNIT	POPULATION
NONE	0	0	0	2.7	0
TOTALS:	N/A	0	0	N/A	0

UNDER ZONING ORDINANCE IN EFFECT AS OF OCTOBER 1988

Planning Area 9

The majority of this area consists of the major floodplain along the Lamprey River. Only a small number of dwellings lie in this area along Newmarket Road (Route 108), several of which are on large lots. The town owns almost one-fourth of the total acreage in this area (the Doe Farm). Therefore, this area offers a little potential for any significant development in the future. See Table 6-11.

TABLE 6-11

TOWN OF DURHAM - 1988 MASTER PLAN

LAND USE PLANNING AREA 9 DATE OF CALCULATION: 22-Dec-88

TOTAL LAND ACREAGE:	397	AC.	100 % OF PLANNING AREA	2.6% OF TOWN
DEVELOPED ACREAGE:	32	AC.	8.1% OF PLANNING AREA	0.2% OF TOWN
UNDEVELOPED ACREAGE NOT DEVELOPABLE:	341	AC.	85.9% OF PLANNING AREA	2.3% OF TOWN
POTENTIALLY DEVELOPABLE ACREAGE:	24	AC.	6.0% OF PLANNING AREA	0.2% OF TOWN

RESIDENTIAL BUILDOUT CAPACITY

ZONE	LOT SIZE PER UNIT (SF)	TOTAL AREA (ACRES)	NUMBER OF UNITS	PERSONS PER UNIT	POPULATION
R	120,000	24	9	2.7	24
TOTALS:	N/A	24	9	N/A	24

UNDER ZONING ORDINANCE IN EFFECT AS OF OCTOBER 1988

TABLE 6-11
(continued)

TOWN OF DURHAM - 1988 MASTER PLAN

LAND USE PLANNNING AREA 9 DATE OF CALCULATION: 22-Dec-88

TOTAL ACREAGE: 455 AC. 2.77% OF TOWN
LAND 397 AC.
WATER 58 AC.

EXISTING LAND USE	ACRES	% PLAN AREA	% TOWN
RESIDENTIAL			
SINGLE FAM.	120.3	26.42%	0.73%
DUPLEX	1.4	0.31%	0.01%
MULTI-FAM./ GROUP QTR.	0.0	0.00%	0.00%
COMMERCIAL	0.0	0.00%	0.00%
INDUSTRIAL/RESEARCH	0.0	0.00%	0.00%
PUBLIC/QUASI PUBLIC			
TOWN	99.3	21.81%	0.60%
SCHOOL	0.0	0.00%	0.00%
STATE	0.0	0.00%	0.00%
TOTAL DEVELOPED (NOT INCL. UNH)	221	48.53%	1.32%
UNIVERSITY OWNED LAND	0.0	0.00%	0.00%

PARCEL DATA	NUMBER	% TOTAL
LESS THAN 1 ACRE	3	15.0%
1AC. TO 3 AC. LOTS	9	45.0%
3AC. TO 6 AC. LOTS	2	10.0%
LOTS WITH 6 ACRES OR MORE	6	30.0%

NO. DWELLING UNITS	D.U. NUMBER
SINGLE FAMILY	12
DUPLEX/ACC. APT.	2
TOTAL	14

INVENTORY OF AVAILABLE SUBDIVISION BUILDING SUBDIVISION	LOTS AVAIL.	WATER SOURCE	WASTE WATER
1. W. SIDE NEWMARKET RD.	2	WELL	SEPTIC
2.			
3.			
4.			
5.			
TOTAL	2		

SPECIAL CONSIDERATIONS

CONSERVATION

In Durham, the issues relating to conservation are closely interwoven with other elements contained in this Master Plan. Many of the recommendations concerning future land use in the Town of Durham are based on a strong desire to protect the natural resources that make Durham attractive to so many of the town residents.

Historically, issues relating to conservation have been addressed by the Conservation Commission. The Commission has established a list of thirteen farms that it would like to protect and maintain as undeveloped open space. In addition to the proposed protection of these thirteen farms (of which several are being actively farmed), a concept of developing natural wildlife corridors is also being utilized. This concept has also been the focus of an ad hoc committee on conservation lands which includes representatives from the Conservation Commissions of Durham, Lee, Madbury, and Newmarket, the Lamprey River Watershed Association and the UNH Natural Areas Committee. Attached as Appendix 4 is a position paper from the Committee which further details the need and purpose for the corridors. Also attached is a memorandum from the committee which specifically discusses the status of the Follett's Brook watershed.

These two concepts were viewed as being desirable, in terms of meeting future town conservation objectives. Several other proposals were suggested as being viable methods to help achieve these two objectives. Further strengthening land use regulations, especially in terms of impact on natural resources, would, in effect, help in the preservation of undeveloped land, as well as in establishing conservation corridors. Changes in land use regulations could include: increasing building setback distances along Great and Little Bay shorelines and streams; more stringent development guidelines on identified aquifers; enforcing wetland and floodplain measures; and mandating recreational set-asides for new subdivision approval. The town could also explore other methods of conservation

enhancement in addition to fee simple purchase and acquisition of development rights, including transfer of development rights, voluntary conservation easements, participation in the program administered by the State Conservation Land Trust, and encouragement of cluster housing.

PARKS AND RECREATION

Parks, recreational areas and open space are important components of a community. They contribute greatly to the physical, mental and emotional health of the population. Under the direction of the Parks and Recreation Committee, a recreation master plan is being established by reviewing current needs and by using the 1984 Recreation Master Plan as a guide.

Durham must be cognizant of both state and national recreation standards. In many areas, this community meets or exceeds these standards. Durham does however, fall short in the number of playgrounds, the acres of playgrounds, the acres of picnic areas, the acres of campgrounds and the number of campsites among others. These standards are meant as a guide for communities and each community must decide what needs and facilities should be addressed. This will be the goal of the Parks and Recreation Committee (see Appendix 5 for Park Standards).

Neighborhood parks form the basic park unit in a community. They should be located to provide easy and immediate access to the surrounding residents, typically within a walking distance of 4-6 blocks maximum (1/4-1/2 mile radius). Durham must focus on the development of this type of park to meet the need for this basic type of park unit. Other major issues are as follows:

1. There is little connection between established parks other than by auto. Pedestrian and bike trails are almost non-existent;

2. The Oyster and Lamprey Rivers do not have sufficient development and access for recreational uses;

3. Existing parklands in the town are underdeveloped and lack aesthetic planning. These parks also tend to be single purpose and do not cater to a wide range of people;

4. Existing parklands lack restrooms and water fountains in most cases;

5. Overdependence on the University and the School District for recreational facilities;

6. Overdependence on others for recreational programs; and

7. There are no set policies concerning when and where to accept parkland dedications or cash payments in lieu of parkland dedications via the subdivision process.

The policies of the Parks and Recreation Committee are as follows:

1. Provide a balanced system of parks and open spaces throughout the community;

2. Work with and develop an ongoing dialogue with Federal and State agencies, the County and the School District to avoid duplication and to build on each other's plans and programs;

3. Seek state and federal grants to develop varied recreational opportunities;

4. Whenever possible, town parks should adjoin or be planned in conjunction with schools. A further example of sharing could include the use of school lands and facilities after school hours by the public. In return, maintenance agreements could be negotiated with the Oyster River School District;

5. Continue the financial support of organizations such as the Oyster River Youth Association;

6. Citizen involvement should be encouraged at every level of park selection, design and development;

7. Parks in the community should be developed to provide an active and a passive recreational environment for families, groups, individuals and the handicapped of all ages;

8. An interconnecting system of walking and bicycle paths need to be developed to interconnect the park system and to provide pedestrian access to commercial, residential and recreational areas;

9. Emphasize the development of existing parklands in the town;

10. Work with the Town Council and the Planning Board to maximize parkland dedications and funds to develop these parks via the subdivision process;

11. Accept cash-in-lieu of land dedication as part of the subdivision process unless proposed land dedications are adjacent to an existing public park or include a site targeted for parkland acquisition;

12. There should be public access to all dedicated public parks;

13. All developments with more than twenty (20) lots should incorporate privately owned and maintained playground or tot lots;

14. Maintain a Parks and Recreation Committee for overseeing acquisition, development and maintenance of the Town Park System;

15. The Town should oversee an ongoing recreation program and hire the necessary staff to coordinate and administer programs and activities; and

16. Maintain and acquire green belts along both the Oyster and Lamprey Rivers for use as a trail system where appropriate.

