

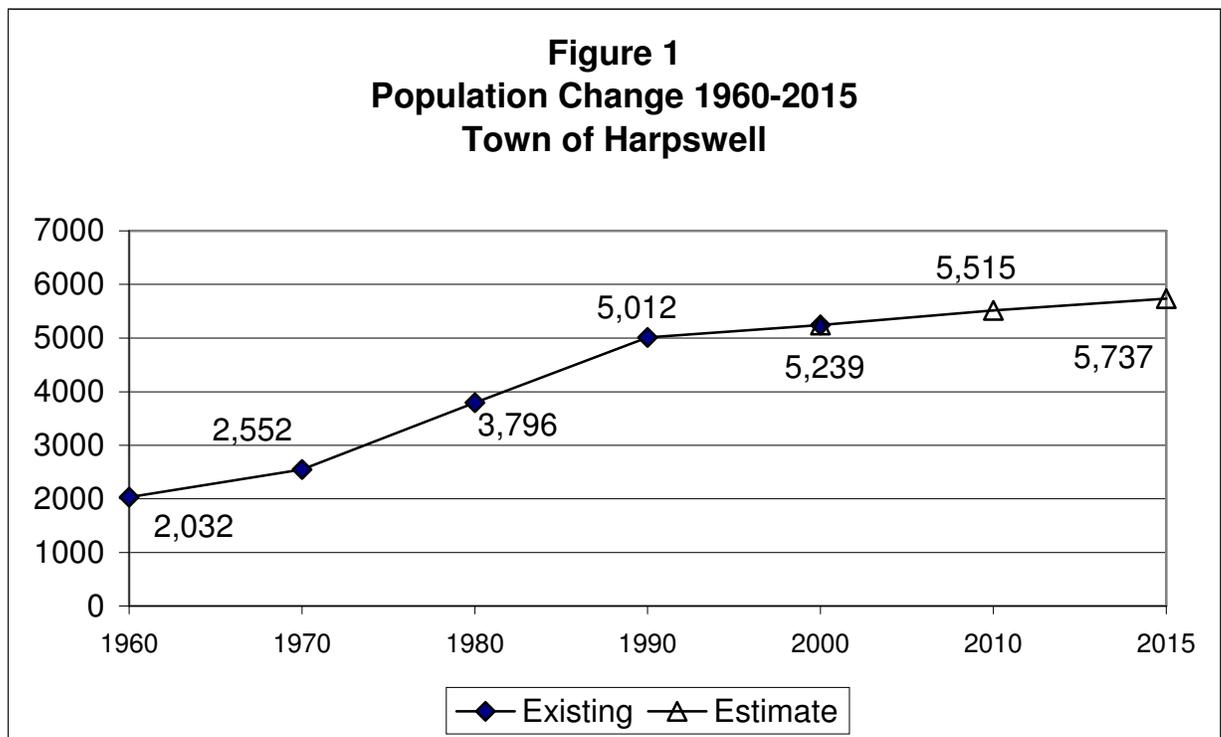
PART II

DEMOGRAPHIC TRENDS

An understanding of the population growth and change occurring within Harpswell and the region is essential to developing a realistic plan for the future.

Year-Round Population

The decades of the 1950's and 1960's saw a dramatic change in the Town's year-round population as substantial growth occurred in the community (Figure 1). By 1970, the population of Harpswell had reached 2,552, almost double the population of thirty years earlier. The 1980's saw the rate of growth in the community increase significantly with the Town gaining over 1,200 year-round residents during the decade.



Source: U.S. Census 1960, 1970, 1980, 1990, 2000, State Planning Office

From 1990 to 2000, Harpswell's year-round population increased from 5012 to 5239 people, an increase of 4.5% (Table 1). The 2000 Census reported that the population of Harpswell as of April 1, 2000, was 5,239. Between 1990 and 2000, 511 children were born in Harpswell while 468 residents died, resulting in a natural increase of 43. Therefore, eighty-one percent of the growth in Harpswell during the 1990's was the result of net in-migration to the community. Over the same ten-year period, the population of the Bath-Brunswick Labor Market Area (LMA) as a whole grew by 1.6%. Of all the LMA's municipalities the Brunswick area grew at the slowest rate, 1.2%. During the

same period, Cumberland County's year-round population rose from 243,135 to 265,612 people, an increase of 9.2%, while the State of Maine grew at a rate of 3.8%.

The projection of future population growth in Harpswell, as in any community, is at best an educated guess about the future. In many senses, the decade of the 1990's is probably a good base for looking at the 2000's. It was characterized by the period of a depressed national economy and high interest rates followed by a period of economic prosperity, job growth, and low interest rates and finally, a period of slower growth and moderate interest rates. Therefore, population size was reflective of various economic conditions. Harpswell's geographic location on the coast and its proximity to Portland and Brunswick will cause additional growth pressure. Lastly, changing demographics will continue to result in smaller households as older people build homes in the town and more seasonal units are used as year-round residences.

The Maine State Planning Office (SPO) has produced population projections for Harpswell¹, as well as for all towns in Maine: the projections for the Bath-Brunswick Labor Market Area are included in Figure I-3. Based on the State Planning Office population projection it is expected that Harpswell is expected to gain 498 new residents between 2000 and 2015 with a total of 5,737 residents in 2015 (Figure 1).

Table 1
Population of Harpswell and the Region, 1990-2000

Municipality	1990	2000	Net Change	% Change
Harpswell	5012	5239	227	4.5%
Brunswick	20906	21172	266	1.3%
Bath-Brunswick Area	77807	79038	1231	1.6%
Cumberland County	243135	265612	22477	9.2%
Maine	1227928	1274923	46995	3.8%

Source: Census 1990, 2000, Maine State Housing Authority

According to the State Planning Office, population in the region will increase over all of the next 10 years. Harpswell's year-round population is expected to increase at 9.5%, from 5,239 in 2000 to 5,737 in 2015. In comparison, the state population is expected to grow by 8.0% in 2015 and the Bath-Brunswick Labor Market Area will grow by 7.1%.

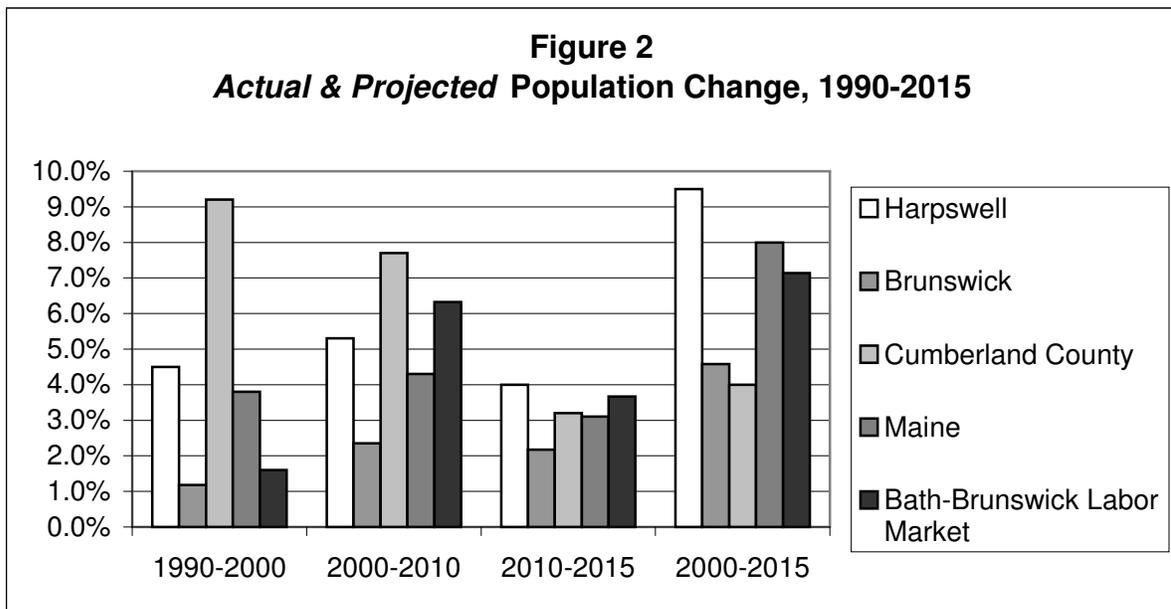
Seasonal Population

Harpswell's population dramatically increases during the summer season. In 2000, the U.S. Census Bureau identified approximately 1,213 seasonal homes in the community, which together make up 32.8% of the total housing units in the community. The number

¹ See Appendix for SPO Population Projection Procedures.

of seasonal housing units increased by 2.6% in comparison to the 1990 figure of 1,182. Combining the year-round and seasonal populations shows that Harpswell grows to a community of over 8,000 during the summer season, with peak population reaching at least 10,000 during the summer holiday weekends. The seasonal population appears not to have experienced any significant growth over the past decade. The number of summer homes has increased slightly, and the Town has not experienced significant growth in its transient lodging accommodations.

In early 1990, during the heart of the summer season, Harpswell's previous Comprehensive Plan estimated that the seasonal population of Harpswell which spends the night in the community probably averaged 3,000 to 4,000 and that during peak holiday and weekend periods, the seasonal population probably reached 5,000 or more residents. The Greater Portland Council of Governments (GPCOG) estimates, using the Department of Human Services lodgings data, that the peak seasonal population remains at approximately 5,000 or more residents. The Town also hosts a sizable group of tourists who are day-trippers whose numbers are difficult to estimate and are not included in this estimate of peak seasonal population.



Source: U.S. Census 1990, 2000, State Planning Office

Household Change

The 1970's saw a dramatic change in the composition of households. Overall, household size dropped dramatically. In Harpswell, the average household had 3.05 people in 1970. By 1980, the average household size had decreased to 2.55 people. This trend continued during the 80's as average household size declined to 2.44 in 1990. In 2000 the average household size dropped to 2.24, a decrease of 8.4% since 1990. This decrease was caused by a variety of factors, including lower birth rates, increased longevity of

independent living among the elderly, higher divorce rates, and more young people living independently in their own households. In Harpswell, small retiree and pre-retiree households moving into the community also contributed to the decrease in household size.

The decrease in household size is also a national trend. The average household size in the United States decreased from 2.63 people in 1990 to 2.59 people by 2000. The decrease in household size has had a substantial impact on residential development in Maine communities in general and on Harpswell in particular. Between 1970 and 1980, the year-round population of Harpswell increased by 1,244 residents, while the number of households grew by 652. This resulted in a

Table 2
Households and Household Size, 1960-2000

	Year-Round Households			Avg. Household Size		
	Town of Harpswell	Cumberland County	State of Maine	Town of Harpswell	Cumberland County	State of Maine
1960	626			3.25		
% Change, 1960 - 1970	33.9%			-6.18%		
1970	838	60,393	302,923	3.05	3.19	3.28
% Change, 1970 - 1980	77.8%	30.3%	30.5%	-16.3%	-14.0%	-13.2%
1980	1,490	78,704	395,184	2.55	2.74	2.85
% Change, 1980 - 1990	37.7%	20.1%	17.7%	-4.1%	-6.2%	-7.3%
1990	2,051	94,512	46,5312	2.44	2.57	2.64
% Change, 1990 - 2000	14.1%	14.3%	11.4%	-8.4%	-4.4%	-7.4%
2000	2,340	107,989	518,200	2.24	2.46	2.44

Source: U.S. Census 1960, 1970, 1980, 1990, 2000, Greater Portland Council of Governments

perception that population growth was faster than it really was since the average number of people living in each dwelling decreased. During the 80's, the year-round population grew by an additional 1,216 people, while the number of households increased by 561. From 1990 to 2000, household population grew by 227 people or 4.53% increase. At the same time households increased by 300, or 14% (from about 2,050 to 2,350), which reflected a continued decrease in the average household size. Nationally, from 1990 to 2000, the household population increased by 13%, while households increased by 15%.

Based upon the SPO year-round population projections, GPCOG calculates that the number of households in Harpswell will increase to 2,679 by 2015. This projection assumes that average household size will continue to decrease slightly between 2000 and 2015 and will reach 2.14, a 4.5% decline.

Household Composition

In 1990, single-person households represented 23.1% of Harpswell's households. By 2000, single-person households increased to 27.1%. The percent of households having two members increased to about 43% in 2000, resulting in over 70% of all households having one or two members (Table 3). This is higher than Cumberland County or the State of Maine and probably reflects Harpswell's growing retirement population. Just over 13% of Harpswell's households had three members in 2000, while 12% had four members. Large households with five or more members constituted only 5.7% of Harpswell's households in 1990 and only 4.1% of households in 2000. Nationally, single-person households increased by 20%, and larger households increased by 13% during the same time.

Table 3
Distribution of Households by Size, for Harpswell and the Region

Household Size	1990		2000					
	Harpswell		Harpswell		Maine		Cumberland County	
1 person	469	23.1%	635	27.1%	139,948	27.0%	30,735	28.5%
2 person	823	40.6%	1008	43.1%	190,788	36.8%	38,568	35.7%
3 person	334	16.5%	315	13.5%	82,339	15.9%	16,551	15.3%
4 person	296	14.6%	286	12.2%	69,421	13.4%	14,712	13.6%
5 person	81	4.0%	80	3.4%	26,416	5.1%	5,596	5.2%
6 person	16	0.8%	16	0.7%	6,752	1.3%	1,338	1.2%
7 or more	10	0.5%	0	0.0%	2,536	0.5%	489	0.5%
Total	2,029	100.0%	2,340	100.0%	518,200	100.0%	107,989	100.0%
1 & 2 person	1292	63.7%	1643	70.2%	330736	63.8%	69303	64.2%

Source: U.S. Census 1990, 2000

Age Distribution

In 2000, 19% of Harpswell's year-round population was under 18 years old, down from 21% in 1990 (Table 4). At the same time, the number and percentage of younger children decreased by 90 persons from 6% of the total population in 1990 to 4% in 2000. In 1990, 40% of the year-round population was in the 18 to 44 years old age group, while almost 24% were middle aged (45 to 64 years old.) In 2000, the number of people in the 18 to 44 years old decreased to 30%, and 47% were middle aged (45 to 64 years old). Almost 19% of Harpswell's population was 65 and older in 2000. In comparison, Cumberland County's middle-aged group composed only 33% of the total population, and only 13% of the year-round population was 65 and older.