The following recommendations should be implemented in the future:

1. The conversion of the ice skating rink to a multi-purpose recreational facility.

2. The development of a park foundation for accepting cash donations and land; and

3. The acquisition of desirable lands which are adjacent to existing parks or which can be developed in the future to help Durham achieve its recreational objectives.

LAND USE PROJECTIONS

Each of the four scenarios for growth described in the Population chapter and the related projections for housing, office/research, commercial and public facility needs obviously will have a major effect upon future land use requirements. Therefore, the following projections for future land use needs are presented in the same manner. The first "baseline" scenario presented indicates the land which will be needed if development continues in the same manner it has in the past, with no efforts to encourage or restrict growth in any way. Each of the subsequent projections deal specifically with the impacts of taking a particular course of action as outlined in the scenario. These projections should be added to or subtracted from the baseline scenario. Refer to Table 6-12.

The first growth scenario assumes that growth will occur in the same trend line as has been occurring without any attempts made to influence it one way or another. This has been identified as the "no-change" option. With this scenario, town residential growth would see an additional 1,000 to 1,200 dwellings developed during the next 21 years. Of this total amount, it was assumed that 90% of these units would be single-family units with an average building lot size of 1.5 acres per unit. The balance would be in multi-family housing, primarily allowing for elderly housing at an average

per unit lot area of 0.5 acres. After allowing for development on the existing 250 lots available, the 830 single-family units and 120 multi-family units would result in the development of 1,245 acres for single-family and 60 acres for multi-family respectively, for a total of 1,305 acres.

The second scenario for growth calls for the encouragement of economic expansion in the form of additional office/research/light industrial facilities, similar in character to that of Data General. The Economic Base chapter indicates that 3 or 4 new facilities could realistically be absorbed over the next twenty years, each employing 100-200 workers. In order to preserve a park atmosphere, a low worker density of 5 workers/acre has been used. This is consistent with the density that will exist at Data General once all 600 workers are at the facility. These new facilities would utilize 20-40 acres each, for a range of 60 acres to 160 acres. This scenario would also generate increased housing, estimated in the range of 100 to 400 new units to house new employees living in Durham, assuming that between one-third and one-half of the new employees would locate in the town. Applying the 1.5 acres per unit, an additional 150 to 600 acres of housing development would occur. Therefore, the total impact of implementing this approach would range between 210 acres on the low end to 760 acres on the high end.

The option of providing additional commercial/professional office space in Durham was also considered either by expanding the downtown area or creating a second commercial center. Downtown expansion would occur on Route 108 between the existing downtown area and the Route 4 interchange. Should a new commercial center be established, the most likely location would be further north of Route 108, to the north of the Route 4 interchange. In either case 4-10 acres has been considered for additional development of this type. With the proper expansion of the downtown, waterfront development could create an extra attraction for the downtown core.

The third scenario for growth is based on the development of additional student housing built by the private sector on taxable property. Allowing

for a gross land requirement of 1,500 square feet per student (including 300 SF of living space, 200 SF for parking space, and an additional 1,000 SF for common functions, interior roadways, landscaping, etc.), approximately 35 acres would be required to accommodate 1,000 students. There would be no measurable impact on the town resident housing stock.

Lastly the scenario for restricting growth has essentially a reverse impact to the last two. Rather than proposing development which would consume land this option would reduce the impact of land utilization in the first scenario by reducing the number of projected dwellings by 200 to 400 units. This would result in a reduction of 300 to 600 acres in residential development leaving approximately 700-1000 acres to be developed under this scenario.

In summary, depending on the direction taken by the committee, the approximate amount of land which would be developed through the year 2010 in Durham would range between 700 acres up to nearly 2,100 acres.

COMMUNITY OPINION ON LAND USES IN DURHAM

In addition to the specific topics which have been discussed in the previous chapters regarding the location of future housing, commercial centers and public facilities, several questions on the survey dealt specifically with some issues related to the preservation of currently undeveloped land and historic resources.

On the conceptual level, there was strong support voiced in favor of preserving natural resources which might otherwise fall victim to development pressures. The protection of wilderness areas and land along waterways received the most vigorous support, followed by water source areas, active farm land, scenic vistas from roadways, and land near settled neighborhoods. However, this question did not include any recognition of funding sources to accomplish such preservation nor the impact that such activities might have on taxes.

The support for historic preservation activities was much more restrained, with only a slightly greater number saying "yes" than "no" to the question about whether historic buildings or sites should be preserved. Three times as many were undecided as those who supported preservation of historic resources, indicating that probably more information should be given to the community before this issue is resolved.

TABLE 6-12

SUMMARY OF
LAND USE PROJECTIONS

Growth Scenario		Acreages
1	Land for 830 single-family and 120 multi-family units at 1.5 acres & 0.5 acres, respectively	1,305
2	Land for 3-4 new office/research facilities at 20-40 acres each	60 to 160
	Land to house 100 to 400 employees and their families at 1.5 acres per unit. (Range assumes between one-third and one-half of employees will locate in Durham)	150 to 600
	Land for new office/retail space	4 to 10
3	Land to house 1,000 students in high density housing development	35
4	Reduction in land use if growth controls adopted to limit building permits, which would reduce housing permits by 10-20 per year, at 1.5 acres per unit	-300 to -600
Maximum	Combination of upper limits of growth scenarios 1 through 3	2,100
Minimum	Combination of growth scenario 1 with maximum reduction of 600 acres in growth scenario 4	700

Goal: Provide for a well-balanced land use pattern to meet present and future community needs in an efficient, environmentally sound, economical and equitable manner, and to preserve and protect open space for conservation and recreation purposes.

Objectives:

1. Discourage development which will result in a scattered, inefficient land use pattern.

2. Encourage the separation of future University related housing from local resident housing.

3. Protect environmentally sensitive areas in the town, including water sheds, aquifers, coastal shorelines, floodplains and stream banks.

4. Preserve scenic areas, prime agricultural lands, wildlife areas and conservation/recreation corridors (consistent with other land use recommendations).

5. Develop both active and passive recreational facilities to serve the diverse needs of both existing population and projected future growth.

Analysis:

Current land use patterns in Durham show somewhat scattered development, loss of open space, loss of agricultural land, pressure on water resources and pressures on the remaining parcels of developable land. A mix of student housing and permanent residences have created conflict due to differing lifestyles. To make changes in

these patterns, many of the recommendations presented in the previous chapters relating specifically to land use, are brought together here to provide an overall picture of how the town should develop.

The concept of preserving farms has been endorsed by the consultant and the Master Plan Update Committee. However, preservation should be accomplished in a manner that will not place the town in the position of underwriting the cost of protecting all thirteen identified farms. Unquestionably, the cost of either fee simple acquisition or acquisition of development rights would place an undue burden on the town's tax structure. The same holds true for the wildlife corridor proposal. The concensus of the Committee was that completion of the initial proposal of the Commission at the town's expense would be prohibitive. The protection of the Follet's Brook and Durham Point corridors are already partially achieved and should be completed using all financial resources available.

Recommendations:

1. New housing development should initially be encouraged to occur on already approved lots and in the area accessed by Route 108 and north of the Oyster River, excluding lands which are to be retained for conservation and restricted from development.

2. Adopt a policy for long term housing development to be encouraged in three areas in the following priority: (1) the area accessed by Route 108 and north of the Oyster River which remains available, (2) a portion of the area south of the Oyster River and east of Route 108 accessed by Durham Point Road, and (3) the Mill Road area.

3. In concert with municipal water and sewer extensions, rezone areas over time to appropriately allow for smaller lot sizes, so that the need for new roadways and utilities will be minimized. This will also help to reduce housing costs and attract development which may otherwise be more scattered throughout the town.

4. Work to develop more off-campus student housing in an area west of the main campus. Revise permitted uses in the O/R and adjacent zones to allow for student housing development.

5. Identify, prioritize, and preserve properties which the town Conservation Commission has determined require protection by such methods as setback requirements, fee simple purchase of properties, acquisition of development rights, transfer of development rights and density bonuses.