In 2000, the median age of Harpswell's year-round population was 45.3 years old, which is significantly higher than 37.9 years old in 1990. This compares with U.S. Census 2000

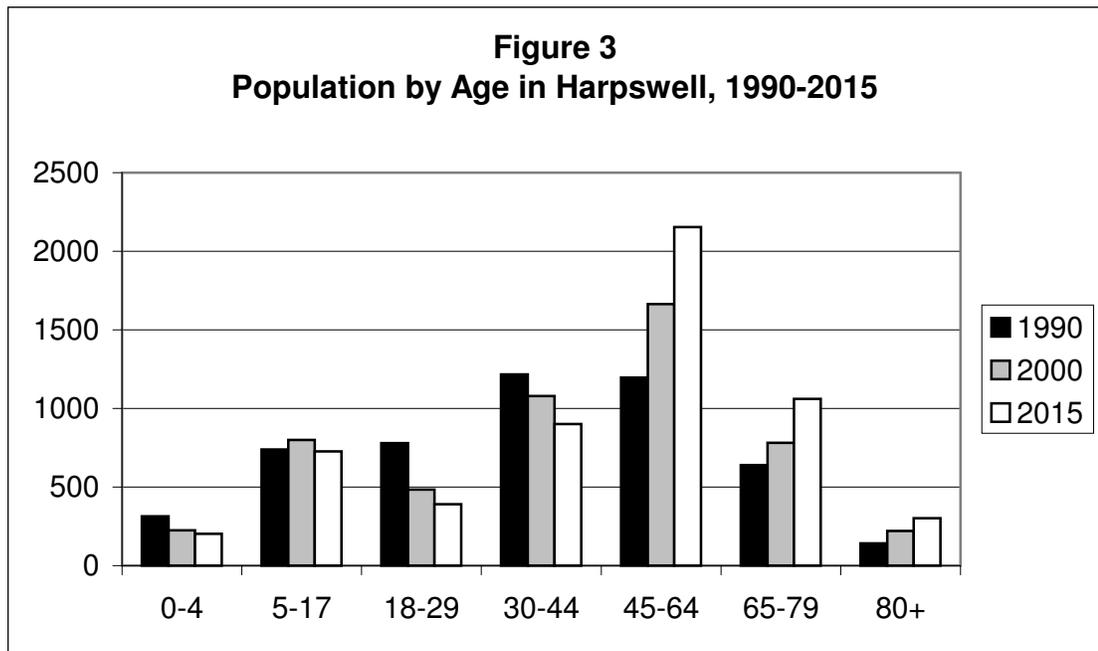
estimates of median ages of 35.5 years for Brunswick, 37.6 years for Cumberland County, and 38.6 years for the State of Maine.

Table 4
Age Distribution in Harpswell, 1990-2015

Age Groups	1990			2000			2015		
	Harpswell	Cumberland County	Maine	Harpswell	Cumberland County	Maine	Harpswell	Cumberland County	Maine
0-4	6%	7%	7%	4%	6%	6%	4%	6%	5%
5-17	15%	16%	18%	15%	17%	18%	13%	15%	15%
18-29	16%	20%	18%	9%	15%	14%	7%	14%	13%
30-44	24%	26%	24%	21%	25%	23%	16%	22%	20%
45-64	24%	18%	19%	32%	24%	25%	38%	29%	30%
65-79	13%	10%	10%	15%	9%	11%	18%	11%	12%
80+	3%	3%	3%	4%	4%	4%	5%	4%	4%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%

Source: U.S. Census 1990, 2000, State Planning Office 2015

In 1990, children in the school age group (under 17 years of age) comprised 21% of the Town's population or 1,053 children. During the 90's, this group experienced a slight decline, reaching 1,024 by 2000 or 19% of the population.



Source: U.S. Census 1990, 2000, State Planning Office, 2015

During this same period, the Town's elderly population changed as well. In 1990, residents 65 and older accounted for 16% of the year-round population (780 people). By 2000, this group had grown to 1,002 people, or 19% of the population. In the group 80 years of age and up, the population grew from 141 in 1990 to 221 in 2000. The aging of the baby boom generation is partly responsible for this trend, which is happening nationally. Other reasons are that younger first-time homebuyers are not buying homes in Harpswell and there has been an in-migration of households headed by the older population.

This aging of the population, with its reduction in school age children, decrease in younger households and increase in older households, reflects an overall increase in the cost of locating in Harpswell – a wealth effect – that accompanies the Town's growing attraction for wealthy middle-aged and older adults as a place to live and retire.

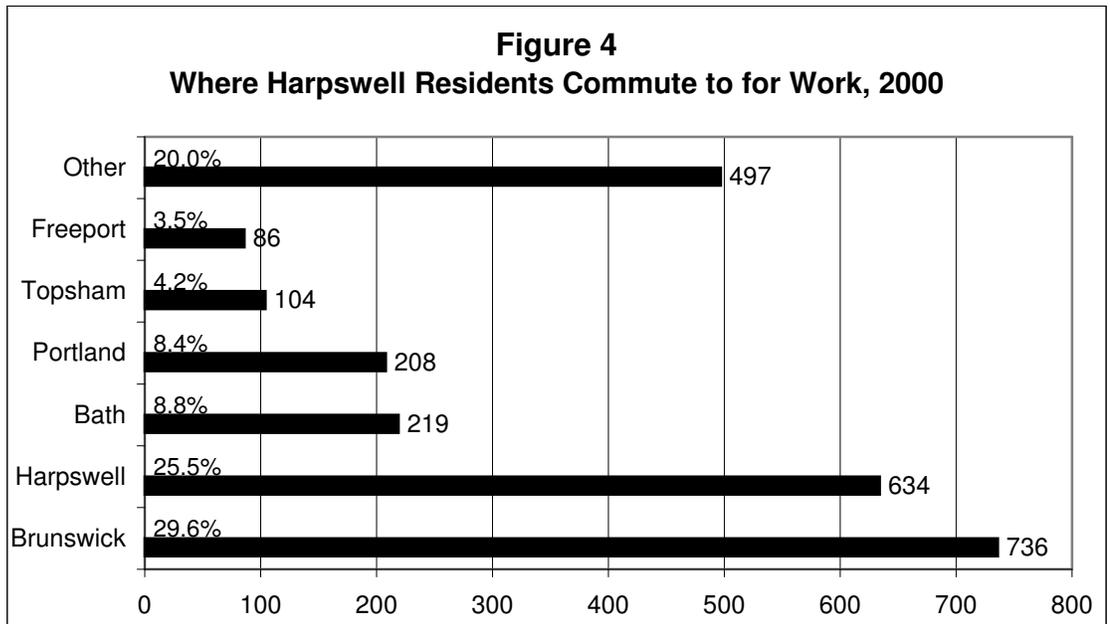
Educational Attainment

Interestingly, the percentage of adults 25 and older with a Bachelor's degree or higher in Harpswell was significantly higher than that in the region. Brunswick had 35% of college graduates, Cumberland County had 34.2%, and the State of Maine had only 22.9%.

In 1990, the percentage of Harpswell residents with high school diplomas was the same as the Cumberland County level of 85% and 10% below the Brunswick level. Three thousand forty seven (32%) adults 25 and older were college graduates and 1,145 (over 85%) had completed high school. See Table I-5. This trend continued and was even more pronounced in 2000. 1,659 adults 25 and older (42%) were college graduates, and 3,494 (almost 89%) had completed high school. This compares with 87.9% of high school grads in the town of Brunswick and 90.1% of high school grads for Cumberland County.

Commuter Patterns

In 1990, approximately 37% of the Town's work force reported commuting to Brunswick, while another 10% reported working in Bath. Only 20.5% of employed residents reported working within the community. This trend continued in 2000, when 29.6% of workers commuted to Brunswick for work and 8.8% traveled to Bath. At the same time, a total of 26.5% of the people employed in Harpswell traveled from surrounding towns to work in Harpswell, a 10% increase from 1990 (Figure 4).



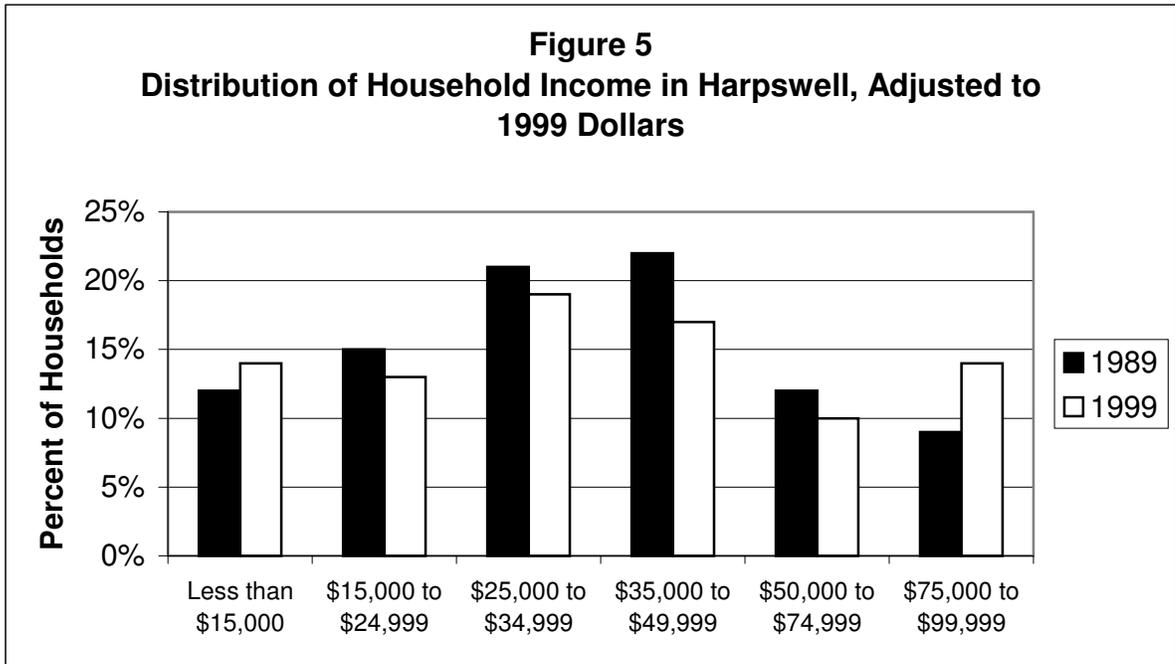
Source: U.S. Census 2000

While the percentage of employed residents reported working in the community slightly increased to 25.5% in 2000, the mean travel time to work increased from 24.5 minutes in 1990 to 31.5 minutes in 2000, which is significantly above county and statewide figures of 22 minutes and 22.7 minutes respectively.

Household Income

Median household income of \$33,298 in 1989 was considerably higher than the statewide median of \$27,854. This is significant when combined with a relatively low level of residents in the labor force (62.3%), indicating that income among non-retired households may be even higher than indicated by the median.

According to the U.S. Census, the median household income in Harpswell increased in the year 1999 to \$40,611 with only 59.5% of the population in the labor force, while the State median household income was \$37,240. Figure I-5 shows the distribution of household income in 1999.



Source: U.S. Census Data 1990, 2000

The growing population has become more affluent, and its demand for land and housing has driven up property values, particularly along the shore. While increasing the prosperity of some sectors, it has made owning property in Harpswell more difficult for others. The higher property values have also increased the Town's share of school and County tax assessments.

ECONOMY STATISTICS

The economy of Harpswell is driven by a variety of factors. For much of the working population, the economy of the Town is influenced and controlled more by regional and national factors than by local conditions. This is particularly true since Harpswell does not serve as a retail, service, or major employment center. In addition a significant portion of retirees in Harpswell are not dependent on local economic conditions for their income.

Regional Economic Environment

Harpswell is part of the Bath-Brunswick region for much of its economic activity. From an employment standpoint, the Town is considered to be part of the Bath-Brunswick Labor Market Area (LMA) as defined by the Maine Department of Labor.² The Bath-Brunswick LMA consists of 20 communities: Alna, Edgecomb, Durham, Brunswick, Harpswell, New Gloucester, Pownal, Richmond, Woolwich, Dresden, Arrowsic, Bath, Bowdoin, Bowdoinham, Georgetown, Perkins Township, Phippsburg, Topsham, Westport Island, West Bath, and Wiscasset, that function as an economic unit.³

Between 1990 and 2000, the Bath-Brunswick LMA experienced 8% growth in employment (Table 15). This growth was spread across industry groups with the largest growth in wholesale trade (129.2%), construction (77.8%), education and health services (108.4%); and finance, insurance and real estate (75%). Despite 128% growth in non-durable goods manufacturing, employment in manufacturing decreased by 36% over this period, reflecting employment levels at Bath Iron Works (BIW), the region's major employer. According to the Maine State Planning Office report on the Maine Economy, Bath Iron Works Corporation was the second biggest private covered employer in the state with 6,600-6,800 employees in 2001.⁴ It is likely, however, that during 1990's employment declined somewhat as the impact of the recession took hold.

Similarly, from a retail and service standpoint, Harpswell is heavily dependent on regional facilities available in Brunswick and is included by the State Bureau of Taxation

² A labor market area consists of an economically integrated geographical area within which workers can reside and find employment within a reasonable distance or can readily change employment without changing their place of residence. - Bureau of Labor Statistics, U.S. Department of Labor.

³ In 1990, the Bath-Brunswick LMA consists of 16 communities only including Durham, Brunswick, Harpswell, New Gloucester, Pownal, Woolwich, Dresden, Arrowsic, Bath, Bowdoin, Bowdoinham, Georgetown, Perkins Twp., Phippsburg, Topsham, and West Bath. For the purposes of these analyses all 1990 figures were adjusted based on the current composition of the LMA, which includes 20 communities.

⁴ Covered employers are subject to the Maine Employment Security Law based on quarterly tax filings required under that law. These data do not include Federal government employees, self-employed individuals (sole proprietorships), unpaid family members, railroad workers, and certain farm and domestic workers. According to the Maine Department of Labor, covered employers account for more than 97% of the total nonfarm wage and salary employment in Maine and all of the goods producing industries in the industrial sectors. However, Harpswell is an exception to this rule due to the presence of the fishing industry and its large number of sole proprietors. According to the 1999 Harpswell Fishing Industry Profile by Bruce C. Mayberry, sole proprietorships and other non-covered employment in the fishing industry may actually account for as much as 50-60% percent of jobs in Harpswell.

as part of the Brunswick Economic Summary Area, which is similar to the LMA except that it does not include Durham, New Gloucester, Pownal, Richmond, Alna, Edgecomb, Wiscasset, and Westport Island. This area has seen its taxable retail sales increase from approximately \$360 million in 1990 to \$510 million in 2000 (Table 16). Even adjusted for inflation, this represents significant real growth in economic activity.

The heritage and community character of Harpswell are defined by the presence of the commercial fishing industry. According to the 1999 Town of Harpswell Fishing Industry Profile Summary Report by Bruce Mayberry, Harpswell remains of significant importance in commercial fishing in the region, with 31% of the County's lobster boats and 20% of the County's total ground-fishing, shrimp, and other fishing boats. Nearly all of the shrimping and ground-fishing boats of Cumberland County operate out of either Harpswell or Portland.

Local Employment

Current employment data is not readily available on a town-by-town basis for small communities. Harpswell does not have any major employers and many people commute

Table 15
Employment Change
Bath-Brunswick Labor Market Area, 1990-2000

Industry Sector	1990	2000	2001	Percent of Total 2001	1990-2000 % Change
Annual Average Employment	30,290	32,700	32,890		8.0%
Average Unemployment Rate	3.4%	2.7%	3.1%		-0.7%
Manufacturing	11,840	7,570	7,960	24.2%	-36.1%
Durable Goods	11,490	6,760	7,360		-41.2%
Lumber and Wood Products	110	40	***		-63.6%
Fabricated Metal	40	90	120		125.0%
Machinery & Computer Equipment	30	40	30		33.3%
Transportation Equipment	10,900	6,100	***		-44.0%
Non-durable Goods	350	800	600		128.6%
Printing/Publishing	230	170	20		-26.1%
Non-Manufacturing	18,450	25,130	24,930	75.8%	36.2%
Construction	1080	1,920	1,700	5.2%	77.8%
Transportation & Public Utilities	450	550	4,720	4.7%	22.2%
Wholesale Trade	240	550	350	6.2%	129.2%
Retail	5,290	6,010	3,970	21.9%	13.6%
Eating/Drinking	1,860	1,120	880		-39.8%
Finance, Insurance & Real Estate	600	1,050	1,160	8.6%	75.0%
Education & Health Services	2,260	4,710	4,770	31.9%	108.4%
Health Services	1,800	2,030	1,340		
Educational Services	40	1,310	2,660		
Social Services	420	1,370	770		
Government	4,510	4,410	4,440	12.5%	-2.2%

Source: Maine Employment Statistical Handbook. Maine Department of Labor

outside of Town for work. In 1990, the U.S. Census reported that the Town had 2,548 working residents, of which 464 or just about 20.5% worked in Harpswell. The balance commuted to work in other communities, primarily Brunswick, Topsham, and Bath. Based on the 2000 Census, the town has 2,582 working residents, of which 634 (25.5%) worked in Harpswell. At the same time, the Census reported that 228 people commuted to work to Harpswell from other communities, primarily residents of Brunswick.