6. Work with the University to determine existing and potential deed restrictions which may protect certain University properties for conservation purposes.

7. Encourage UNH to expand westerly and use high rise facilities where practical. A westerly expansion will help preclude incompatible land use between UNH and established residential neighborhoods.

8. Employ methods such as the extension of water and sewer, zoning changes, transfer of development rights and clustering to guide development and minimize any adverse impacts which may result.

9. Establish new shoreline protection zones that distinguish between major and minor water bodies. Adjust existing setback distances for these new zones.

10. Establish an aquifer overlay protection zone to minimize intensive development on environmentally sensitive aquifers and aquifer recharge areas.

11. Establish a watershed overlay protection zone along rivers serving as existing and potential domestic water supply.

12. Continue town participation in the New Hampshire Coastal Program administered through the Office of State Planning.

13. Obtain conservation easements to complete preservation of the Crommett Creek/Durham Point corridor for conservation and passive recreation purposes.

14. Support the recommendations of the Conservation Commission and the Ad Hoc Committee on Conservation Lands aimed at preserving both active and inactive farms and conservation corridors within the town. Consider conservation easements, fee simple purchase and transfer of development rights. Further, explore all outside funding sources, including the State Land Conservation Investment Program.

15. Develop a rating system for prioritizing undeveloped land for conservation and recreation needs.

16. Continue cooperative efforts between the town, UNH, Oyster River School District, and the Oyster River Youth Association in planning use of recreation facilities and programming for recreational needs.

17. Develop new active and passive recreational facilities in areas recommended for future residential development. Consider use of impact fees and land set-asides for new major subdivisions.

18. Make the park system in Durham accessible to all residents through various recreational facilities which address the needs of each neighborhood and the entire community.

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APPENDIX 1

RIST – FROST

POPULATION ESTIMATES

METHODOLOGY FOR
RIST-FROST POPULATION
ESTIMATES AND PROJECTIONS

Rist-Frost uses a cohort-component estimating and projection methodology, an approach which is widely utilized because of its detail and recognition of analyzing each of the three components (births, deaths, and migrational factors) that generate population change. This method has been selected from a number of methodologies because it can be applied at the local level in which vital events (the number of births and deaths) are comprehendable and symptomatic data (in this case, change in dwelling units) can be used as a measure of migrational patterns. Additionally, this type of component model is recommended for long-range projections.

This projection technique also allows for the inclusion of special institutional types of populations. This is particularly important in Durham since changes in University population can occur independently of other components.

The cohort-component model begins with the 1980 Census population data which is divided into five-year age groupings (cohorts) by sex. Calculations are performed in five-year intervals with a given cohort at the beginning of the period progressing to the next higher age level at the end of the five years. Adjustments are made for the expected number of survivors from each cohort based on mortality statistics, the expected change in migration based on the assumed change in dwelling units and average persons per dwelling unit during the five-year period, and the addition of any special populations during the five-year time frame. Therefore, in this model, University students living in Durham are recognized as a separate population segment.

To determine the new 0-4 cohort for the period, the number of females in the 15-44 child-bearing age brackets is multiplied by an average birth rate per 1,000 females, with 50% assumed for each sex. The beginning population

from the beginning of the period, births, deaths, and migration changes, are totalled for a population estimate or projection five years later.

Beyond the methodology described above, one additional step has been needed. The 1980 census population data by age does not separate University students and permanent residents which fall primarily within the 15-19 and 20-24 cohorts. To make the separation, and approximate a population distribution for an average community without a dominant special population segment, it has been assumed that there are 200 males and 200 females in each age grouping.

The result from the previous five-year interval is transferred to the beginning of the next five-year interval and the process is repeated. With the fact that each variable in the model is independent of the other, it is possible to make varying assumptions for any given time period to arrive at a range of projections, and consider varying scenarios.

Survival rates for each cohort and for each sex have been taken from the P-25 series of the U.S. Census of Population, No. 952, "Projections of Population of the United States, By Age, Sex and Race: 1983 to 2080," Page 142, Table B-2B, Five-Year Survival Rates by Age and Sex for the White Population, Middle Mortality Assumption. The survival rate for the 75 and over age group is an average from five separate age groupings shown in the table, weighted on an 80%/20% basis with 80% from the 75-85 ages which would make up the biggest part of the 75+ chart.

The birth rate is an average birth rate per 1,000 females age 15-44, most common child-bearing age groupings. The rate of 154.2 per 1,000 females has been used by the Strafford Regional Planning Commission and other New Hampshire planning agencies.

The migrational total population is derived from the change in dwelling units, as reported by the municipality, multiplied by the average number of persons per dwelling unit which is expected for the five-year period. At the local level it is assumed that population of permanent residents is

directly related to the change in occupied dwelling units, with virtually all housing units in Durham being occupied. The 2.7 average persons per dwelling unit has been taken from the "Demographic Profiles-Strafford Planning Region, N.H." prepared by the Strafford Regional Planning Commission in 1988.

The migration distribution rates used in this model have been used in other Northern New England population studies by the Strafford Regional Planning Commission and the Portland Council of Governments in Portland, Maine.

TOWN OF DURHAM - 1988 MASTER PLAN

POPULATION — POPULATION ESTIMATE - 1985 — DATE OF CALCULATION: 10-Nov-88

AGE	1980 MALE	SURVIVAL RATE	1985 SURV.	1980-1984 DEATHS	1980-1984 BIRTHS	MIGRATION DISTRIB.	80-84 MIGRA.	1985 UNH	1985 TOTAL
0-4	133	0.9979			92	0.015	5		97
5-9	169	0.9986	133			0.015	5		137
10-14	205	0.9958	169			0.015	5		174
15-19	200	0.9926	204			0.040	13	1,800	2,017
20-24	200	0.9920	199			0.050	16	1,800	2,014
25-29	296	0.9922	198			0.100	32		230
30-34	167	0.9922	294			0.100	32		326
35-39	153	0.9892	166			0.050	16		182
40-44	153	0.9821	151			0.040	13		164
45-49	135	0.9699	150			0.025	8		158
50-54	134	0.9505	131			0.015	5		136
55-59	125	0.9251	127			0.015	5		132
60-64	87	0.8852	116			0.010	3		119
65-69	51	0.8293	77			0.005	2		79
70-74	50	0.7588	42			0.005	2		44
75+	53	0.5352	66			0.000	0		66
MALE	2,311		2,223	-88	92		159	3,600	6,075

AGE	1980 FEMALE	SURVIVAL RATE	1985 SURV.	1980-1984 DEATHS	1980-1984 BIRTHS	MIGRATION DISTRIB.	80-84 MIGRA.	1985 UNH	1985 TOTAL
0-4	99	0.9983			92	0.015	5		97
5-9	158	0.9990	99			0.015	5		104
10-14	206	0.9981	158			0.015	5		163
15-19	200	0.9974	206			0.040	13	1,800	2,018
20-24	200	0.9974	199			0.050	16	1,800	2,015
25-29	234	0.9970	199			0.100	32		231
30-34	211	0.9963	233			0.100	32		265
35-39	175	0.9941	210			0.050	16		226
40-44	175	0.9900	174			0.040	13		187
45-49	139	0.9833	173			0.025	8		181
50-54	138	0.9729	137			0.015	5		141
55-59	116	0.9599	134			0.015	5		139
60-64	91	0.9393	111			0.010	3		115
65-69	66	0.9096	85			0.005	2		87
70-74	65	0.8650	60			0.005	2		62
75+	99	0.6539	121			0.000	0		121
FEMALE	2,372		2,301	-71	92		159	3,600	6,152
TOTAL	4,683			(159)	184		319	7,200	12,227