The major source of local employment is in marine related activities. The Fishing Industry Profile Summary Report identified approximately 400-500 people as of 1998 who work full or part-time in fishing, lobstering, shellfishing and related activities. Out of these 400-500 people, between 200-250 individual license holders operating from the Town are estimated to be significantly dependent on commercial fishing for full or part time income. An additional 60-80 or so people are involved in marine services supported by local commercial fishing, including boat yards and marinas, boat builders and repair services, gear and traps, marine electronics and equipment, and marine construction services. Therefore, 50-60% of the total full and part time job base located within Harpswell is directly or indirectly related to commercial fishing.

Even though the 1999 Harpswell Fishing Industry Profile identified only 400-500 people who work full or part time in the fishing industry, the total number of commercial marine harvester licenses issued for residence/anchorage in Harpswell issued by DMR was 740 in 1998. The discrepancy is due to the fact that many individuals hold more than one type of license. The Fishing Industry Profile also reports that in 1998, there were a total

Table 16
Taxable Retail Sales in Thousands
For Harpswell and Brunswick ESA, 1998-2002

	1998	1999	2000	2001	2002
Harpswell	8,999	9,374	9,720	9,535	10,216
Brunswick ESA: Taxable Sales	424,310	465,796	489,126	505,676	510,125
Building Supply	40,997	56,927	64,230	64,543	65,813
Food Stores	58,520	63,279	66,160	56,399	57,447
General Mdse.	100,651	100,055	104,061	110,144	116,679
Other Retail	37,170	41,689	44,864	50,917	54,993
Auto Transp.	109,540	121,256	123,241	137,542	128,095
Rest. & Lodging	77,432	82,589	86,570	86,131	87,098
Total Sales	463,806	497,688	524,390	538,410	534,901
Consumer Sales	424,310	465,796	489,126	505,676	510,125
Restaurants	63,479	67,655	70,281	69,746	70,444
Lodging Places	13,953	14,934	16,289	16,385	16,655
Brunswick ESA Sales By Quarter					
Q1	19.6%	19.9%	19.8%	19.5%	19.3%
Q2	25.2%	24.6%	26.2%	26.5%	26.1%
Q3	28.6%	29.5%	28.2%	28.2%	29.5%
Q4	26.7%	25.9%	25.8%	25.8%	25.1%

Source: State Planning Office

of 522 people residing in or having their principal anchorage in Harpswell who held one or more licenses. Of these people 427 gave a Harpswell address. This is well within the 400-500 people the Fishing Industry Profile estimates to be working full or part time in fishing, lobstering, shellfishing and related activities. While the number of commercial shellfishing licenses declined statewide, Harpswell's commercial shellfishing permits have increased substantially since 1990 as resources have improved under local conservation management.

The landings of marine products attributed to Harpswell-based fishermen for 1997 and 1998 had an estimated value of \$12 – \$14 million. Of this total, between \$9-\$10 million is estimated to be landed within the town of Harpswell. The value of local landings is predominantly in lobster and shrimp. Overall, Harpswell-based fishing represents an estimated 24% of overall landed value reported for Cumberland County.

Because of the Town's population and labor force growth, its location near the Bath-Brunswick and Portland area labor markets, and the ascendancy of other faster growing industries, the percentage of local residents working in the fishing industry has declined and will probably continue to do so according to the Town of Harpswell Fishing Industry Profile. In addition, the future economic importance of the fishing industry in Harpswell, as well as the rest of Maine and New England, will depend in substantial part on how federal fishing regulations will limit fishing in the short term and how effectively that limitation will allow for fish population stocks to recover in the long run.

Employment in Harpswell varies seasonally, with the peak employment in most sectors occurring in the summer, which is the third quarter of the year. According to the Maine Department of Labor, in the third quarter of 2001, Harpswell's 138 commercial establishments employed 691 workers – an average of 5 workers per firm. These businesses provide necessary goods and services for town's residents, including water-related business such as boatyards, marinas, and yacht clubs; tourism-oriented services – motels, inns, active outdoor recreation and adventure establishments; general services – painting, construction, landscaping; customer oriented services – catering, restaurants, food and retail stores; and professional employment including home occupation.

Table 17 below shows an upward trend in Harpswell's total covered⁵ employment figures from 1990-2001. While some industries such as transportation saw a decline (64 employees to 28), others such as construction, retail, service, and public administration saw increases. In 2001, the retail sector had the largest number of employees. Since 1990, third quarter employment has increased overall by 48% from 466 in 1990 to 691 in 2001. Third quarter figures for July, August and September include seasonal establishments. Annual employment figures were significantly lower than third quarter figures, with 387 employees in 1990 and 559 in 2001, which represents a 44% increase. Seasonal fluctuations in tourism-based covered employment are mostly reflected in the Retail and Service categories.

⁵ See Footnote 4 for definition of covered employment.

While the Town lacks any large employers, it has a local economy that is characterized by small businesses and individual self-employed people who, taken as a group, provide significant local economic activity and income. These employers are scattered in various locations throughout the community. Besides the many small businesses and sole proprietors in fishing and marine-related industries there are also many small home-based businesses, sometimes called home occupations that are included in this group.

Table 17
Third Quarter Covered Employment by Major Industry, 1990-2001

Industry	1990	2001
Agriculture	9	30
Mining	0	0
Construction	57	100
Manufacturing	3	Suppressed
Transportation	64	28
Wholesale	26	41
Retail	200	259
Finance	4	15
Service	85	180
Public Administration	19	37
Total Employment (3rd Quarter)	466	691
Total Employers (3rd Quarter)	86	138
Total Employment (Annual)	387	559

Source: Maine Department of Labor, Division of Labor Market Information Services.

State, County, and Local Occupational Characteristics

In 2000, the size of Harpswell's labor force was 2,583. The unemployment rate was 1.3%, which is significantly lower than statewide and county level of 3.1% and 2.5% respectively. This may be due, in part, to residents' ability to gain wider employment options via slightly longer travel times.

According to the 2000 Census, the key industry sectors that support Harpswell's workers, not just in Harpswell, but everywhere they work, are education, health and social services (537, or 21.6%); retail trade (322, or 12.9%); construction and professional industry sector (263, or 10.6% each); manufacturing (250, or 10%), and agriculture, forestry, fishing and hunting, and mining (203, or 8.1%). Together these five provide 65.7% of the jobs for Harpswell. Comparatively, the largest portions of Cumberland County's force is employed in education, health and social services (22.3%), and retail sales (14.7%), and less in the construction industry (5.5%) and professional sectors (9.9%). Statewide, 23.2% the labor force was involved in education, health and social services, 14.2% in manufacturing, and 13.5% in retail trade industry sector. (See Table 17).

According to statewide economic forecasts, the Maine State Planning Office expects the services and retail trade sectors of the economy to grow, construction jobs to hold relatively steady, and manufacturing jobs too show a steady decline.

To describe the labor force by occupational sectors the US Census indicates that just over 56% of the Town's labor force reported their occupation in 1990 as management, professional or related occupations or sales and office occupations. This is somewhat higher than for the State as a whole but lower than Cumberland County. Another 10% held service jobs, and 22% were employed in farming, forestry, and fishing, construction, extraction, and maintenance, and production, transportation and material moving occupations. It is significant to note that almost 11% were employed in natural resource industries, primarily fishing.⁶ This is almost four times the statewide level and about eight times that of Cumberland County.⁷

By 2000, almost 60% of the Town's labor force gave their occupation as management, professional or related occupations or sales and office occupations. The percentage of service jobs remained about the same and the percentage of farming, forestry, and fishing, construction, extraction, and maintenance, and production, transportation and material moving occupations declined slightly to about 21%. The percentage of the labor force in natural resource industries declined to 7%, but remained at almost four times the statewide level and about ten times that of Cumberland County.

Retail Trade

The Town of Harpswell does not contain any large retail operations. Its primary sources of retail activity are the restaurants and lodgings and the small gift, craft and general stores. In 2002, the businesses in Harpswell had taxable retail sales of \$10,215,600, up from just over \$8,998,800 in 1998.

[See Table 18 on following page]

⁶ See Footnote 5, above for the differences between covered employment and sole proprietorships, and how this affects representation of the fishing industry in state labor statistics. Note also that the Census uses still another measure.

⁷ Census 1990 and 2000 used different categories for dividing the labor force according to occupation. However, GPCOG estimated the percentage of service jobs.

Table 18: Significant Demographic Factors, Town of Harpswell, ME

	Town of Harpswell		Town of Brunswick		Cumberland County		State of Maine	
	1990	2000	1990	2000	1990	2000	1990	2000
% of population <10	12.5%	9.7%	13.4%	12.8%	13.3%	12.4%	14.5%	12.0%
% of population >10	87.5%	90.3%	86.6%	87.2%	86.7%	87.6%	85.5%	88.0%
Median Age	37.9	45.3	31	35.5	33.7	37.6	33.9	38.6
Average Household Size	2.44	2.24	2.71	2.34	2.65	2.38	2.75	2.39
% of 1 person households	22.3%	27.3%	9.9%	30.8%	25.2%	28.4%	23.3%	27.0%
Education: adults 25 and over								
% high school grads	85.1%	88.9%	95.5%	87.9%	85.0%	90.1%	78.8%	85.4%
% Bachelor's degree or higher	32.0%	42.2%	48.8%	35.0%	27.6%	34.2%	18.8%	22.9%
Income								
median household income	\$33,298	\$40,611	\$38,896	\$40,402	\$32,286	\$44,048	\$27,854	\$37,240
per capita income	\$16,952	\$30,433	\$14,343	\$20,322	\$15,816	\$23,949	\$12,957	\$19,533
median family income	\$36,604	\$45,119	\$36,577	\$49,088	\$38,822	\$54,485	\$32,422	\$45,179
% 16 and over in labor force	62.3%	59.5%	68.0%	65.5%	68.8%	69.0%	65.6%	65.3%
Unemployment Rate	3.5%	1.3%	4.6%	2.2%	5.2%	2.5%	6.6%	3.1%
Occupation								
Management & professional		41.4%		40.0%		38.8%		31.5%
Service Occupation		11.8%		16.3%		14.2%		15.3%
Sales and Office		18.5%		25.6%		28.2%		25.9%
Farming, fishing, forestry		7.0%		0.7%		0.6%		1.7%
Construction and maintenance		10.2%		8.4%		7.2%		10.3%
Production, transportation		11.1%		9.1%		11.1%		15.3%
Industry								
Agriculture		8.1%		1.0%		1.0%		2.6%
Arts and food		7.5%		9.8%		7.7%		7.1%
Construction		10.6%		4.5%		5.5%		6.9%
Education		21.6%		28.8%		22.3%		23.2%
Finance		3.1%		5.0%		9.8%		6.2%
Information		4.2%		3.4%		3.6%		2.5%
Manufacturing		10.0%		10.0%		9.7%		14.2%
Other services		3.1%		3.8%		4.5%		4.7%
Professional		10.6%		8.5%		9.9%		6.9%
Public administration		1.9%		5.1%		3.5%		4.5%
Retail Trade		12.9%		15.4%		14.7%		13.5%
Transportation and utilities		2.4%		2.8%		3.9%		4.3%
Wholesale Trade		4.0%		1.9%		3.9%		3.4%
Residence in 1985/in 1995								
same house	60.2%	63.2%	39.3%	47.4%	51.9%	54.2%	55.6%	59.6%
same county	16.8%	11.8%	15.1%	17.6%	26.0%	25.8%	24.2%	22.9%
same state	6.5%	6.9%	26.8%	11.4%	33.5%	7.4%	31.9%	7.7%
different state	15.9%	16.0%	31.8%	21.9%	13.5%	11.2%	11.6%	9.0%
elsewhere	0.6%	2.1%	2.1%	1.6%	1.0%	1.3%	0.9%	0.9%
Place of Work								
area of residence	25.9%	25.5%	60.6%	53.6%	40.7%	88.7%	40.9%	96.1%
out of area of residence	74.1%	74.5%	39.4%	46.4%	59.3%	11.3%	59.1%	3.9%
mean travel time to work	24.5 min.	31.5 min.	16.0 min.	18.9 min.	18.7 min.	22 min.	19.0 min.	22.7 min.

Issues and Implications

Residential and Business Use Conflicts. A key issue facing the Town is how it can accommodate small businesses without creating unnecessary problems for their neighbors. Finding a balance that provides a desirable environment for small businesses while assuring that they are good neighbors must be a major objective of the Town.

The Future Health of the Marine-Related Economy. The community also has an important marine related economy. Care must be taken to assure that the Town's policies and regulations support this vital component of the Town's economy and work to foster its growth.

Seasonal and Tourism-Related Businesses. A final issue is businesses that cater primarily to summer visitors. Since these businesses need visibility, they tend to locate along the two major roadways. While they provide important economic benefits, it is important that the Town consider how these kinds of businesses can be best accommodated without creating traffic hazards or reducing the attractiveness of the community.

The "Creative Economy". Within the state and within the New England region the economic development community is developing and promoting the idea of boosting local economic stability and productivity through support of business opportunities that arise from the creative arts. For Maine and for New England this growing sector of the economy and newly emphasized aspect of economic development is being promoted and recognized as a competitive advantage. The creative economy is viewed as enhancing quality of life, which is one of the state's and the region's most attractive aspects for additional business development. For Harpswell, the existing quality of life is attractive to creative artists who already live here and for others who have not yet arrived. The fact that there is little reason for more traditional sources of jobs to locate in Harpswell, as opposed to communities to the north, makes Harpswell more attractive in this respect, at the same time that it leaves the Town with fewer options for job growth.

AGRICULTURAL AND FOREST RESOURCES

Agricultural and forestry resources can play an important role in most communities. Often they are a significant source of jobs and income. In Harpswell, this is somewhat true for forestry, but less so for agriculture. There is only one remaining active commercial farm. However, the use of land for productive agricultural or forestry use is part of the Town's rural character. With land prices skyrocketing, it is doubtful that agriculture and forestry, even with the support of Maine's current use taxation program are an effective deterrent to its conversion to other uses.

Existing Agricultural Use

The extensive farming going on in Harpswell at the turn of the 19th to 20th century has been gradually eroding. During the past 100 years and more, previous generations have left for better jobs elsewhere or entered other occupations. As the older generations retired, farms were abandoned and allowed to grow back to brush or timber. Some of this land has been developed.

The land use inventory conducted by members of the Land Use Subcommittee in 1992 identified only six operations in Harpswell, all of which are part-time operations. These operations involved a total of approximately 150 acres of land. The committee could find only six cows, two working horses, and several sheep, chickens, and ducks. Quite a bit of hay was cut, some for feed and some simply to keep fields clear. In addition, there were numerous saddle and trotting horses. Some gentlemen farmers were keeping sheep, bees and rabbits and raising berries and vegetables. The latter were selling some products at roadside stands. None of this activity had much direct economic impact.

Agricultural Suitability

A second approach to understanding the agricultural resource is to look at the suitability of land for agricultural purposes regardless of its current use. This approach is more long term since it views areas with potentially productive soils as a resource even if it is not currently being used for agriculture. Current land values and competing agricultural areas around the country and the world are effectively meeting Harpswell's need for food. The likelihood is small that Harpswell or Maine should ever need to rely heavily on local or regional soils for food production. Nevertheless, if agriculture is to be supported against continuing decline, or even started up on a small scale of some specialty niche production, the relative suitability of soils for agriculture deserves some consideration. Though the likelihood any program seeking to preserve such areas from being lost forever to development is admittedly small, suitable agricultural soils in Harpswell are described below.

The Soil Conservation Service⁸ of the U.S. Department of Agriculture has defined "prime farmland" as the land that is best suited for producing food, feed, forage, fiber and oilseed crops. It has the soil quality, growing season and moisture supply needed to produce a

⁸ Now known as the Natural Resource Conservation Service.

sustained high yield of crops while using acceptable farming methods. This approach to defining agricultural land is desirable since prime farmland is a limited resource.

The Soil Conservation Service has identified the soils types that are considered "prime farmland." The following soils found in Harpswell are considered prime farmland:

- BuB Buxton Silt Loam (3-8% slope)
- WrB Woodbridge Fine Sandy Loam (3-8% slope).

The Buxtons are quite widely scattered around town and show up in many areas including Cundy' s Harbor, Great Island, Harpswell Neck and even small areas of Orr' s Island. Small areas of the Woodbridges are found on Harpswell Neck and in the Cundy' s Harbor area.

The, SCS has also designated other soils are "prime farmland" if irrigation is available. Some of these soils types are found in Harpswell including:

- DeA/DeB Deerfield Loamy Sand (0-8% slope)
- HiB Hinckley Gravelly Sandy Loam (3-8% slope)
- LyB Lyman Fine Sandy Loam (3-8% slope)
- WmB Windsor Loam Sand (3-8% slope).

In a situation such as Harpswell where there are limited fresh water sources for irrigation, it does not make sense to consider these as "potential high value' agricultural land."

The SCS has also designated other soils as "prime farmland" if they are drained. There appears to be *none* of these soil types in Harpswell.

Visual Impacts of Agriculture

Agriculture is visually significant in Harpswell. The Merricongea Farm, at the entrance to Harpswell from Brunswick on Route 123 is significant for its beautiful farmhouse and barn, as well as for its wide, open fields and the vista they afford to the forests and marshes.

At several places around Harpswell there are open fields that provide similar visual access to wider views that include views of historic buildings and groups of buildings, forests, harbors, islands and the open sea.

If nothing else, the continued existence and annual mowing of these fields is important to maintaining the visual character of the Town. In 2004, there are only 20 acres within Harpswell that are enrolled the state's Farm and Open Space Tax Program.

Existing Forestry Use

The vast majority of undeveloped land in Harpswell is in forest. However, of the 15,304 acres of land in Town, there were only 2,138 acres of land included under the Tree Growth Tax Program in 1993. In 2004, this total has declined to 1,419 acres, a decrease of about 34% in the past 11 years.

This program provides that the land be assessed for tax purposes for its "current use" as forestland. The owners of land in the program are required to conduct management activities professionally planned by a licensed professional forester.

There are no stands of timber that can be harvested to produce a sustained yield. Forestry activities do not make a significant contribution to the Town' s economy. At least two people do make a living cutting timber for lumber and firewood and for clearing building sites. Many landowners will cut a few logs from their own land for their personal use. Table 19 shows the general scale of timber harvesting operations in Harpswell. Over the years covered it appears there has been a general decline in the volume of activity.

Table 19
Summary of Timber Harvest Information for the Town of Harpswell
1995 – 1999, 2002

Year	Selection harvest in acres	Shelterwood harvest. in acres	Clearcut harvest in acres	Total harvest in acres	Change of land use in acres	Number of timber harvests
1995	55	80	2	137	-	4
1996	112	-	-	112	-	6
1997	106	-	-	106	-	6
1998	6	-	-	6	2	3
1999	20	35	5	60	6	5
2002	56	-	-	56	-	4
Totals	355	115	7	477	8	28

*To protect confidential landowner information, data is reported only where three or more landowner reports reported harvesting in the town. (Source: Maine Forest Service.)

There appears to be very little forested land in Harpswell that is capable of supporting commercial forestry. Instead, land values are so high that some of the land is being held until the right moment for development. Given current prices, even some tree farmers may be unable to resist future economic pressures to convert their land to development uses.

Forestry Suitability

As with agriculture, forestland can also be viewed from the standpoint of the suitability of the land to support commercially viable tree growth.

The SCS⁹ has also identified "prime forestland" based upon soils capability. They define prime forestland as land that has soil capable of growing wood at the economic productive growth rate for a given tree species. Based upon eastern white pine, many of the soils types found in Harpswell are "prime forestland" including:

- BgB/BgC2 Belgrade Very Fine Sandy Loam
- BuB/BuC2 Buxton Silt Loam
- DeB/DeC Deerfield Loamy Sand
- HiB/HiC/HiD Hinckley Gravelly Sandy Loam
- LyB/LyC Lyman Fine Sandy Loam
- LzB/LzC/LzE Lyman Very Rocky Fine Sandy Loam
- PkB/PkC Peru Fine Sandy Loam
- PIB/PIC Peru Very Stony Fine Sandy Loam
- Sn Scantic Silt Loam
- Wa Walpole Fine Sandy Loam
- WmB/WmC/WmD Windsor Loamy Sand
- WrB/WrC Woodbridge Fine Sandy Loam

These soils types include a large amount of the Town that is not wetland, probably three quarters or more of the upland area. Given the nature of the Town and the characteristics of the terrain, it is not realistic to consider most of these areas "prime forestland." While much of the undeveloped land is forested and a significant portion of these soils are identified as "prime forestland" soils, increasing land values of the Town make this resource of little competitive commercial value.

Therefore, emphasis placed on conserving woodland for commercial forestry use alone is misplaced. Programs and promotion of forestry needs to be part of a larger effort to raise awareness within the community of the importance for helping to support the forest habitat value, groundwater recharge value, scenic value, recreational value and non-point source water pollution prevention value. With these additional values as part of the purpose of promoting continued forestry and preserving the opportunities for it, forestry can be integrated into any public and private conservation activities that help keep the remaining forest from being lost to development.

⁹ Now known as the Natural Resource Conservation Service.

HISTORIC AND ARCHAEOLOGICAL RESOURCES

Historic Resources

Due to its early settlement and its pattern of villages, the Town of Harpswell is rich in historic buildings and structures. There are ten individual buildings, a bridge, an island, and an historic district that are listed on the National Register of Historic Places. These are:

- Harpswell Meeting House, Route 123
- Elijah Kellogg House, Route 123
- Merriconeag Farm, Route 123
- Elijah Kellogg Church, Route 123
- East Harpswell Free Will Baptist Church, Cundy' s Harbor Road
- Union Church, Route 123
- Union Hotel, Cundy's Harbor Road
- Halfway Rock Light Station
- Auburn-Harpswell Association Historic District, Route 123
- Eagle Island
- Bailey Island Cribstone Bridge
- Deacon Andrew Dunning House, Mountain Road
- Tarr-Hackett House, Harpswell Neck Road

The Auburn-Harpswell Association Historic District is located to the west of Route 123 with shore frontage on Potts Harbor. It contains 12 historic structures.

Listing on the National Register indicates that these places are of significance and deserving of protection. However, listing on the National Register does little to protect these places. It does require an historic review for projects involving federal funding if these properties are affected. It does not, however, involve any other restriction on the properties.

There may be additional properties in the community that are eligible for inclusion on the National Register. Extensive surveys have been conducted of the properties in Harpswell, at least some of which are held by the Maine Historic Preservation Commission. Further evaluation of the survey data available is needed to identify other properties that may be eligible for listing on the National Register of Historic Places.

There are a substantial number of buildings and structures that are of local historical significance. Although the National Register of Historic Places is national in scope, the program accommodates buildings and sites of national, state and local significance. So it can include properties and sites of local significance reflecting local values.

Archaeologic Resources

Historic Archaeological Sites. In the years since 1993, the Maine Historic Preservation Commission has identified 32 historic archaeological sites:

- Gun Point Saltworks, Anglo-American Saltworks
- First Potts Settlement, English Homestead
- Second Richard Potts Settlement, English Fishing Station
- Nicholas Shapleigh Settlement, English Farmstead
- 5 House Sites, American Domestic
- Great Harbor Cove House, American Domestic
- Bailey's Island Blockhouse, English Blockhouse
- Orr's Island Blockhouse, English Blockhouse
- Harpswell Neck Blockhouse, English Blockhouse
- New Meadows Fort, American Fort
- "MERRICONEAG", American Wreck, Screw
- "CHARLES A. SMITH", American Wreck, Screw
- Skolfield Shipyard, American Shipyard
- "DON", American Wreck, Excursion Boat
- "ORTEM", American Wreck, Yacht
- "POTOMAC", American Wreck, Schooner
- Unidentified Schooner, American Wreck, Schooner
- "GEORGE W. CLIFFORD", American? Wreck
- "CARRIE-?", American Wreck, Coaster
- "CURIO", American Wreck, Gas Screw
- "NOLO", American Wreck, Gas Screw
- "STROLLER", American Wreck, Gas Yacht
- "ELIZABETH W. SMITH", American Wreck Schooner
- "LYDIA", Unidentified Wreck
- "SARA POST", American Wreck, Schooner
- "SKF JAMES", Canadian Wreck, Schooner
- Lowell Cove Clay Pipes Find, American Artifact Find
- Garrison House, Anglo-American Garrison House

Of the above-listed sites, 16 (50%) are shipwreck sites. MHPC states that except for limited testing of a few of the above listed sites during a Casco Bay survey, no other professional survey for historic archaeological sites has been performed to date (as of October 2004). MHPC also suggests that future field work could focus on the site relating to the earliest European settlement of the Town, beginning in the seventeenth century.

Prehistoric Archaeological Sites. The Maine Historic Preservation Commission (MHPC) has subjected approximately half of Harpswell's shoreline to reconnaissance archaeological surveys. As of October 2003, the number of prehistoric archaeological sites identified, 165, reflects a decrease of one since at least 1993, when there were 166

identified sites. At least one of the identified sites has been destroyed by construction within the shoreland zone between April 2002 and October 2003. None of these sites are currently listed on the National Register, although 66 seem to be eligible. All are shell middens located in the shoreland zone. The MHPC recommends that the other half of Harpswell's shoreline should be surveyed as soon as possible.

The MHPC has provided Harpswell with a series of topographic maps of the Town marked to show "prehistoric archaeologically sensitive areas". These are on file at the Town Office. Nearly all of the area shown on these maps as prehistoric archaeologically sensitive areas lies within the shoreland zone.

Harpswell Historical Society

There is an active well-established historical society in Harpswell, which is called the Harpswell Historical Society. The following is an excerpt from the Society's web page:

"The Harpswell Historical Society was created in 1979 by citizens who were concerned about preserving the Old Harpswell Meeting House and its contents. The group, headed by Harpswell resident and first president, Thurlow Alexander, met in the spring of '79 and by fall had a group of 16 charter members dedicated to the preservation of Harpswell's heritage.

"In the following years the Society oversaw repairs and stabilization of the Old Harpswell Meeting House [a Registered National Historic Landmark], was instrumental in relocating the Hearse House, [which still houses one of two horse drawn hearses which were available to Harpswell residents] at Harpswell Center, and assisted in the discovery and reconstruction of the 1759 vintage Harpswell Center Cattle Pound.

"In 1993 the Society received the deed to one of Harpswell's few public community buildings, Centennial Hall. This building was constructed in 1876 by town residents, to celebrate the centennial this country's independence from England. The building served the public as a meeting place for suppers, plays, dances and recitals well into the 1940's and 50's. For many years it was the home of the Harpswell Garden Club and many of their functions were held there. Centennial Hall gradually fell into disuse and ill repair but when Mr. and Mrs. Edwin Thompson made the building available the Historical Society in partnership with the Harpswell Garden Club, arranged to have the building cut into three pieces and moved to Harpswell Center and onto land owned by the Garden Club and designated as the Ann Francis Hodgkins Memorial Park. This then created the Harpswell Historic Park. In the following years the Historic Park Committee, made up of members of both the Historical Society and the Garden Club, has overseen the reconstruction of the building and landscaping of the grounds. This effort is continuing and is about 85% complete.

"As a second addition to the newly created Historic Park, the North Harpswell District # 2 one room schoolhouse was given to the Historical Society by the Wilson Family as an example of one of the nineteen school buildings which once existed in Harpswell. Restoration of this building

continues with the school scheduled to be moved onto a foundation soon and reproduction desks to be installed soon.

‘In the past few years the Society has taken responsibility for the care and upkeep of two of Harpswell' s twenty cemeteries. The Thomas Cemetery and the Wilson Cemetery both on Harpswell Neck. A joint project with the Society and Harpswell Boy Scout troop 634 at Bailey Island is underway to restore the Doughty Cemetery on Great Island which is now abandoned and in a sad state of disrepair.

‘In 1998 the Committee for the conservation of old records began one of the original objectives of the Society. Filing cabinets and flat file drawers were purchased, Acid free files, envelopes were ordered and members attended several workshops at the Maine State Archives in preparation of cataloging and indexing old town records and the growing collection of Society memorabilia and documents.

‘Each year the Historical Society sponsors three public meetings with a guest speaker, which presents a program dealing in some fashion with either Harpswell History or Casco Bay Regional History. (We are always looking for suggestions for speakers or subjects). The programs have traditionally been held at Cundy' s Harbor, Orr' s Island and Harpswell Center.

‘The Harpswell Historical Society consists of a nine member Board Of Directors, which includes the four officers of the Society [President, Vice President, Secretary and Treasurer]. We presently have a membership of nearly one hundred and seventy five.”

As the above excerpt shows, the Society can and does play a meaningful role in promoting knowledge and awareness of the Town's history and important historic structures. Together with Harpswell Garden Club, the Society operates and continues to further develop Harpswell Historic Park.

Issues and Implications

The protection of historic and archaeological sites runs headlong into concerns about private property rights and restrictions on the use of private property. This concern applies particularly to privately owned historic structures and potential archaeological sites. At the same time, there is a desire to preserve our "roots" and the remnants of earlier civilizations.

In addition, the scenic values of some locations in Harpswell depend to an important extent on historic architecture and village lot dimensions, setbacks and building scale, unplanned as they are. Individual development or redevelopment decisions in such locations can significantly affect the scenic appeal and unique character of such locations.

Historic Sites. To help protect the historic appearance of National Register-listed historic structures, the MHPC recommends establishment of a mechanism for reviewing impacts from new construction on or adjacent to such structures. Maine's subdivision statute requires review of impact on "historic sites". Harpswell's subdivision ordinance

includes this review standard. The Town has no definition of “historic sites” that is broad enough to include adjacent and nearby buildings for impact review in subdivisions and Planning Board decisions about applications for expansions, replacements, reconstructions of buildings on non-conforming lots.