		D.U.'S x	P/DU	= MIGRATION POP.
FEMALES 15-44	1,195			
AVE. BIRTH RATE PER 1,000	154.2	118	2.7	318.6

TOWN OF DURHAM - 1988 MASTER PLAN

POPULATION — POPULATION ESTIMATE - 1988 — DATE OF CALCULATION: 10-Nov-88

AGE	1985 MALE	SURVIVAL RATE	1988 SURV.	1985-1987 DEATHS	1985-1987 BIRTHS	MIGRATION DISTRIB.	85-87 MIGRA.	1988 UNH	1988 TOTAL
0-4	97	0.9979	39		61	0.015	8		108
5-9	137	0.9986	113			0.015	8		121
10-14	174	0.9958	152			0.015	8		159
15-19	217	0.9926	190			0.040	20	1,800	2,010
20-24	214	0.9920	214			0.050	25	1,800	2,040
25-29	230	0.9922	219			0.100	51		270
30-34	326	0.9922	266			0.100	51		317
35-39	182	0.9892	266			0.050	25		291
40-44	164	0.9821	172			0.040	20		193
45-49	158	0.9699	158			0.025	13		171
50-54	136	0.9505	144			0.015	8		151
55-59	132	0.9251	126			0.015	8		134
60-64	119	0.8852	115			0.010	5		120
65-69	79	0.8293	89			0.005	3		92
70-74	44	0.7588	52			0.005	3		55
75+	66	0.5352	74			0.000	0		74
MALE	2,475		2,390	-85	61		254		6,305

AGE	1985 FEMALE	SURVIVAL RATE	1988 SURV.	1985-1987 DEATHS	1985-1987 BIRTHS	MIGRATION DISTRIB.	85-87 MIGRA.	1988 UNH	1988 TOTAL
0-4	97	0.9983	39		61	0.015	8		108
5-9	104	0.9990	99			0.015	8		107
10-14	163	0.9981	127			0.015	8		135
15-19	218	0.9974	185			0.040	20	1,800	2,005
20-24	215	0.9974	217			0.050	25	1,800	2,042
25-29	231	0.9970	221			0.100	51		272
30-34	265	0.9963	244			0.100	51		295
35-39	226	0.9941	248			0.050	25		274
40-44	187	0.9900	209			0.040	20		229
45-49	181	0.9833	182			0.025	13		195
50-54	141	0.9729	162			0.015	8		170
55-59	139	0.9599	136			0.015	8		144
60-64	115	0.9393	123			0.010	5		128
65-69	87	0.9096	96			0.005	3		99
70-74	62	0.8650	69			0.005	3		71
75+	121	0.6539	136			0.000	0		136
FEMALE	2,552		2,493	-59	61		254		6,408
TOTAL	5,027			(144)	122		508	0	12,713

		D.U.'S x	P/DU	= MIGRATION POP.
FEMALES 15-44	1,324			
AVE. BIRTH RATE PER 1,000	154.2	188	2.7	507.6

APPENDIX 2

RIST – FROST

POPULATION PROJECTIONS

ASSUMPTIONS FOR
RIST-FROST PROJECTIONS

All population projections are based on underlying assumptions. As a beginning point for analysis, Rist-Frost has considered three scenarios which focus on migrational change. In all three scenarios, natural components are assumed to remain unchanged since these factors are slow to change, and they also represent a small portion of the overall change.

The University of New Hampshire Board of Trustees has, for a number of years, held a cap on its enrollments. These projections assume that cap will be continued. The University has been contacted regarding more information about their enrollment projections. Should any changes in enrollment policies be under consideration by the University, they will be factored into the projections at that time.

With the above factors held constant, the only component remaining is the migrational factor which, in this model, is measured by changes in overall dwelling unit totals. This figure is then multiplied by a person per dwelling unit (P/DU) average. While the P/DU of 2.7 is also subject to change, recent trends indicate that it has changed very little and may not change significantly in the future. Therefore, that figure, too, has been held constant.

The following scenarios have been considered for increases in dwelling units:

Projection RFA #1

This projection assumes that dwelling unit increases will continue at an average of 50 per year for the next two five-year periods. Then, as housing prices stay high and possibly continue to increase, activity will slow down to a level of 40 additional dwelling units per year added to the housing stock for the three remaining five-year intervals.

Projection RFA 2

This scenario assumes that dwelling unit increases will continue at an average rate of 50 per year for the entire duration of the population projection period.

Projection RFA 3

This scenario assumes that dwelling unit increases will be at a rate of 60 per year for the entire duration of the population projection period. This is approximately the same rate which the Strafford Regional Planning Commission used in arriving at their 1995 projections. The resulting rate of growth closely approximates that projected by the Office of State Planning for the period between the years 2000 and 2010, as can be seen in the accompanying line graph.

The RFA 1 projection model is shown on the following pages.

TOWN OF DURHAM - 1988 MASTER PLAN

POPULATION PROJECTIONS FOR 1985-1990 DATE OF CALCULATION: 05-Nov-88

AGE	1985 MALE	SURVIVAL RATE	1990 SURV.	1985-1989 DEATHS	1985-1989 BIRTHS	MIGRATION DISTRIB.	85-89 MIGRA.	1990 UNH	1990 TOTAL
0-4	97	0.9979			104	0.015	10		114
5-9	137	0.9986	97			0.015	10		107
10-14	174	0.9958	137			0.015	10		147
15-19	217	0.9926	173			0.040	27	1,800	2,000
20-24	214	0.9920	215			0.050	34	1,800	2,049
25-29	230	0.9922	213			0.100	68		280
30-34	326	0.9922	228			0.100	68		296
35-39	182	0.9892	323			0.050	34		357
40-44	164	0.9821	180			0.040	27		207
45-49	158	0.9699	161			0.025	17		178
50-54	136	0.9505	153			0.015	10		164
55-59	132	0.9251	129			0.015	10		139
60-64	119	0.8852	122			0.010	7		129
65-69	79	0.8293	105			0.005	3		109
70-74	44	0.7588	65			0.005	3		69
75+	66	0.5352	69			0.000	0		69
MALE	2,475		2,371	-104	104		338	3,600	6,412

AGE	1985 FEMALE	SURVIVAL RATE	1990 SURV.	1985-1989 DEATHS	1985-1989 BIRTHS	MIGRATION DISTRIB.	85-89 MIGRA.	1990 UNH	1990 TOTAL
0-4	97	0.9983			104	0.015	10		114
5-9	104	0.9990	97			0.015	10		107
10-14	163	0.9981	104			0.015	10		114
15-19	218	0.9974	162			0.040	27	1,800	1,989
20-24	215	0.9974	218			0.050	34	1,800	2,052
25-29	231	0.9970	215			0.100	68		282
30-34	265	0.9963	231			0.100	68		298
35-39	226	0.9941	264			0.050	34		298
40-44	187	0.9900	225			0.040	27		252
45-49	181	0.9833	185			0.025	17		202
50-54	141	0.9729	178			0.015	10		188
55-59	139	0.9599	138			0.015	10		148
60-64	115	0.9393	133			0.010	7		140
65-69	87	0.9096	108			0.005	3		111
70-74	62	0.8650	79			0.005	3		83
75+	121	0.6539	132			0.000	0		132
FEMALE	2,552		2,468	-84	104		338	3,600	6,509
TOTAL	5,027			(188)	207		675	7,200	12,921

		D.U.'S x	P/DU	= MIGRATION POP.
FEMALES 15-44	1,343			
AVE. BIRTH RATE PER 1,000	154.2	250	2.7	675

TOWN OF DURHAM - 1988 MASTER PLAN

POPULATION PROJECTION FOR 1990-1995 DATE OF CALCULATION: 10-Nov-88

AGE	1990 MALE	SURVIVAL RATE	1995 SURV.	1990-1994 DEATHS	1990-1994 BIRTHS	MIGRATION DISTRIB.	90-94 MIGRA.	1995 UNH	1995 TOTAL
0-4	114	0.9979			121	0.015	10		131
5-9	107	0.9986	113			0.015	10		124
10-14	147	0.9958	107			0.015	10		117
15-19	200	0.9926	147			0.040	27	1,800	1,974
20-24	249	0.9920	198			0.050	34	1,800	2,032
25-29	280	0.9922	247			0.100	68		315
30-34	296	0.9922	278			0.100	68		346
35-39	357	0.9892	294			0.050	34		327
40-44	207	0.9821	353			0.040	27		380
45-49	178	0.9699	203			0.025	17		220
50-54	164	0.9505	173			0.015	10		183
55-59	139	0.9251	155			0.015	10		166
60-64	129	0.8852	129			0.010	7		135
65-69	109	0.8293	114			0.005	3		118
70-74	69	0.7588	90			0.005	3		93
75+	69	0.5352	89			0.000	0		89
MALE	2,812		2,690	-122	121		338	3,600	6,748

AGE	1990 FEMALE	SURVIVAL RATE	1995 SURV.	1990-1994 DEATHS	1990-1994 BIRTHS	MIGRATION DISTRIB.	90-94 MIGRA.	1995 UNH	1995 TOTAL
0-4	114	0.9983			121	0.015	10		131
5-9	107	0.9990	113			0.015	10		124
10-14	114	0.9981	107			0.015	10		117
15-19	189	0.9974	113			0.040	27	1,800	1,940
20-24	252	0.9974	189			0.050	34	1,800	2,023
25-29	282	0.9970	251			0.100	68		318
30-34	298	0.9963	282			0.100	68		349
35-39	298	0.9941	297			0.050	34		331
40-44	252	0.9900	296			0.040	27		323
45-49	202	0.9833	249			0.025	17		266
50-54	188	0.9729	198			0.015	10		208
55-59	148	0.9599	183			0.015	10		193
60-64	140	0.9393	142			0.010	7		149
65-69	111	0.9096	132			0.005	3		135
70-74	83	0.8650	101			0.005	3		104
75+	132	0.6539	158			0.000	0		158
FEMALE	2,909		2,811	-98	121		338	3,600	6,870
TOTAL	5,721			(220)	242		675	7,200	13,618

		D.U.'S x	P/DU	= MIGRATION POP.
FEMALES 15-44	1,571			
AVE. BIRTH RATE PER 1,000	154.2	250	2.7	675

TOWN OF DURHAM - 1988 MASTER PLAN

POPULATION PROJECTION FOR 1995-2000 DATE OF CALCULATION: 05-Nov-88

AGE	1995 MALE	SURVIVAL RATE	2000 SURV.	1995-1999 DEATHS	1995-1999 BIRTHS	MIGRATION DISTRIB.	95-99 MIGRA.	2000 UNH	2000 TOTAL
0-4	131	0.9979			130	0.015	8		138
5-9	124	0.9986	131			0.015	8		139
10-14	117	0.9958	123			0.015	8		131
15-19	174	0.9926	116			0.040	22	1,800	1,938
20-24	232	0.9920	173			0.050	27	1,800	2,000
25-29	315	0.9922	230			0.100	54		284
30-34	346	0.9922	312			0.100	54		366
35-39	327	0.9892	343			0.050	27		370
40-44	380	0.9821	324			0.040	22		345
45-49	220	0.9699	373			0.025	14		387
50-54	183	0.9505	213			0.015	8		221
55-59	166	0.9251	174			0.015	8		182
60-64	135	0.8852	153			0.010	5		159
65-69	118	0.8293	120			0.005	3		123
70-74	93	0.7588	97			0.005	3		100
75+	89	0.5352	118			0.000	0		118
MALE	3,148		3,001	-147	130		270	3,600	7,001

AGE	1995 FEMALE	SURVIVAL RATE	2000 SURV.	1995-1999 DEATHS	1995-1999 BIRTHS	MIGRATION DISTRIB.	95-99 MIGRA.	2000 UNH	2000 TOTAL
0-4	131	0.9983			130	0.015	8		138
5-9	124	0.9990	131			0.015	8		139
10-14	117	0.9981	123			0.015	8		132
15-19	140	0.9974	117			0.040	22	1,800	1,938
20-24	223	0.9974	140			0.050	27	1,800	1,967
25-29	318	0.9970	222			0.100	54		276
30-34	349	0.9963	317			0.100	54		371
35-39	331	0.9941	348			0.050	27		375
40-44	323	0.9900	329			0.040	22		350
45-49	266	0.9833	320			0.025	14		333
50-54	208	0.9729	262			0.015	8		270
55-59	193	0.9599	203			0.015	8		211
60-64	149	0.9393	186			0.010	5		191
65-69	135	0.9096	140			0.005	3		142
70-74	104	0.8650	123			0.005	3		126
75+	158	0.6539	194			0.000	0		194
FEMALE	3,270		3,153	-117	130		270	3,600	7,153
TOTAL	6,418			(264)	260		540	7,200	14,154

		D.U.'S x	P/DU	= MIGRATION POP.
FEMALES 15-44	1,684			
AVE. BIRTH RATE PER 1,000	154.2	200	2.7	540

TOWN OF DURHAM - 1988 MASTER PLAN

POPULATION PROJECTION FOR 2000-2005 DATE OF CALCULATION: 05-Nov-88

AGE	2000 MALE	SURVIVAL RATE	2005 SURV.	2000-2004 DEATHS	2000-2004 BIRTHS	MIGRATION DISTRIB.	00-05 MIGRA.	2005 UNH	2005 TOTAL
0-4	138	0.9979			129	0.015	8		137
5-9	139	0.9986	138			0.015	8		146
10-14	131	0.9958	139			0.015	8		147
15-19	138	0.9926	131			0.040	22	1,800	1,953
20-24	200	0.9920	137			0.050	27	1,800	1,964
25-29	284	0.9922	198			0.100	54		252
30-34	366	0.9922	282			0.100	54		336
35-39	370	0.9892	363			0.050	27		390
40-44	345	0.9821	366			0.040	22		387
45-49	387	0.9699	339			0.025	14		353
50-54	221	0.9505	375			0.015	8		383
55-59	182	0.9251	210			0.015	8		218
60-64	159	0.8852	168			0.010	5		174
65-69	123	0.8293	140			0.005	3		143
70-74	100	0.7588	102			0.005	3		104
75+	118	0.5352	139			0.000	0		139
MALE	3,401		3,228	-173	129		270	3,600	7,227

AGE	2000 FEMALE	SURVIVAL RATE	2005 SURV.	2000-2004 DEATHS	2000-2004 BIRTHS	MIGRATION DISTRIB.	00-05 MIGRA.	2005 UNH	2005 TOTAL
0-4	138	0.9983			129	0.015	8		137
5-9	139	0.9990	138			0.015	8		146
10-14	132	0.9981	139			0.015	8		147
15-19	138	0.9974	131			0.040	22	1,800	1,953
20-24	167	0.9974	138			0.050	27	1,800	1,965
25-29	276	0.9970	167			0.100	54		221
30-34	371	0.9963	275			0.100	54		329
35-39	375	0.9941	370			0.050	27		397
40-44	350	0.9900	373			0.040	22		394
45-49	333	0.9833	347			0.025	14		360
50-54	270	0.9729	328			0.015	8		336
55-59	211	0.9599	263			0.015	8		271
60-64	191	0.9393	202			0.010	5		208
65-69	142	0.9096	179			0.005	3		182
70-74	126	0.8650	129			0.005	3		132
75+	194	0.6539	235			0.000	0		235
FEMALE	3,553		3,414	-139	129		270	3,600	7,413
TOTAL	6,954			(313)	259		540	7,200	14,641

		D.U.'S x	P/DU	= MIGRATION POP.
FEMALES 15-44	1,678			
AVE. BIRTH RATE PER 1,000	154.2	200	2.7	540

TOWN OF DURHAM - 1988 MASTER PLAN

POPULATION PROJECTION FOR 2005-2010 DATE OF CALCULATION: 05-Nov-88

AGE	2005 MALE	SURVIVAL RATE	2010 SURV.	2005-2009 DEATHS	2005-2009 BIRTHS	MIGRATION DISTRIB.	05-10 MIGRA.	2010 UNH	2010 TOTAL
0-4	137	0.9979			128	0.015	8		136
5-9	146	0.9986	137			0.015	8		145
10-14	147	0.9958	146			0.015	8		154
15-19	153	0.9926	146			0.040	22	1,800	1,968
20-24	164	0.9920	151			0.050	27	1,800	1,978
25-29	252	0.9922	163			0.100	54		217
30-34	336	0.9922	250			0.100	54		304
35-39	390	0.9892	333			0.050	27		360
40-44	387	0.9821	386			0.040	22		408
45-49	353	0.9699	381			0.025	14		394
50-54	383	0.9505	342			0.015	8		350
55-59	218	0.9251	364			0.015	8		372
60-64	174	0.8852	202			0.010	5		208
65-69	143	0.8293	154			0.005	3		156
70-74	104	0.7588	119			0.005	3		121
75+	139	0.5352	154			0.000	0		154
MALE	3,627		3,428	-200	128		270	3,600	7,425