Maine’s shoreland zoning statute includes as one of its purposes, “to protect archaeological and historic resources”. Harpswell’s shoreland zoning ordinance contains a review standard for archaeological and historical sites. It requires that, “All proposed land use activities shall be designed to protect archeological and historic sites that have been identified in the Town’s Comprehensive Plan, or by the Maine Historic Preservation Commission or the National Park Service. The developer must submit the application to the MHPC at least 20 days before it appears on the Planning Board agenda. The Planning Board must consider any comments received from the MHPC in acting on the application.

Archaeological Sites. One approach to dealing with the issue of protecting these resources while protecting landowner rights is to provide the opportunity for appropriate public bodies to conduct preliminary investigations when development is proposed, thereby creating an opportunity for them to work with the property owner if a significant resource is identified.

Another approach is a voluntary one in which the property owner is provided with information and assistance in protecting the resource. An example of this was work on the Tarr-Hackett House with assistance from the Harpswell Heritage Land Trust.

FRESH WATER, ESTUARINE AND MARINE WATER RESOURCES

The water resources of Harpswell include surface water, tidal water, and ground water. Residents rely on ground water for drinking and for subsurface waste disposal. The town's tidal waters, ponds, and wetlands provide habitat for numerous species as well as recreational attractions. The town has had several water studies done over the past 10 years. This is a compilation of that data.

Freshwater Resources

Ponds. Harpswell has 10 freshwater ponds that exceed one acre and one that exceeds the 10-acre criteria for a great pond – Ice Pond. (Wright-Pierce) Harpswell has numerous smaller freshwater ponds, freshwater wetlands, and springs. Many of these ponds (8) are used for emergency water supplied for the Volunteer Fire Departments. Dry hydrants permitted by easements allow access to the water in these ponds.

Streams. There are several small streams and brooks that drain the land and flow into the ocean. Freshwater wetlands, often associated with these streams or ponds, are described in the Natural Resources background chapter.

Stream and Pond Water Quality. The State has four water quality classes that describe its water quality goals for streams and rivers (AA, A, B, C), and one class for lakes and ponds (GPA). They are all high standards with little variation between them. All water that attains these classifications meets the minimum “fishable-swimmable” standards established in the Clean Water Act.

Streams in Harpswell designated as Class B. Ponds are designated as GPA. According to the Maine DEP, there is no available water quality sampling data in Harpswell streams to show whether or not these streams are attaining their present water quality classification.

Threats to Water Quality. The principal threats to surface water quality in Harpswell streams are erosion and sedimentation from clearing for development, construction sites, timber harvesting, and road and driveway ditches. Automotive runoff from roads and parking lots, chemical fertilizers and herbicides from fields and lawns are additional threats to surface water quality. Development can contribute to erosion and sedimentation problems both during and after construction. After clearing and/or during construction stormwater runoff from bare earth can erode sediment from areas stripped of their vegetation and deposit the sediments into streams. After construction, worn areas, and poorly designed roads, paths and driveways, can cause erosion and sedimentation.

In pond watersheds, development raises the level of phosphorus contained in stormwater runoff. When these higher concentrations of phosphorus reach the lake or pond, they can, over time increase the concentration of phosphorus much more rapidly than under the natural conditions of a wooded watershed. At a density of one home on two acres,

the concentration of phosphorus can increase by a factor of 10. Phosphorus adds plant food to the water of a lake or pond. This can lead to more consumption of dissolved oxygen by algae in the water, decreased visibility within the water, increased temperature and even algae blooms.

Bacterial pollution in streams has limited adverse effects on the streams themselves. However, if a septic system is failing near a stream and the stream is carrying high fecal coliform counts, bacterial pollution in adjacent coastal waters can result. This pollution of coastal waters can be the basis on which shellfishing areas are closed to harvest.

Existing Measures to Protect Surface Water Quality. The Town of Harpswell has long been aware of the important relationship of stormwater runoff and stream water quality. The Town also knows that stream water quality affects estuarine and marine water quality. Accordingly, the Town has adopted strong standards limiting non-point source pollution from new development.

- Erosion and Sedimentation Controls. Under current ordinances, erosion and sedimentation control plans are required under the Basic Land Use, Shoreland Zoning, the Subdivision Ordinance and the site plan review ordinance. Shoreland zoning requires at least a 75' setback from wetlands, and prohibits clearing of vegetation within the setback, except as needed for paths.
- Phosphorus Controls in Great Pond Watersheds. Because of the potential for degradation of water quality in lakes and ponds, the Maine Legislature amended the subdivision law to require that subdivisions in great pond watersheds be reviewed for their phosphorus impact on the lake or pond in question. Since the Town's Subdivision Ordinance references the general review criteria of the subdivision statute, the Town does already have the authority to review for phosphorus impacts of any new subdivision proposed in the Ice Pond watershed.
- Stormwater Management. The Basic Land Use Ordinance and the Shoreland Zoning require new development to limit the amount of stormwater discharged post development to the same as close to pre-development amounts as possible. These two ordinances also require, wherever possible that the stormwater runoff be directed across vegetative buffers or into vegetated swales or other natural or built feature that will help to filter pollutants from the stormwater. The site plan review ordinance allows the Planning Board authority to regulate the quality of stormwater runoff from buildings and parking lots. The Subdivision Ordinance also regulates stormwater amounts and quality.

Except to the extent required under minimum State shoreland zoning standards, the Town does not regulate non-point source pollutants from agriculture, animal husbandry or from timber harvesting.

Nearly all streams in Harpswell are not required under State shoreland zoning standards to have a 75' Stream Protection District of undisturbed buffer along each side of them.

However, for most uses, the current Maine Natural Resources Protection Act rules will require a 75' setback in any case.

Tidal Waters

On almost all of its borders, Harpswell is surrounded by salt water, ranging from the open ocean to saltwater marshes. There are three main bays and one river – Middle Bay, Harpswell Sound, Quahog Bay, and the New Meadows River. Harpswell has one of the longest shorelines among Towns in Maine, at 216 miles.

Estuarine and Marine Water Quality. The DEP classifies surface waters according to their desired use and water quality necessary to support that use. Tidal waters in Harpswell are designated Class SA. Class SA is the highest water quality classification for estuarine and marine waters. Class SA waters are to be:

“...suitable for the designated uses of recreation in and on the water, fishing, aquaculture, propagation and harvesting of shellfish and navigation and as habitat for fish and other estuarine and marine life. The habitat shall be characterized as free-flowing and natural.... The estuarine and marine life, dissolved oxygen and bacteria content of Class SA waters shall be as naturally occurs...There may be no discharge to direct discharge of pollutants to Class SA waters, except storm water discharges that are in compliance with state and local requirements.”¹⁰

In those shellfishing areas that have been closed by the State Department of Marine Resources due to bacterial contamination, we can tell by this statement that the bacterial standard listed above is either not being met or there is the distinct possibility it will not be met based on the presence of one or more overboard discharge systems or other threat of contamination.

Monthly water quality monitoring is conducted along the coast of Harpswell, testing for the presence of fecal coliform organisms. Fecal coliform counts are an indicator of the presence of human waste in the water. The results of these tests are important in terms of shellfish area closures.

There are 93 remaining licensed Over Board Discharges in Harpswell. The result is that many areas of the coast are closed to shellfish harvesting.

Threats to Marine Water Quality. According to the most recent published reports from the Maine Department of Environmental Protection, estuarine waters are attaining some SB uses from Parker Point in Yarmouth to the south end of Butler Cove (Merrymeeting Bay), Bath. This is another indication that Harpswell's estuarine and marine waters are not attaining the State's water quality goal of Class SA. The Town's marine water quality depends in part on the quality of stormwater runoff, the effectiveness of septic systems, and the discharge or containment of sanitary wastes by boats into marine waters.

¹⁰ This paragraph quotes excerpts from 38 MRSA §465-B 1A, 1B, and 1C, the Maine statute that sets water quality goals for estuarine and marine waters of the state.

- Stormwater runoff carries sediment, bacteria, nutrients, fertilizers, pesticides, herbicides, oil, grease and other automotive chemicals into marine waters and organisms ingesting them. These materials are collected by the runoff from roads, ditches, construction sites, fields, lawns and parking areas and carried to the sea in rainwater and snowmelt.

During the 1990's the Maine DEP developed "Best Management Practices" (BMPs) for limiting pollution in stormwater runoff from several sources, including agriculture, timber harvesting, erosion from construction sites, and stormwater from development. BMPs are published in a series of manuals by the DEP. Depending on the activity, BMPs can be applied by landowners voluntarily or by regulation. For development the DEP reviews, BMPs are generally required for controlling erosion and protecting stormwater quality. BMP's for agriculture or timber harvesting are generally applied voluntarily. The Town requires BMPs for new development reviewed under its site plan review ordinance, subdivision ordinance and shoreland zoning. Neither the DEP nor the Town applies BMP's to management of the impacts from existing roads and driveways, or from ditches. If not maintained properly these can be a source of erosion and sedimentation as well as automotive pollutants. Some communities choose to address such impacts voluntarily through coastal watershed surveys and follow-up remediation work. Others require their municipal road crews or contractors to use BMPs in performing road and ditch maintenance and reconstruction projects.

- Septic Systems. Not all septic systems are sited, constructed and maintained so as to function properly and without adverse impact on groundwater. Particularly along the shore, and especially in older, more dense areas of shoreline development, septic systems may allow tainted effluent to contaminate marine waters and adjacent shellfish areas, rendering them unsafe for shellfish harvesting and subject to regulatory closure to prevent human consumption at least until the contamination problems are corrected.

The 2001 Wright-Pierce Drinking Water and Sanitary Septic Study – Phase I Report identifies, describes and maps the incidence and likelihood of a range of septic system problems and issues. While new septic systems must be designed to conform with the Maine State Plumbing Code and the minimum setback in the Town's DEP-approved shoreland zoning ordinance, existing systems, whether or not they were constructed according to the Plumbing Code, are not required to be upgraded until a problem becomes evident. And sometimes there is no suitable site for a replacement system on a property that needs it. In such circumstances, the Plumbing Code does allow for replacement system variances.

However, in the last few years, the options for new and replacement systems have broadened considerably, due to more efficient wastewater disposal and treatment technologies that are now recognized by and acceptable under the Plumbing Code. These new technologies sometimes require less land because of their new degree of

efficiency. This likely poses an opportunity for improving groundwater conditions in some existing older densely developed areas. But the same improved efficiency may also render some sensitive locations, including shoreland locations and offshore islands developable, where previously they were not.

- Overboard discharge systems (OBDs) are prime sources of potential contamination of marine waters with fecal coliform bacteria, and just the presence of one or more OBDs will trigger regulatory closure of an adjacent shellfish area, irrespective of the presence or absence of evidence of contamination.

New OBDs for residential and commercial uses are no longer licensed by the DEP. Those that were licensed, beginning in the 1970's and extending into the 1980's have been targeted by the State for removal and replacement with a system that eliminates the discharge to marine waters. For the past several years, Harpswell has worked with the DEP to provide financial and technical assistance to owners of OBD systems for their removal and replacement. Statewide the systems are targeted in order of priority for potential redemption of closed shellfish beds as productive beds subject to local shellfish resource management and harvesting.

To date, Harpswell property owners have reduced the total number of OBDs from 127 to 93. The program is still continuing to help remove additional OBDs. It is possible that the new wastewater disposal and treatment options cited above, will also offer new options for OBD replacement. In some locations, the new technology may offer an option where previously there was none. See the Water Resources Map for the locations of remaining OBD systems.

Ultimately, the question of whether or not to open a closed shellfish area may depend not only on the absence of OBDs discharging near it or directly into it, but also on the effectiveness of controls on stormwater quality as well as the remediation of failing septic systems as well. Any source of fecal coliform bacteria, even non-human sources such as domestic animals, can be sufficient grounds for the Maine Department of Marine Resources (DMR) to close an area, under FDA regulations. The DMR's marine water quality monitoring in the area will need to provide evidence that pollution is within acceptable limits before an area can be reopened.

The overall success of the OBD removal program at allowing shellfish areas to be reopened may therefore depend to a substantial extent on how well the Town also addresses problems with septic systems and stormwater runoff generally.

- Marine Sanitary Waste from boats poses another threat to marine ecosystem and human health when onboard holding tanks are emptied into marine waters instead of being pumped out at licensed marine sanitary pump out stations. Pump-out stations exist at Dolphin Marine Services in South Harpswell and Great Island Boat Yard in Quahog Bay. There is also a pump-out station at Paul's Marina on Mere Point, adjacent to Birch Island in Harpswell. One issue the Town faces is whether

these will be adequate to meet the need and whether boat owners will know they are there, know the impacts of discharging marine toilets at sea or in harbor, and will take advantage of them.

- Nutrients, Dissolved Oxygen and Fish Kills. In the same way that phosphorus serves as plant food in freshwater and can lead to algae blooms and lowered dissolved oxygen when present in excessive concentrations in lake water, nitrates in estuarine water can cause dissolved oxygen in estuarine waters to drop by stimulating growth of marine algae. Although the causes of the 1988 fish kill in Maquoit Bay are still debated among scientists, with some attributing the high nitrate concentrations to human impact and others supporting natural long term cyclical fluctuations in nitrate concentrations, it is still clear that, for whichever reason, a fish kill due to excessive algae consumption of oxygen did occur.
- Too Many Pogies. Though there is little anyone could have done to prevent the sudden fish kill in parts of Harpswell, including Quahog Bay, in 1990 due to massive numbers of pogies entering coves with relatively poor water circulation, this is another example in recent memory of how fish kills can, and once in a great while, do occur due to natural causes.

Existing Measures to Protect Estuarine and Marine Water Quality. Existing measures to control erosion and sedimentation using Harpswell's land use ordinances are described above under Existing Measures to Protect Surface Water Quality. Other measures in local ordinances that help to protect estuarine and marine water quality include Shoreland Zoning setbacks of 75' and strict limitations on clearing for development and on timber harvesting and vegetation removal within the 75' setback. The Plumbing Code also requires a minimum setback from the normal high water line for new septic systems. It is noteworthy that the Plumbing Code is not designed to mitigate against nitrate pollution of groundwater. This fact makes it all the more important that the Planning Board has the authority under the Subdivision Ordinance and the Site Plan Review Ordinance to require hydrogeologic assessments prior to approving proposed subdivisions and site plans. Where these are on waterfront property, this authority can contribute, if used to do so, to ensuring that nitrates in septic system effluent do not reach the sea in concentrations any greater than would be permitted under federal drinking water standards.

Marine Pumpout Stations have been described above. There is also a mobile marine pump-out boat that is operated by the Friends of Casco Bay that serves South Portland to Freeport.

Marine Resources. The significance of protecting water quality on an ongoing basis is not only aesthetic and environmental, it is economic as well. There are many marine resource-harvesting businesses, restaurant and tourism-related businesses that depend on a continuing high quality marine environment. As detailed in the Marine Economy sections of Parts I and II of this Plan, marine resources are the basis for 50 to 60% of the local job base.