AGE	2005 FEMALE	SURVIVAL RATE	2010 SURV.	2005-2009 DEATHS	2005-2009 BIRTHS	MIGRATION DISTRIB.	05-10 MIGRA.	2010 UNH	2010 TOTAL
0-4	137	0.9983			128	0.015	8		136
5-9	146	0.9990	137			0.015	8		145
10-14	147	0.9981	146			0.015	8		154
15-19	153	0.9974	147			0.040	22	1,800	1,968
20-24	165	0.9974	153			0.050	27	1,800	1,980
25-29	221	0.9970	164			0.100	54		218
30-34	329	0.9963	220			0.100	54		274
35-39	397	0.9941	328			0.050	27		355
40-44	394	0.9900	395			0.040	22		416
45-49	360	0.9833	390			0.025	14		404
50-54	336	0.9729	354			0.015	8		363
55-59	271	0.9599	327			0.015	8		335
60-64	208	0.9393	260			0.010	5		265
65-69	182	0.9096	195			0.005	3		198
70-74	132	0.8650	166			0.005	3		168
75+	235	0.6539	268			0.000	0		268
FEMALE	3,813		3,649	-164	128		270	3,600	7,647
TOTAL	7,441			(363)	256		540	7,200	15,073

		D.U.'S x	P/DU	= MIGRATION POP.
FEMALES 15-44	1,659			
AVE. BIRTH RATE PER 1,000	154.2	200	2.7	540

APPENDIX 3

DURHAM OPINION SURVEY

APPENDIX 3

DURHAM OPINION SURVEY

Durham - General

1. What are the three main reasons you live in Durham? Please rank them by putting a 1 for the most important reason, 2 for the second most important and 3 for third most important.

1/7	2/0	3/0	_____ born here
35	15	3	_____ spouse, family or friends here
44	25	20	_____ near University
41	28	13	_____ close to job
21	28	35	_____ rural character
11	16	17	_____ good place for children
31	20	12	_____ quality of schools
4	11	10	_____ quality of housing
5	21	27	_____ type of people who live here
6	9	23	_____ physical appearance of the town
18	4	9	_____ other (specify) _____

2. How many years have you lived continuously in Durham? (CHECK ONE)

29/54	0-2 years 11-20 years	29/67	3-5 years over 20 years	21	6-10 years

3. The attached map of Durham is divided into eight districts. Write here the number corresponding to the district you live in. _____

10/11	1 5	59/9	2 6	10/20	3 7	65/16	4 8

Town Services

4. Which of the following do you feel are important? (You may identify specific problem areas in the space provided at the end of the list. 1 = Most Important; 2 = Desirable; 3 = Not Needed; 4 = No Opinion. Place a check under each number for the appropriate category.)

	1	2	3	4
Improving condition of roads (specify road below)	27	53	76	34
Building recreational facilities including playgrounds	17	64	90	21
Improving key intersections	81	21	33	8
Improving the pattern of downtown traffic flow	53	59	69	12
Providing more downtown parking	56	65	52	16
Establishing a separate public library	11	21	133	18
Other (describe) _____				

zero omitt

69 answered other.

5. What do you think would happen to your taxes if the Town completed all the items you favored above?

86 will increase
29 stay the same
6 decrease slightly
6 no opinion
11 not applicable

6. Which of the following do you feel Durham needs in the next 5-10 years and how much are they needed? (1 = Urgently Needed; 2 = Somewhat Needed; 3 = Unnecessary; 4 = No Opinion. Place a check under the appropriate number for each category.)

	1	2	3	4
Additional fire station	10	33	95	42
Community center for civic activities	9	41	115	23
New dump location or recycling center	70	44	47	29
Extension of water and sewer lines	26	49	68	43
New town offices	6	20	136	25
New police station	9	30	116	30
New public works facility	4	21	107	53
New water treatment facilities	30	44	55	57
Improve downtown appearance	18	31	109	14

Other (please specify): 25

7. What do you think would happen to your taxes if the Town completed the items you marked needed above?

95 will increase
68 stay the same
9 decrease slightly
14 no opinion
10 not applicable

8. Check up to three (3) intersections which you consider need upgrading.

52 Durham Point Road/Newmarket Road
30 Pettee Brook Lane/Main Street (Tin Palace)
48 Main Street/Madbury Road (Post Office corner)
54 Mill Road/Main Street (Burger King)
64 Exit from Shopping Plaza (Martin's)
122 Main Street/Newmarket Road (Courthouse)
6 Bennett Road/Route 108
10 Bennett Road/Packers Falls Road
10 Wiswall Road/Packers Falls Road
22 Other (specify) _____

9. Is there any place in Durham where road condition is a problem for you? (Surface, bad curves, etc.) Describe location and problem:

93

Local Business

10. Which of the following goods and services do you usually shop for in Durham? (Place checkmark to the left of each item.)

94	food	119	drugs
1	clothes	57	restaurant
168	hardware	15	gifts
114	clothes cleaning	69	books/stationery
141	gasoline		

11. If new stores came to Durham, where should they be located? (Check as many as apply.)

97	Downtown
22	Off 155 (Mast Road toward Lee)
20	Off Route 4 towards Portsmouth
27	Off 108 towards Newmarket
55	Off 108 towards Dover
23	Off 4A (Old Concord Road)
52	Do not want any new businesses
9	Other (Please specify locations: _____)

12. Do any of your household members use any of the following services?

28	COAST bus	119	Airport bus/limo	6	taxis
10	Carpool	1	health service vans		
168	none of above				

Housing

13. What is the need for the following type of housing in Durham?

Housing Type	Great	Some	None	No Opinion
Elderly/"Lifecare"	42	67	30	43
Low-moderate income	62	52	45	21
Single-family	22	21	58	23
Student apartments	45	47	54	32
Family-size apartments	21	70	55	30
Condos/townhouses	4	43	96	31
Mobile homes	2	21	134	21

0 omitted

14. Have you had trouble finding affordable housing in Durham?

46 Yes 130 No

15. Do you own or rent your residence? (Check one)

191 Own 18 Rent 10 Neither

16. Where in Durham should the following types of new housing be located? (Using same attached map, enter number code for location of each housing type. Check one number or more for each type of housing. Note that multi-family houses includes townhouses and condos.)

SKIP

	Single Family Houses	Duplexes for Two Families	Multi-Family Houses	Dormi-tories	Mobile Homes
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					

Industry and Employment

17. How many adults in your household are:

1-30, 2-19, 3-7, 4-1, 5-1, 9-1

47 6 1 working part-time 69 55 7 working full-time
student 6 looking for work retired

18. Do you feel that Durham should allow additional growth in the following business-related areas?

	Yes	No	No Opinion
Private educational institutions (vocational, etc.)	98	64	14
Office center	122	38	18
Research and development businesses	139	25	15
Large retail stores	25	143	6
Small shopping centers	65	91	12
Light industry, warehousing	78	72	9
Manufacturing	36	119	9
Other 27			

Check here if you feel no additional businesses should be encouraged 33

19. Do you feel that Durham should establish an Economic Development Authority to attract new businesses?
69 Yes 95 No 33 No Opinion

Parks and Recreation

20. What recreational activities have members of your household pursued in Durham in the past 12 months?

173 walking, jogging
92 birdwatching
93 picnicking/relaxing
27 soccer
53 tennis
93 swimming
52 hockey, skating
21 baseball
30 other (please specify) ____________
50 fresh water fishing/boating
68 salt water fishing/boating
78 cross-country skiing
105 hiking in woods
11 hunting
73 using playgrounds

21. Does Durham need additional parks or recreational facilities?
63 Yes 102 No 29 No Opinion

Schools

22. Please indicate the number of persons in your household currently attending any of the following by placing a number under each grade cateogry.

	K-5	6-9	9-12	Univ/ College
Oyster River Schools	___	___	___	
Private schools (including colleges)	___	___	___	___
Vocational schools			___	___
UNH, Durham				___
Other (specify) _____				

SKIP

23. Does Durham need additional schools?
10 Yes 91 No 67 No Opinion
If YES, where should they be located? (Town and location, if known)
22 Yes with location

Location and extent of growth

24. How do you feel about residential growth in Durham?

7 favor rapid growth 116 favor slow growth
70 favor little or no growth 3 no opinion

25. Should Durham expand water and sewer lines to new areas?

75 Yes 67 No 53 No Opinion

26. Should increased density of housing be permitted in areas served by sewer and water?

57 Yes 106 No 30 No Opinion

27. The Trust for New Hampshire Lands and other sources provide money for a town to use in protecting open land, if the town shares in the cost. Would you support Durham's protecting land under such programs?

167 Yes 11 No 16 No Opinion

28. Do you feel that Durham should encourage the preservation of any of the following? (check all that apply) (see next page)

172 wilderness areas for wildlife, hiking and skiing
123 open space providing scenic views from road
170 land along rivers and Great Bay
64 land near settled neighborhoods
137 active farm land
159 water source areas
4 none
(Any specific areas where land should be protected? List them) 52

29. Are there any historic buildings or sites that you think should be preserved in Durham?

30 Yes 22 No 90 No Opinion.
If YES, specify 47 Yes with suggestions

30. When open land paying reduced Current Use taxes is developed, the developer must pay a penalty. How should the Town use this penalty money?

148 should be used to preserve other open space
40 should go into the General Fund
4 both

Personal

31. Please check the one category which best describes your household:

16 single person living alone
12 single parent with children in residence
71 married couple with children in residence
82 married couple, no children in residence
3 related individuals (other than above)
10 unrelated individuals
5 both related & unrelated individuals

32. Please indicate the number of persons in each age category residing in your household.

1	2	3	4	6	19	
18	6					Under 5 years
15	4					5-9 years
17	6					10-14 years
28	9	1			1	15-19 years
25	6	2	1		1	20-24 years
40	45	2				25-44 years
41	54					45-64 years
22	19					65-74 years
12	10					75 and over

(Circle the age category above that includes respondent)

	1	2	3
15-19	4		1
20-24	5		13
25-44	6		63
45-54	7		77
65-74	8		27
75+	9		14

Totals for 1 - 200

#22/

100	no household member in school	
21 households had	24 members in	K - 5
15	16	6 - 9
24	28	HS
2	2	Private K - 5
2	2	" 6 - 9
3	4	" HS
19	25	" College
1	1	Vocational HS
4	5	Vocational College
38	82	UNH (includes 29 from 1 household / fraternity)
9	9	Other

#16/

(1) (don't want)	Single family	Duplexes	Multi-family	Dorms	Mobile Homes
0	7	9	14	5	(34)
1	55	(49)	(45)	57	18
2	57	(48)	(36)	32	8
3	58	36	28	5	13
4	46	29	18	14	0
5	(67)	46	26	5	(20)
6	(70)	38	26	5	(19)
7	54	24	16	1	6
8	23	22	27	32	1
UNH				8	
No answers 73					

APPENDIX 4

REPORT OF AD HOC COMMITTEE ON CONSERVATION LANDS

A REGIONAL PERSPECTIVE ON CONSERVATION LANDS IN DURHAM, LEE, MADBURY AND NEWMARKET

REPORT OF AN AD HOC COMMITTEE
JANUARY, 1988

INTRODUCTION

Background

In 1986, the Natural Areas Committee of the University of New Hampshire became concerned about the future of the UNH Natural Areas in Durham. **The committee observed that these areas may become "habitat islands," cut off from each other by increasing land development.**

It was apparent that this was a problem which ought to be discussed among all those owning or managing conservation lands in the area. **Thus, an informal ad hoc committee on conservation lands was formed.** It includes representatives from the Conservation Commissions of Durham, Lee, Madbury and Newmarket, the Lamprey River Watershed Association and the UNH Natural Areas Committee.

The objective of the committee is to develop a regional approach to identifying and conserving lands which provide important connections between existing protected tracts.

This report summarizes the committee's findings.

The Problem

Southeastern New Hampshire has experienced dramatic increases in land development and population growth in the past few years. The combined population of Durham, Lee, Madbury and Newmarket increased 28% (from 12,816 to 16,343) in the five years between 1981 and 1986. The amount of developed land in Strafford County (which includes three of the towns) increased by 40% between 1974 and 1982. The total acreage in the four-town area is 45,410 acres.

Intensifying land development has had two effects:

- First, the number and size of undeveloped areas are declining.

- Second, lands which have been protected as conservation areas are being surrounded by development. This decreases their effective size: wildlife can no longer move easily from one natural area to another, and some must move away from the area's boundaries into the more protected center.

It is well known that some species of wildlife require fairly large areas of habitat to survive. (Home ranges for pine marten and white tail deer are roughly 640 acres). Plant species also require contiguous areas to proliferate. Plants are valuable in their own right and also because they are the most crucial element in wildlife habitat.

Small, isolated habitats have less diversity of plant and animal species than those that are large and contiguous. Each species has its own mix of habitat needs for water, food, nesting or resting, breeding and cover. A species may require low wetland areas for one use and upland areas for another. If both types of areas are not accessible because land is developed between them, the species can no longer flourish. And other species dependent upon it will also disappear.

Losing our open land has a profound negative effect on us all. The U.S. Departments of Interior and Commerce have found that 17% of all Americans take special trips to observe, photograph or feed wildlife. About 47% of all Americans are actively interested in the wildlife around their homes. For those who have committed their lives and livelihoods to living in a rural environment, the ability to fish, hunt, photograph or just catch a glimpse of wildlife and to ski, walk and drive by scenic natural areas is an integral part of their reason for living here.

From a more utilitarian point of view, **our open lands -- particularly wetlands -- protect the water supply, reduce flooding and clean up pollution caused by development.** (Plants clean both water and air.) They provide natural buffers against noise and reduce human crowding. They create visual relief from developed lands, especially in areas of strip and "cookie cutter" development.

The economic and medicinal value of many plants and animals are just being discovered. Yet, at the same time, the earth's flora and fauna species are being destroyed. Scientists estimate that by the year 2000, as much as 15% of the earth's present plant and animal species may be lost, mainly because of development.

The University has long recognized the importance of maintaining open land for education and research. On a smaller scale, local schools and youth groups also use such areas for educating and exposing young people to the natural world.

In summary, protection of quality undeveloped areas from ever-increasing development should concern us all. Large, contiguous tracts of conservation land are necessary to protect our current diversity of plant and animal species from the impact of habitat isolation and fragmentation. It is thus exceedingly important to consider conservation lands not only as individual parcels, but also in relation to other protected lands.

CONSERVATION LANDS IN THE FOUR-TOWN AREA

Independently, the towns of Durham, Lee, Madbury and Newmarket have all made efforts to secure conservation lands. (See map.)

Durham owns and manages over 200 acres of conservation lands including the Doe Farm, Langmaid Farm, Horsehide Creek, Colby Marsh and several smaller areas. Also in Durham are the Adams Point Wildlife Area on Great Bay and part of the Great Bay Estuarine Research Reserve.

Lee owns about 150 acres of conservation land, with 163 more in conservation easement to either the Town or the Forest Society. The largest parcels are the 80-acre Town Forest, 21 acres on Wheelwright Pond and two parcels on Steppingstone Road which total 27 acres. The Town is seeking conservation easements on land along the Lamprey River, the Oyster River, and areas lying between the extensive wetlands west of Route 125 and the Lee Bog near the Town Hall.

Madbury has recently purchased its first conservation area, a 38-acre portion of Hicks Hill adjacent to the U.N.H. Kingman Farm. The Town also has an interest in protecting its major natural features, the Bellamy River and associated Portsmouth Reservoir.

Newmarket has acquired no conservation land to date, but has been active in obtaining funds to do so. (However, developers have provided some significant open land -- at Moody Point, for example.) The Conservation Commission considers the Folletts Brook area to be an important candidate for protection, since it is part of the town's water supply and a valuable wildlife area. The Lamprey River is also important. Newmarket abuts Great Bay and includes parts of the Estuarine Research Reserve that have a high priority for protection, such as Lubberland Creek.

The University of New Hampshire owns about 3,000 acres of open land in the four-town area. Most of this is located in Durham (Foss Farm, Thompson Farm, College Woods, the Horticultural Farm). There are also major holdings in Lee (Burley-Demeritt and Dudley farms) and Madbury (Kingman Farm).