- Shellfish. Harvested species include, but are not limited to, soft-shell clams. From 1997 through 2003, the seven-year average weight of soft-shell clam landings in Harpswell was 829,061 pounds per year. This amount exceeds not only any other town in Cumberland County, but also any other town in Maine for the same period, except for Waldoboro. Given that approximately half of the shellfish growing areas in Harpswell are closed due to contamination or the presence of overboard discharges, there is also potentially significant economic payback to the community at large if existing shellfish beds can be reopened. Currently there are 85 commercial harvesting licenses issued by the Town. The local shellfish resource is managed by the Marine Resources Committee and the Marine Patrol Officers who administer and enforce Harpswell's Shellfish Ordinance. Volunteers who report to the Maine Department of Marine Resources frequently monitor water quality. The Friends of Casco Bay also monitor water quality at over 100 sites in Casco Bay including Harpswell waters.
- Lobsters. Approximately 200 lobster boats based in Harpswell and their crews depend on a clean marine environment for producing abundant and clean lobsters for sale to local as well as regional, national and international customers.

Of more indirect but still substantial economic as well as environmental value, and also dependent on a clean marine environment for their continued existence are the following resources:

- Eelgrass Meadows. In shallow, near-shore areas, eelgrass can grow in large meadows. Eelgrass meadows help trap sediment that contributes to shellfish beds and serve as nursery areas for several species of fish, including small flounder and mussels and other shellfish. They also provide food for migrating waterfowl. Today eelgrass meadows are comparatively rare. In the 1930's an eelgrass wasting disease destroyed 90% of eelgrass growing along the East Coast. Too much suspended sediment can block light to eelgrass meadows and cause them to die back and relinquish their root system's stabilizing effect on the bottom sediment. Although eelgrass has rebounded somewhat since the 1930's it faces new threats such as sediment in runoff from development, boat traffic, dragging of fishing gear, harvest of shellfish and periodic dredging of navigational channels. Recent outbreaks of eelgrass wasting disease have occurred in Maquoit and Middle Bays.

Eelgrass, though rare, plays a significant role in the marine environment and the land-based economy that depends on shellfish, fisheries and bird watching. Only some of the stresses on the resource are land-based, mostly those activities that generate sediment. If the marine activities that pose the other threats listed can be directed elsewhere than the eelgrass meadows, whether through regulation or education, the resources chances of expanding will be improved as would the consequent benefits for the marine economy and quality of life.

- Coastal Wading Bird and Waterfowl Habitat. Besides supporting shellfish, intertidal flats also support a Baltic clams, gems clams, mussels, periwinkles, amphipods,

marine worms, and other species that make these areas important feeding habitat for coastal wading birds and migratory waterfowl. Salt marshes are also important coastal wading bird and waterfowl habitat. Maine has designated these kinds of areas and others as one type of significant wildlife habitat under the Natural Resources Protection Act, and the Maine Department of Inland Fisheries and Wildlife has mapped Coastal Wading Bird and Waterfowl Habitat, including that within Harpswell. See the Natural Resources Map for specific locations.

As with most marine resources, these habitat areas are more likely to support waterfowl and wading birds, when the water quality on them is unimpaired by pollution impacts from the land. Another important factor in their use, particularly for species of birds that are more sensitive to the presence of humans (and even pets) is the degree to which nearby development is screened from these areas so as to afford some security for the birds. Vegetative screening enhances this sense and also contributes to more effective filtration of pollutants from runoff.

Continuing shoreline development may pose a threat to the current rate of usage of these intertidal flat and marsh areas by birds that help keep the marine environment in balance, provide an important element of the unique quality of life in Harpswell, and offer important potential for recreation and birdwatching as part of the local economy. Although some areas are designated significant wildlife habitat by the State, this designation does not currently have a regulatory significance under DEP rules. So the Town may wish to evaluate its shoreland zoning to determine whether additional riparian buffers adjacent to coastal wading bird and waterfowl habitat areas are warranted.

- Seabird Nesting Islands. Several of the many offshore islands of Harpswell, particularly those closer to the open Atlantic Ocean, have been designated as seabird nesting islands, another form of significant wildlife habitat that has been mapped by the State. These islands play a critical role in the reproductive cycle of many species of seabirds, and, unlike coastal wading bird and waterfowl habitat areas, they are subject to protection from development under DEP rules and Harpswell's shoreland zoning. Two of these islands, Pond Island and Jenny Island are also habitat for the roseate tern, which is on both the State and federal lists of endangered species.

Although not subject to development, these islands can be visited by their owners and by sea kayakers and others arriving by boat to explore. On the one hand, they may provide an opportunity for ecotourism, and on the other, they are a fragile resource best left as undisturbed as possible if they are to perform their critical role in the birds' reproductive cycles.

- Regional Coordination. Regional watershed management efforts, such as the Casco Bay Estuary Project, the Friends of Casco Bay, and the New Meadows River Watershed Project, are working on all the above issues, and Harpswell in varying degrees is participating in such regional efforts. Harpswell will need to decide how much to coordinate its actions with those of other Town's and these public and

private non-profit organizations. These organizations offer monitoring, data and technical options and programs for working on these issues. The Town may wish to consider using these resources for educational purposes and/or for development of more effective Town ordinances, or both.

GROUNDWATER RESOURCES

This background chapter provides a more detailed look at relevant planning information and issues than the Background Trends and Analysis/Issues statement on Groundwater in Part I that precedes and introduces the Goals, Policies and Action Recommendations on groundwater.

Studies and Well Surveys

In 1982 the town commissioned a report, "Ground Water Resource Analysis, Harpswell, Maine" by Robert G. Gerber, Consulting Engineer & Geologist, and John R. Rand, Consulting Geologist, then both Harpswell residents, to assess the groundwater quality and quantity status of the town. This study drew on the results of a well survey that produced data on 1100 wells in Harpswell. The 1993 Comprehensive plan was largely based on data from the Gerber-Rand report.

In 2001, the Town completed Phase I of another study with the assistance of Wright-Pierce, a Topsham engineering firm. The report is entitled, "Drinking Water and Sanitary Septic Study – Phase I". The report made use of the Gerber-Rand Study well data and analysis, and on well data on new wells reported to the Maine Geological Survey beginning in 1987, as required by state law.

In 2002, D.W. Newberg Associates, Inc. of Harpswell gave a workshop and prepared a workshop on "Land Use Planning: Some Hydrogeologic Considerations" for the Conservation Commission.

Policies and Action Recommendations in Part I draw on the findings and recommendations of these surveys and studies. All three of the study reports are part of the Appendices to this Comprehensive Plan and are available for review at the Town Office.

Additional analysis was conducted by the Harpswell Comprehensive Plan Committee with computerized mapping assistance from the Greater Portland Council of Governments and technical assistance from Andrews L. Tolman, a professional hydrogeologist at the Maine Drinking Water Program to obtain a clearer picture of current groundwater usage rates in relation to rates of groundwater recharge, within each of the many small drainage basins within the town. The method for completing this analysis was adapted from a similar study method used in a townwide hydrogeologic study completed by Woodard & Curran for the Town of Phippsburg. The results of the analysis showed that while there are localized problems of insufficient groundwater quantity in existing wells, sometimes associated with saltwater intrusion, no drainage basin in Harpswell presently uses more than 30% of available recharge, and almost all use less than 20%.

A table map showing individual drainage basin results is contained in the Appendix. The watersheds are mapped and labeled on the Drainage Basin Analysis Map. Both are

available for review at the Town Office. The map was used in the preparation of the Development Constraints Map described in the Future Land Use Plan section of this Plan.

Description of the Resource

The following is a very brief and basic description of the groundwater system in Harpswell. More detail can be found in the Gerber-Rand Study and the Wright Pierce Study.

1. Hydrogeologic Cycle: When rain falls, or snow melts, some of it runs over the surface of the land and a small portion of it seeps into the soil. Of that portion that seeps into soil, some stays in the soil and some infiltrates still further downward to where soil, subsoil or bedrock fissures are saturated with water: the water table. The water table is the underground surface of a vast underground reservoir of water that that has built up slowly over geologic time and fills the many cracks and fissures of the bedrock and portions of the soil and subsoil deposits on the surface of the bedrock.

Water moves within this matrix of earth and rock. The water table slopes beneath the surface of the land toward the sea. As more rain and melting snow slowly supply the system with water from the land surface, the groundwater flows ‘downhill’ within the land and exits where the land meets the sea. In this process, groundwater also supplies most of the flow in streams, where the water table emerges at the land surface. Rainfall causes streams to swell or subside, but groundwater supplies the steadier base flow that keeps water flowing in the streams between storms.

From above, the groundwater and soil water are drawn upon by vegetation drawing water up through its roots. Much more groundwater is used by plants and lost to the sea than is taken up by people using wells and springs. What water runs off to the sea, whether in a stream or underground, and what water is released by plants animals and humans to the environment all returns to the sea and the sky and then again to the land in the form of rain and snow.

2. Bedrock Geology: From the Gerber-Rand study summary: ‘The bedrock in Harpswell is divisible into thirteen major rock types... The single feature that characterizes most of the bedrock as a groundwater aquifer...is its layered fabric, with thin, platy laminations sandwiched between thicker, more massive beds. The layers trend parallel with the distinctive north-south grain of the Town’s peninsulas and islands, and are stacked upright, on end, like books on shelf. The rock tends to separate along the platy laminations, creating a multitude of narrow passageways through which groundwater can flow both down to depth and laterally to the north or south through the Town. In addition to these numerous lamination openings, the rock is also cracked at wider intervals by nearly vertical fractures that cut east-west across the layering. The bedrock aquifers of most of Harpswell owe their existence primarily to water moving through the lamination openings, although cross-fractures can locally be very important sources of ground water.’

3. Surficial Geology, Soils, and Recharge: Also from the Gerber-Rand study summary: “Harpwell soil types, which originated as Surficial deposits formed during either the advance or retreat of the last major glacier to cover Maine, are generally too thin to constitute reliable aquifers in themselves. The soils are very important, however, in that they dictate the rate that ground water can be recharged to the bedrock aquifers in their areas. Five major soil types have been identified whose natural differences in texture, compactness and thickness lead to significant differences in bedrock recharge, ranging from a low average annual recharge rate of 0.11 to a high of 0.91 gallons per minute per acre of soil area. The recharge potential of a soil is notably dependent on the vegetative cover and land use on that soil. There is much greater recharge potential in forested areas than in grasslands or areas of bare soil. No ground water recharge occurs in areas covered by such impervious structures as roads, parking lots and buildings.”

4. Aquifers: There are no sand and gravel aquifers in Harpswell shown on the Maine Geological Survey’s sand and gravel aquifer map series. Sand and gravel aquifers are typically formed from water-sorted glacial deposits and offer well yields of from 10 to 50 gallons per minute (gpm) or more.

Although this source says Harpswell does not have sand and gravel aquifers, Harpswell does have some documented locations, based on existing wells that currently provide high well yields from bedrock wells. The Wright Pierce Study documents and maps several known locations of high and moderate well yields. These locations are shown on the Water Resources Map of this comprehensive plan.

In addition, the Gerber-Rand study summary describes several possible high yield aquifer locations. “Several areas in Harpswell deserve special attention because of their inferred potential as relatively high-yield aquifers. Near South Harpswell, Merriman Cove/Harpwell Center, and on Bailey Island, three deposits of thick glacial till soil may overlie aquifers contained in buried sand and gravel deposits... Relatively high -yield bedrock aquifers may also exist, in narrow structures that cut northeasterly across the bedrock grain from western Harpswell Neck to eastern Great Island. The longest of these structures is a steeply-inclined diabase dike, a tabular volcanic intrusion up to 100’ in thickness, that is characterized by closely spaced, fairly open fractures. Shorter potential bedrock aquifers are inferred by topographic lineaments that cross the Long Reach Mountain and Orrs Hill on Great Island, possibly reflecting narrow zones of closely-fractured, saturated bedrock. The possibility that one or more of these special geologic features may ultimately be shown capable of providing substantial quantities of water for nearby community or commercial use distinguishes them as subjects for early protection and continued evaluation.”

5. Wells and Septic Systems: Except for a handful of developments that have two or more houses sharing wells and/or septic systems, residential development in Harpswell relies exclusively on individual on-site private wells and septic systems for water supply and wastewater disposal. There are 32 ‘public water supplies’ operated by the schools and private commercial land uses. The term ‘public water supply’ means any well having 15 or more service connections and/or serving 25 or more individuals are served

daily for at least 60 days per year. These wells are typically higher yield wells than domestic wells, but they may also be very small, such as when a small store sells coffee. The Maine Drinking Water Program requires monthly testing and reporting for a range of potential contaminants.

Threats to Groundwater

As in all Maine towns, groundwater in Harpswell is vulnerable to pollution from many sources. And groundwater in Harpswell is variable in its natural water quality and well yields. And as with many Maine towns, there are some existing groundwater problems and future development poses additional threats. Unlike most towns, Harpswell is surrounded by ocean and one is never more and often less than one-half mile from the water. And because Harpswell has more shoreline than any other Maine town, a very high percentage of existing and future development is now located and can be expected to locate along the shore.

1. Water Quantity: Within several densely built-up areas there are some locations where the cumulative use of groundwater by many leads to the wells of a few going dry or having reduced yields in the summer months of highest use. In some cases, the water table of freshwater has thinned due to excessive use in the area and wells draw in salt water from below the freshwater, which because it is less dense than saltwater, floats like a lens on the more extensive saltwater that underlies it.

2. Water Quality: There are several kinds of existing water quality problems that have been documented through the well surveys and the groundwater studies cited above. These can be divided into two categories: naturally-occurring and of human origin.

Naturally occurring quality problems consist primarily of high levels of iron, arsenic and magnesium, which have all been found in many wells, as documented in more detail in both the Gerber-Rand and Wright-Pierce studies. In many cases, the well owner applies treatment to reduce these contaminants to more acceptable levels. Existing problems of human origin fall mainly into four categories: nitrate-nitrogen and pathogens from septic systems, road salt in wells near major roads, saltwater intrusion into wells along densely developed shores, and petroleum product spills.

The Wright-Pierce study has documented and mapped known water quality problems of human origin. The locations of existing problems appear on the Water Resources Map. Although it is not documented on the Water Resource Map there also exists fuel contamination of groundwater underlying the Mitchell Field site, which was the former fuel depot for the US Navy that served the Brunswick Naval Air Station, which was later given by the Navy to the Town. The Maine Department of Environmental Protection has advised the Town that it will take several decades for this site to purge itself of the remaining contaminants to a degree that would render the site suitable for uses that depend on drinking water wells.

3. Potential Problems from Continuing Development: While most of Harpswell currently enjoys good water quality and sufficient water quantity, the available groundwater resources are not infinite, and in many locations, as the Water Resources Map shows, problems are beginning to emerge. Depending on how future development takes place, what kind of development at what scale or density, and where it happens, the types of problems in evidence now could become more common and/or grow worse where they are now.

a. Trends in nitrate and bacteria exceedances.

Keeping in mind that the well data for 1982 and 1990 through 2000 represents different sampling methods and sample sizes, the trends in the percentage of wells whose water exceeded water quality standards for nitrate and bacteria grew substantially between the earlier and the later tests. Bacteria exceedances rose from 2.0% (19 in 939 wells) in 1982 to 38.6% (128 of 332 tests). Nitrate exceedances rose from 0.7% (7 in 939 wells) in 1982 to 14.0% (34 of 242 tests).

b. Potential use impacts.

Currently there is no zoning in Harpswell that limits permitted uses anywhere except in the shoreland zone. It is therefore quite possible that some large use such as a major resort hotel or, perhaps less probable, but still possible, an office complex could place unusually large and concentrated demands on the groundwater system. Also, it is possible that some allowed commercial uses could present wastewater quality issues. Current site plan review and subdivision ordinances allow the Planning Board to require hydrogeologic studies from an applicant to show whether a proposed use will meet current state and federal groundwater standards. However, the question of whether some uses should be excluded outright or accepted but only at a limited scale, needs to be examined.

c. Potential density impacts.

Current minimum lot sizes are one acre for residential development that is not part of a subdivision and two acres when it is part of subdivision. From the perspective of nitrate-nitrogen pollution prevention, the Gerber-Rand study and the Wright Pierce study recommend that allowable density for new development be based on soil type. Both studies concur that there are five major soil types in Harpswell and that each should be developed at a minimum lot size that ranges from 0.5 to 4.2 acres. Current hydrogeologic study requirements for site plan and subdivision can help evaluate individual proposals, but the question of whether to establish different minimum lot sizes in different parts of Town also needs to be examined. Salt intrusion impacts of new development are not easy to model and none of the three geologic reports reviewed offered a minimum lot size to address this question. Shoreland zoning requires that new wells be set back at least 100 feet from the ocean. To prevent salt intrusion in new wells, Wright-Pierce recommends locating them at least 200 feet from the shoreline. To prevent additional salt intrusion in

areas where it already has occurred, whether in new or existing wells, Wright-Pierce also recommends discouraging new residential development in these areas.

d. Potential petroleum spills, road salt.

New fuel storage tanks and related piping located outdoors are subject to some of the same hazards that have led to spills in the past. Since the ice storm of 1998, they are now known to be subject to another – falling ice and falling objects weighted by ice. Both Wright-Pierce and Newberg Associates offer some recommendations for improved safety in design and improved inspections and enforcement of safety standards. Existing wells near roads are at the mercy of the amount of salt applied to the road in that location. New wells have the option, but are not required to be located any minimum distance from an existing well-traveled and/or especially hazardous adjacent section of road.

e. Public water supply options.

In the event that portions of Harpswell become overbuilt from the standpoint of remaining serviceable by private wells and septic systems, any form of centralized public water supply would be infeasible due to high total costs and insufficient numbers of users to make water use fees affordable. However, the various potential aquifers indicated by areas of known high and moderate yield wells do appear to offer some promise for small community scale water wells serving nearby development. They also offer the potential for commercial uses that use ample amounts of water such as restaurants or hotels.

Until such locations are investigated to learn more about what they offer and what land use regulations may be needed to protect their recharge areas, the Town cannot plan for either their retention as potential future water supplies or their use to serve commercial needs.

Additional Groundwater Protection Needs

With its substantial and growing database on groundwater from well surveys and the three study reports referred to herein, the Town needs to begin implementing measures to help prevent further localized groundwater problems, protect groundwater quality generally from new development, and learn its full range of options with respect to possible future public water supplies. To this end, principal recommendations of the three reports are excerpted and included in the following table:

	Gerber-Rand	Wright-Pierce	D. W. Newberg
Minimum Lot Size	<p>Recommended Minimum Lot Sizes are based on 5 major soil types identified in Harpswell and are intended to protect against excessive nitrate-nitrogen concentration in groundwater:</p> <ul style="list-style-type: none"> ○ “Glaciomarine Sand – 0.5 acres ○ Reworked Glacial Till – 0.8 acres ○ Glacial Till/Exposed Bedrock - 1.3 acres ○ Lodgement Till – 2.0 acres ○ Glaciomarine Clay/Silt – 4.2 acres” <p>Here is the general context in which this recommendation is offered.</p> <ul style="list-style-type: none"> ○ “Land use controls can take many forms. For example, Harpswell could be divided into a number of separate land use districts, with each district having its own permitted, conditional, and prohibited uses. Performance standards could be established for each type of permitted and conditional use. For example setback requirements could be specified for borrow pits and regulations could be adopted pertaining to borrow pit reclamation.” 	<ul style="list-style-type: none"> ○ Same minimum lot sizes based on soil types as Gerber-Rand, with the following recommendation: “There were a number of assumptions made when developing these minimum lot sizes such as the nitrogen concentration in the wastewater, the slope of the land, rainfall amounts, and the potential for denitrification in the soil. More conservative assumptions would yield larger minimum lot sizes whereas less conservative assumptions would yield larger minimum lot sizes. It may be desirable in the future phases of these study to utilize assumptions more specific to individual areas to assist in prioritizing certain areas of Town.” 	<ul style="list-style-type: none"> ○ No minimum lot size recommendation made.

	Gerber-Rand	Wright-Pierce	D. W. Newberg
Protection of Recharge, Quantity and Quality	<ul style="list-style-type: none"> ○ With respect to recommended residential densities in Table 8: “Notice that the restrictions on housing density due to water quality considerations result in allowable densities that are only about one-half those that are allowable due to considerations of recharge potential.” ○ “The most prominent effect of commercialization is reduction in recharge due to addition of impervious area. ○ “The types of waste produced [from commercial or industrial development] and the methods of waste disposal should be carefully controlled.” ○ “For example setback requirements could be specified for borrow pits and regulations could be adopted pertaining to borrow pit reclamation.” 	<ul style="list-style-type: none"> ○ No recommendation made. 	<ul style="list-style-type: none"> ○ No recommendation made.

	Gerber-Rand	Wright-Pierce	D. W. Newberg
Nitrate-Nitrogen: Preventive	<ul style="list-style-type: none"> ○ See Minimum Lot Size above. ○ “Allowable residential densities could be defined in different areas according to our soil map and the calculated allowable densities in Table 8.” [See Minimum Lot Sizes, above.] ○ “Any commercial development should be designed to follow two simple rules: a) the total runoff from the site in the developed state will not be increased beyond that in the undeveloped state (unless it can be shown that an increase in runoff will have no offsite impact); and b) the concentration of any pollutants introduced into the soil on the site will be attenuated to Safe Drinking Water Standard at the site boundary.” ○ “In order to evaluate impacts on ground water, the subdivider should be required to map basic soil, water table, and drainage conditions. The developer should be required to lay out leachfields and wells in a manner that will minimize offsite ground water contamination. As recommended for commercial projects, subdivisions should be designed so that runoff is not increased by the project and Safe Drinking Water Standards will be met at the boundary.” 	<ul style="list-style-type: none"> ○ “Increase separation distances between septic system and wells to a minimum of 200 feet between a septic system and a downgradient well and 150 feet between a septic system and a well located laterally.” ○ “Regulated density of development to lot sizes discussed in Section 7.” [Gerber-Rand recommendations above] ○ “Perform regular inspection and pumping of septic tanks.” ○ “Recommend periodic testing of private wells (e.g., annual water quality testing).” ○ Track septic system maintenance to include notifying homeowners when it is time to pump out septic tank.” ○ “Construct individual or small community advanced treatment systems that can remove nitrate and bacteria.” ○ Consider limiting conversions of seasonal homes into year round homes.” 	<ul style="list-style-type: none"> ○ “For all site evaluations in which a septic system design is based on a profile of 4, 5, or 6 soil the Site Evaluator should be required to identify, and locate on the HH-200 form, all down-gradient dug wells, springs, and well points which are within 300’ of the proposed system. If requested by the owner of the water supply, the owner of the proposed system should be required to pay for semi-annual monitoring of the nitrate concentration in the water supply.”

	Gerber-Rand	Wright-Pierce	D. W. Newberg
Nitrate-Nitrogen: Remedial	<ul style="list-style-type: none"> ○ No recommendation beyond a general recommendation of strict enforcement. 	<ul style="list-style-type: none"> ○ “Replace failed or substandard [septic] systems with properly designed and constructed systems.” ○ “Construction of small community system with individual septic tanks and shared leaching field.” 	<ul style="list-style-type: none"> ○ No recommendation more specific to nitrate-nitrogen remediation than the one related to finding suspected community supply source present on Bailey Island, directed mainly at saltwater intrusion.
Saltwater Intrusion	<ul style="list-style-type: none"> ○ “We cannot, at this time, recommend a permissible housing density based upon considerations of salt-water intrusion potential. The potential for salt-water intrusion is complexly related to local geology, distance from the ocean, pumping rates, well location, and local recharge rates. All of these factors could only be taken into account in a ground water simulation model which would be difficult to develop. Until such models can be developed, we suggest that the allowable densities as determined by Figure 8 [listed above] be used as a guideline for preventing salt-water intrusion.” 	<ul style="list-style-type: none"> ○ “Locate wells at least 200 feet from shoreline.” ○ “Discourage additional building in areas with a potential for saltwater intrusion shown in Figure 2-4.” [map] 	<ul style="list-style-type: none"> ○ “The Town should identify an area on Bailey Island where Hinckley Series and related soils suggest the presence of permeable, coarse-textured sediments overlying bedrock, and where a water supply well could, if installed, be protected and utilized by the public. Such a water source would presumably be of particular benefit to the residents of the southern portion of Orrs Island and Bailey Island where well water is impacted by saltwater intrusion.”

	Gerber-Rand	Wright-Pierce	D. W. Newberg
Petroleum Storage	<ul style="list-style-type: none"> ○ No recommendations specific to petroleum storage. 	<ul style="list-style-type: none"> ○ “Distribute information related to spill planning.” ○ Heating oil tank inspection program.” 	<ul style="list-style-type: none"> ○ “The Town of Harpswell should require every individual proposing to install an underground fuel storage tank to provide information on the depth to bedrock, type of overburden and depth to the water table. (Obtaining this information may require test borings and/or seismic investigation of the subsurface.) In addition, all wells, Waterbodies, and other facilities within 1000’ which might be threatened should be located on a plan drawn to scale. These data should be presented in sufficient detail as to facilitate decisions as to whether, and how, to attempt recovery of free product in the event of a spill. The information should be made available to all parties potentially responding to such an event.” ○ “The Town, and, in particular the Code Enforcement Office, should work with the fuel oil suppliers of the residents of Harpswell to be sure that annual furnace inspections and maintenance are accompanied by careful examinations of the piping and fuel storage that are necessary for the proper operation of the heating system.”

	Gerber-Rand	Wright-Pierce	D. W. Newberg
Road Salt	<ul style="list-style-type: none"> ○ “New wells should be located as far as practicable from major roads.” 	<ul style="list-style-type: none"> ○ “Reduced use of rock salt and increased sand use. Post signs ‘Reduced Salt Areas’.” ○ “Research the use of alternative deicing chemicals such as calcium magnesium acetate, liquid calcium chloride, etc.” ○ “Locate new water supplies. State aid may be available to assist residents in locating new water supplies.” 	<ul style="list-style-type: none"> ○ “The use of salt on the roads in Harpswell should be carefully reviewed in consultation with the Maine Department of Transportation, and other organizations in a position to offer guidance. The goal should be to improve the safety of motorists during the winter months without excessive use of salt.”
Water Softeners	<ul style="list-style-type: none"> ○ No recommendation made. 	<ul style="list-style-type: none"> ○ “Consider replacing sodium chloride with potassium chloride.” 	<ul style="list-style-type: none"> ○ No recommendation made.
Public Water Supplies	<ul style="list-style-type: none"> ○ “It is highly improbable that large areas of Harpswell will ever be served by a public central water supply. The user fees that would be necessary to support construction of such a system in Harpswell’s shallow bedrock terrain would be enormous and beyond the financial capability of many Harpswell residents, who would choose not to stop using their existing wells.” 	<ul style="list-style-type: none"> ○ “Develop and extend public water to affected homes. Possible sources include groundwater wells and desalinization systems.” 	<ul style="list-style-type: none"> ○ “The Town should identify an area on Bailey Island where Hinckley Series and related soils suggest the presence of permeable, coarse-textured sediments overlying bedrock, and where a water supply well could, if installed, be protected and utilized by the public. Such a water source would presumably be of particular benefit to the residents of the southern portion of Orrs Island and Bailey Island where well water is impacted by saltwater intrusion.”

NATURAL RESOURCES

"An understanding of Harpswell' s natural resources is essential to planning for future development of the Town. Those resources which contribute to the Town' s attractiveness as a place of work and to live include its topographic setting of islands and peninsulas, its many bays, coves, harbors and vistas along its 186 mile marine shoreline, its access to inshore and offshore fisheries, its 2,500 acres of clam flats, its open spaces, forest reserves, wildlife habitats and wetlands. In potential conflict with these positive resources is the nature of the land itself with its uncompromising soils and its finite water supplies. These serve to limit the extent to which the Town may be developed and populated and used."

These words opened the discussion of natural resources in the 1981 Comprehensive Plan and are still relevant today.

This section identifies the major natural features of the Town and evaluates the future use of the Town' s land.

Land Form

Unlike any other town in Maine accessible by roads, Harpswell is comprised exclusively of long narrow peninsulas and island clusters, much resembling a great handprint stamped on the northern reaches of Casco Bay. The ground commonly rises rapidly up from the ocean shorefront, to reach inland elevations as high as 100 feet above sea level; the highest point in Harpswell is slightly over 200 feet elevation on Long Reach Mountain, Great Island. For long stretches of coastline and in numerous coves and harbors, the rocky shorefront drops off into water deep enough for all-tide docks and mooring grounds.

The shape of the Town is directly related to the south trending fabric of the layered bedrock formations in which it was carved. Originally deposited in an ancient ocean as flat-lying beds of muds, sands and volcanic flows, the formations were transformed by mountain-building forces in the dim geologic past to hard, crystalline rocks; the layers were tilted upright on end to a nearly vertical attitude, and were locally invaded by molten granitic masses. Through time, the unequal weathering and erosion of alternating upright layers of weak and strong rocks worked the land into long parallel valleys and ridges. The final shaping of the area we call Harpswell came with the passage of the last glacial ice sheet, scouring the valleys and ridges to fresh bedrock as it advanced southerly into the Gulf of Maine; leaving a veneer of clays, sands and till rubble as it melted and retreated to the north.

In addition to the steep slopes in shoreland areas, there are some inland areas which have significant slopes. Sustained slopes of greater than 15% create some constraints on the use of the land since road building and the installation of septic systems becomes more difficult and expensive as the slope of the land increases. Inland areas with significant slope constraints include the area between Lombos Hole and Long Reach, areas on the northern end of Orr' s Island and the portion of Great Island enclosed by Route 24, the Cundy' s Harbor Road, and the head of Quahog Bay.

Soils

The Cumberland County Soil Survey prepared by the Soil Conservation Service¹¹ of the U.S. Department of Agriculture provides a general overview of the types of soils found in Harpswell. Soils in the Town vary a great deal and can change dramatically in very short distances as a result of the geological forces discussed above. The following excerpts from the 1981 Plan provide an overview of the Town' s soil conditions:

"Harpswell has nearly a dozen soil types. About 70% of the land area is covered by Lyman soil, a thin veneer of glacial till, defined as shallow, fine sandy loam, locally very rocky. Ledge protrudes through this till in numerous places. The limitations on the suitability of Lyman soil for septic sewage disposal are very severe, and Lyman presents a hazard of polluting groundwater. "

"Roughly 15-20% of the land area is blanketed by relatively thick deposits of glacial-marine clay-silt, the well know ' blue clay' of southern Maine. Broad areas along the northeastern part of Harpswell Neck and on Great Island from Strawberry Creek northward, as well as many narrow valley bottoms throughout the Town, contain this material. These soils also have low permeability, are poorly drained, making them unsuitable for sewage systems, have a high seasonal water table, and are locally susceptible to land sliding or slumping.