When each of the four towns' conservation lands and the University's open land are viewed together from a regional perspective, it becomes evident that there are potential connections between them that often cross town

boundaries. The effective size of existing undeveloped areas can be extended and maximized if towns plan together to acquire conservation land or easements which form natural corridors.

These potential natural corridors are described below.

(1) Durham-Madbury corridor. A nearly continuous band of open land extends from the Doe Farm in Durham, through the University-owned Highland House and Foss Farms and north through College Woods and the Horticultural Farm, almost to the Madbury line. Nearby in Madbury are Hicks Hill and the adjacent U.N.H. Kingman Farm with its extensive woodlands. University lands are essential to the continuity of these areas; however the degree to which these lands are protected is not certain.

(2) Lamprey River. Lee, Newmarket and Durham have identified the Lamprey River and its tributaries, the Little and North Rivers, as a potential conservation corridor. The shoreline of this river is largely undeveloped and several key parcels are already publicly owned (Doe Farm, Packers Falls) while one large section of shoreline is owned by UNH (Burley-Demeritt farm). Newmarket, Lee and Durham have Shoreline Protection Zones.

(3) Folletts Brook area. Including portions of Lee, Newmarket and Durham, the Folletts Brook area is comprised of extensive forest and wetland and has value as a wildlife habitat. While only a portion of the area is publicly owned (Newmarket water supply), there appears to be real potential for protection through easements or cluster development.

(4) Durham Point. The Durham Conservation Commission has identified a potential corridor of conservation lands between the town dump and Adams Point. This corridor includes town lands, state land, and areas protected by conservation easement.

(5) Central Lee. The Lee Conservation Commission has identified a potential conservation corridor from the extensive wetlands west of Route 125 through the Town Forest to the Lee Bog. Portions of this area are already protected.

(6) Wheelwright/Oyster River. The Town of Lee owns a parcel on Wheelwright Pond, and easements are being sought to augment the existing Shoreline Protection Zone along the Pond and the Oyster River.

RECOMMENDATIONS

The Conservation Commissions of Durham, Lee, Madbury and Newmarket, with representation from the University of New Hampshire, the Great Bay Trust and the Lamprey River Watershed Association, should establish a committee to assist the Towns in:

a. **identifying key parcels** for protection and developing a regional open space map;

b. **securing funding** from governmental and private sources;

c. **developing and implementing a method of approaching landowners** to seek their cooperation in protecting land (perhaps with the assistance of the Forest Society);

d. **supplying information to town boards** on the potential corridors and means for protecting them;

e. **preparing voter education materials** to support requests for money to acquire lands and for zoning regulations to provide buffers around conservation lands;

f. informing UNH of regional conservation concerns and **seeking its cooperation in protecting key lands**; and

g. **cooperating with other conservation organizations** such as the Trust for N.H. Lands, Audubon Society, Nature Conservancy, Society for the Protection of N.H.Forests, Fish and Game, Soil Conservation Service of Rockingham and Strafford Counties, etc.

STRATEGIES FOR PROTECTING LANDS

Land can be protected by either acquiring the property itself, or by leaving the ownership of the land with its property owner and acquiring only the development rights or a conservation easement on the parcel.

Land acquisition by purchase

The most secure protection of the land comes from ownership. Purchase of the land by the town's conservation commission, one of several state agencies, or a public or private land trust can assure preservation. Outright purchase at fair market value is sometimes possible if local funding is made available, with or without matching funds from federal or state agencies.

Communities can form a joint project for a given corridor (eg., the Lamprey River corridor). Then a donation of land in one part of the corridor can be treated as the local match for government funds needed to purchase land in another part of the corridor (even if the parcel lies in another town).

Land acquisition by gift

Some landowners may realize significant income tax advantages by donating or selling property at a reduced price. For example, one way of reducing the capital gains tax from the sale of a piece of property is to give a portion of it to a conservation group. This is particularly signficant under the new tax laws, for now capital gains must be taken in one year instead of being spread over a number of years.

The bequest of land in an owner's will can often reduce or eliminate estate taxes. Bequests also allow the owner to retain land during his lifetime in case of an emergency need to liquidate it.

Some landowners may also be enthusiastic enough about a well-planned and -presented conservation effort to contribute land without tax gains as a motivation.

Whenever land is donated or sold to a conservation group or municipality, the landowner must decide whether, and under what restrictions, he wishes the recipient to be able to sell the property in the future. Unless this has been spelled out in the agreement, some conservation groups sell donated parcels which they do not consider important to their goals in

order to finance the purchase of more desirable land. The same could happen to land obtained by a town. The landowner may be willing to have his land used this way, but if he feels strongly about preserving it in an undeveloped state, provisions must be made for that.

Acquisition of easements or development rights

Land can also be protected by the landowner's either selling or donating easements or development rights. While providing less tax advantage, this method allows owners to retain the land and to use it for agriculture or forestry. It is much more binding than the sale of land with restrictive covenants. (There have been many instances when the purchaser was subsequently able to obtain release from covenants.)

Protection through zoning

Some land can be protected by zoning if it can be shown that the motivation is to protect the health, safety and welfare of the community at large. Wetland and Shoreline Zones are examples of this. **Cluster zoning, where part of the development is set aside as open space, may not always result in the appropriate land being conserved.** It is up to the conservation commissions and planning boards to assure that the open space planned is meaningful.

In approaching the problem of acquiring land locally, there is no substitute for approaching landowners directly. Each has his own interests, constraints and balance of priorities which affect the type of arrangement most appropriate to his situation.

The **Society for the Protection of N.H. Forests** and the **Trust for N.H. Lands** (new office staffed by Roberta Jordan on Center Street in Exeter, Tel. 778-0504) can give advice on various options. The **N.H. Association of Conservation Commissions** (224-7867) keeps abreast of various programs and the money currently available through them.

TO: Durham Technical Advisory Committee and
Rist-Frost Associates

FROM: Ad Hoc Committee on Conservation Lands

RE: Protection of the Follett's Brook Area

The Ad Hoc Committee is comprised of representatives of the Conservation Commissions of Durham, Lee, Madbury and Newmarket, as well as members of the University of New Hampshire Natural Areas and Woodlands committees.

This group has been active for over a year. Its main focus has been to coordinate efforts among the towns and the University in protecting key land and water resources. The group's primary activity has been developing a regional open space plan (attached) which emphasizes the protection of key wetlands and the development of links between existing open space corridors.

Protection of the Follett's Brook watershed has been identified as an important goal for this group. It has several features that warrant special protection measures:

1) The area is currently largely undeveloped;
2) The brook's watershed provides the primary water supply for the Town of Newmarket;
3) The brook is a trout stream for much of its length;
4) There is evidence that the surrounding area represents an important wildlife habitat and travel corridor for wildlife, and may be the only habitat in Durham for certain species;
5) The conservation commissions of all three towns with land in this area (Durham, Lee and Newmarket) have all identified its protection as a shared goal.

The Ad Hoc Committee sponsored a well-attended informational meeting for landowners in the Follett's Brook area in May, 1988. Subsequently, Newmarket has acquired one conservation easement in connection with this project and is working on a second. Durham also has an easement pending.

It is the hope of the Ad Hoc Committee that in its Masterplanning process, the Town of Durham will take account of the importance of this project, as well as the other resource protection targets identified in our 1988 report: we generally get only one shot at resource protection in masterplanning for rapidly developing towns.

APPENDIX 5

TOWN OF DURHAM
PARK STANDARDS

STANDARDS

Tot Lots:	Typically, privately owned and maintained, 1/4 - 1 acre in size, serving the immediate needs of a specific development designed for extensive use by children.
Neighborhood Parks:	A recreational area serving those living within walking or short driving distance. It usually serves an area with a radius of 1/4 to 1/2 mile, encompassing a maximum of 2,000 people and having a minimum size of five (5) acres. Pedestrian access to the surrounding area is important.
Community Park:	A recreational area serving an area with a radius of 1/2 - 1-1/2 miles. The minimum park size should be 15 acres serving a maximum of 5,000 - 6,000 people.
District Park:	A recreational area serving the needs of the entire Durham community with multi-purpose activities for people of all ages.

Source: Town of Durham Parks and Recreation Committee