"The remainder of the land area contains somewhat sandy soils which washed off the glaciers as they receded. The major deposits of these soils occur near the [former] Navy tank farm¹² on Harpswell Neck, through the South Harpswell peninsula, and across the northern half of Bailey Island. Again, they present a very severe danger of groundwater pollution from downward percolating wastes."

Soil constrains the use of land. The two most important soil properties for Harpswell are:

1. the ability of the soil to treat (or "renovate") wastewater in subsurface sewage disposal systems, and
2. the permeability of the soil in allowing precipitation to migrate down and recharge groundwater.

The Maine State Plumbing Code dictates how subsurface disposal systems are to be designed based upon the anticipated capacity of the soil to provide treatment. Critical to all system designs and installations is the provision for a zone of native soil beneath every disposal field which will not be water saturated except for very limited periods of time. Thus, for every proposed disposal site 12 inches of native soil must exist above bedrock or above evidence (i.e., soil "mottling") of groundwater saturation (15 inches in the shoreland zone). Depending upon soil type, separations of 1 foot or 2 feet from bedrock or the water table must then be

¹¹ Now known as the Natural Resource Conservation Service.

¹² Now known as George J. Mitchell Field.

achieved in the design of the system. In this way a zone of unsaturated soil material beneath the disposal field is provided. The treatment occurring in the soil zone includes the dying off of pathogenic microorganisms (viruses and bacteria) and minor loss of nitrogen to the soil atmosphere. Other chemical components of wastewater are also retained in the soil zone.

For significant areas of Harpswell the soil conditions required by the Plumbing Code and discussed above, do not exist. Systems can be installed practically everywhere, but systems cannot be expected to perform satisfactorily unless the conditions described here are met.

While each septic system is designed to treat wastewater, it also is a method of replenishing groundwater removed by pumped wells. In this way every system degrades the quality of groundwater. This is the inherent "cost" of treatment. The challenge is to manage the costs while realizing the benefits of treatment.

Soil type influences the percentage of precipitation that infiltrates the ground to replenish groundwater and dilute contaminants. For example, soils with State Plumbing Code-designated profiles of "4", "5", and "6" are developed from highly permeable sands and gravels. Adams and Windsor soils, or their equivalents, can be found in certain areas of Harpswell. They represent this group of permeable soils.

On the other hand, soils with Code-designated profiles of "8" and "9" are fine-textured and are relatively impermeable. Buxton silt loam, a common soil in Harpswell, is an example of this group.

Septic systems sited in these very different soils may function equally well. However, they represent very different threats to groundwater. As a consequence, it might be prudent to permit a different density of septic systems (hence different minimum lot sizes) in areas of highly permeable soils than is allowed in areas of relatively impermeable soils.

The State's recommended minimum lot sizes are generally less than 40,000 square feet based on the plumbing code criteria, except for the Curtis Cove and Stover Point areas on Harpswell Neck and much of Bailey Island where minimum lot sizes of 40,000 to 80,000 square feet are recommended because of rapid percolation and the potential for contamination of the groundwater.

The slope of the soil is another characteristic that has importance for both septic system siting and erosion and sedimentation from stormwater runoff. Slope gradient must be less than 20% to allow a septic system under the Plumbing Code.

The issue of infiltration of rainwater into the ground to replenish the groundwater supply and dilute contaminants is also affected by soils types. Sands and gravels generally allow a major percentage of the precipitation to infiltrate into the ground while clays cause most of the rainfall to run off and not be absorbed by the soils.

Floodplains

Floodplains are areas that are subject to flooding on a periodic basis. The federal government has established the 100-year flood (1% chance of flooding occurring in any year) as the basis for regulatory controls.

In Harpswell, where there are no rivers, only small ponds and only short streams, virtually all floodplains are in coastal situations. There are two basic categories:

1. Areas that are flooded simply through exceptionally high tides
2. Areas subject to wave action that increases the flood level. In these areas there is the danger of significant property damage due to wave action.

The Federal Flood Insurance Program requires communities to restrict/control development in floodplains. At the same time, this program provides subsidized flood insurance that underwrites the risk of development in floodplains.

The Water Resources Map shows the approximate locations of the 100-year floodplains in Harpswell, as designated by the Federal Emergency Management Agency. These designations are subject to error and must be used carefully in planning for the community.

There is a level of public interest in wise use of floodplains including:

- 1) Minimization of risk of private property loss,

In order for the Town's property owners to remain eligible for federal flood insurance, the Town must continue to maintain its floodplain management ordinance's consistency with federal standards for these ordinances, as determined by the State Floodplain Management Program.

- 2) Minimization of public tax subsidy to underwrite property flood damage claims under both insurance and disaster programs, and

The Town can voluntarily participate in various federal programs that help communities to better evaluate their risk of loss of life and property during floods and other natural disasters. Collectively such programs can be termed hazard mitigation planning, and they can have the effect of lowering not only risk, but also the cost of payout after disasters to their community due to reduced damage. Implementing some forms of hazard mitigation can also make policyholders eligible for lower flood insurance premiums.

- 3) Limiting exposure of public safety forces in responding to assistance calls.

While this is partly a matter of training, it can also be affected by planning by property owners and the Town that anticipates hazards to public safety personnel when approving new development.

Wetlands

Wetlands are vital natural resources that have both ecological and economic importance. Common names for wetlands include swamps, marshes and bogs. Wetlands provide a unique habitat for a broad spectrum of plants, animals and fish, including waterfowl, shellfish, fish, insects, reptiles, amphibians, and many mammals. Wetlands are important in the hydrologic cycle because they slow down and store storm water runoff, which is then slowly released into brooks and other surface waters, reducing flood hazard downstream. Wetlands also serve as water purifiers, absorbing nutrients and sediment carried into them by storm water and helping to protect water quality in streams, estuarine waters and shellfishing areas downstream.

Wetland Characterization System

The locations of wetlands in Harpswell are shown on the Water Resources Map. In 1999 and 2000, the State Planning Office developed a new method of characterizing wetlands in Harpswell and other towns within the Casco Bay Watershed. This new method provides a functional assessment of each wetland to rate its relative importance in each of six wetland function categories. These categories include:

1. Plant and animal habitat
2. Sediment retention
3. Flood flow alteration
4. Fisheries habitat
5. Shellfish habitat
6. Cultural and educational value

A wetland that meets the rating system's threshold characteristics in any of these categories receives a "1". If it does not meet the threshold it receives a "0" for that category. Each time a wetland receives a "1", it is called a "hit". In Harpswell, each wetland has received between 0 and 6 hits, depending on how many categories' threshold requirements for a hit it meets.

It is important to note that all wetlands perform valuable ecological functions in all or most of the six categories above. Stated another way, "0" hits in any given category does not mean a wetland has no functional value in that category. It only means the wetland is performing that important wetland function at a level below the threshold for receiving a hit for that category.

All wetlands are important. This new rating system provides a systematic approach to determining which wetlands are most important for providing each type of wetland function. It also lets us see which function or combination of functions each wetland is playing an especially important part in providing for the ecosystem as a whole.

Harpswell Conservation Commission Wetland Study

Over the last several years the Harpswell Conservation Commission, with professional wetland scientist assistance from Woodlot Alternatives, Inc., has evaluated 28 wetlands to learn more precise information about their delineation, classification and values.

Subsequently, the Harpswell Land Use Committee worked with the Conservation Commission, the Greater Portland Council of Governments, the State Planning Office and Woodlot Alternatives to integrate the data from both studies to produce more accurate and informative maps of wetlands in Harpswell, and to develop recommended land use ordinance changes.

Wetland Regulations

Because wetlands are ecologically important in all the ways described above, and because they are vulnerable to filling, dredging, draining or other alterations in order to make them suitable for or supportive of development, these activities are regulated at federal, state and local levels of government. The Army Corps of Engineers (ACE) and the Maine Department of Environmental Protection (DEP) regulate activities in wetlands of all sizes.

At the local level, the State's subdivision statute requires that all wetlands regardless of size must be shown on proposed subdivision plans. And the Town, pursuant to the State shoreland zoning statute, has placed a shoreland zone around unforested wetlands of 10 acres or more or associated with lakes, rivers or streams. If the wetland is high or moderate value habitat as determined by the Maine Dept. of Inland Fisheries and Wildlife (IFW) the land in this shoreland zone must be in Resource Protection. Where wetland habitat values are low or "indeterminate" according to the IFW, a minimum setback and buffer of 75' is required for new development.

Under State and federal wetland regulations, sometimes a developer is allowed to fill, drain or otherwise alter a wetland, provided that the same developer compensates for this activity by restoring, creating, enhancing or preserving wetland(s) on the same site or elsewhere on another property. That property may or may not be located in Harpswell, or in the same watershed. This means that while the ecosystem as a whole is receiving the benefit of compensation, Harpswell may not be.

Harpswell does not presently have any substantial influence over what choices off-site are acceptable to state or federal authorities. State and federal regulators generally recognize that local concerns and wetland protection priorities are not taken into account in any systematic way. They are authorized and would like to make wetland compensation site choices that honor local wetland protection priorities. The State Planning Office has recently developed a model local ordinance for interested municipalities to use for this and other purposes that can compliment state and federal regulatory activities to cooperatively achieve more effective protection of local wetland resources.

Vernal Pools

There is one type of wetland that is not shown on either the Water Resources Map or the Natural Resources Map because there is no published source of information to document its locations. That type of wetland is called a vernal pool. Vernal pools occur on the forest floor in the early to middle weeks of spring. They are inherently temporary lasting for only a few weeks each year. These pools are fed by melting snow at the time of year when the water table is generally at its highest. They play critical roles in the life cycles of many species including the wood frog, the spotted salamander, the blue-toed salamander and the spotted turtle.

It is theoretically possible for developers and planning boards that know where vernal pools are located to prevent them from being lost to development. The main difficulty is that for all but a few weeks of the year their location is undetectable. Other wetlands are distinguished by wetland vegetation for all or part of the development season. But unless a vernal pool is found and its location delineated during its brief springtime existence, its need to occupy that space, which looks like any other low-lying area of forest floor, will go unnoticed and unprotected as a result.

The Maine IFW is gradually creating an inventory of vernal pools. And the Maine Audubon Society has created a manual for volunteers, possibly including classes of school children, to use for creating a local inventory of vernal pools.

Critical Wildlife Habitats and Natural Areas

The following habitat areas are shown on the Natural Resources Map¹³.

1. Significant Wildlife Habitat

Significant Wildlife Habitat is defined by the Maine Natural Resources Protection Act (NRPA), which became effective in 1988. It was intended to define, designate and protect Significant Wildlife Habitats from adverse effects of development. In the years since the Act's adoption, various state agencies have been developing statewide maps of the many types of Significant Wildlife Habitats. Those present in Harpswell are described below and shown on the High Value Plant and Animal Habitat map.

a. Deer Wintering Areas

These are areas of forest in which the combination of cover, remoteness, and availability of food are optimal for deer to gather and survive the winter. Deer Wintering Areas as mapped have not been adopted as an NRPA-regulated habitat. None of the deer wintering areas are protected from potential development under current state or local rules.

¹³ Available at the Town Office.

b. Waterfowl/Wading Bird Habitat

Waterfowl and/or wading birds use this type of Significant Wildlife Habitat for breeding, feeding, roosting, loafing and migration areas. While these areas are not adopted as NRPA-regulated Significant Wildlife Habitat, they are protected to some degree by Harpswell's shoreland zoning and by state wetland and stream regulations.

c. Sea Bird Nesting Islands

The Town of Harpswell is home to a substantial number of important wildlife habitats, the majority of which are seabird nesting areas. These provide breeding sites for (among others): seagulls, eiders, terns, several species of heron, osprey and bald eagles. The offshore islands are the location of the vast majority of these sites. Among the most important are:

- Birch Island - heron rookery, osprey nesting site
- Upper Goose Island - ospreys and other seabirds
- The Goslings - osprey nesting site
- Little Whaleboat Island - heron rookery, ospreys and other seabirds
- Upper Flagg Island - seabird nesting sites
- Little Birch Island - eider nesting site
- Eagle Island - gull, eider and night heron nesting sites
- Pond Island – roseate tern nesting site
- Jenny Island - roseate tern nesting site
- Mark Island - heron (great blue, green and night crown) rookery

While several of the offshore islands are now protected by conservation easements on all or part of them (Upper Goose, Whaleboat, Yarmouth, and Eagle Islands, for example), the bulk of them are under increasing recreational use and development pressure. Four or five years ago, the Town gave all of the shoreland zone portions of state-designated Sea Bird Nesting Islands Resource Protection status. However, even though Sea Bird Nesting Islands have some degree of State protection, the degree of this protection is insufficient in some cases to prevent all additional development on these islands.

The past decade also continued to bring a marked increase in recreational boat traffic throughout Casco Bay. This increase in boat traffic brought more people (and their pets) to virtually all the offshore islands. This rise in picnicking and camping threatens to disturb nesting and habitat areas. Examples of where this is already a concern are Little Whaleboat, Ragged, Snow, and most notably, The Goslings.

Another source of pressure on the offshore island habitats comes from deteriorating water quality brought about by increased development of the surrounding mainland, existing overboard discharges, poorly maintained septic systems in the shoreline area, and sewage and petroleum discharges from both recreational and commercial vessels.

In the last few years, a new generation of more efficient septic system technology has emerged. This new technology is now acceptable under the Maine State Plumbing Code. The new technology offers more versatile options for addressing existing groundwater problems in densely built-up areas and allows for higher densities of new development as well. However, these very advantages also make it more feasible, where otherwise permitted to develop on small coastal islands, at least some of which may be better protected for their rare or unique and fragile habitat values.

2. Threatened and Endangered Plants and Animals, Rare or Exemplary Natural Communities. In Harpswell, there are several species of plants and animals that are listed as of Special Concern, Threatened or Endangered under either state or federal Endangered Species Acts.

a. Plants and Rare or Exemplary Natural Communities

The Maine Natural Areas Program tracks plant species that are rare in Maine. Rare plant species and their locations in Harpswell are listed below and are shown on the High Value Plant and Wildlife Habitat map for the Town of Harpswell. These locations have been field verified within the last 20 years.

Map Number	Plant or Community	State Rarity	State Status
1.	Low Elevation Bald	S3 – Rare in Maine (on the order of 20-100 occurrences)	
2.	Low Elevation Bald	S3 – Rare in Maine (on the order of 20-100 occurrences)	
3.	Rose Maritime Shrubland	S4 – Apparently but not demonstrably secure in Maine	
4.	Wild Leek	S3 – Rare in Maine (on the order of 20-100 occurrences)	Special Concern

b. Threatened and Endangered Animals

The Maine Department of Inland Fisheries and Wildlife tracks the status, life history, conservation needs, and occurrences for animal species that are Endangered, Threatened or otherwise rare. Rare Animal species and their habitat or locations in Harpswell are listed below and are shown on the High Value Plant and Wildlife Habitat map for the Town of Harpswell. Rare Animal habitat locations need field verification.

Animal Name	State Status	Federal Status
Bald Eagle	Threatened	Threatened
Roseate Tern	Endangered	Endangered

Since many of the habitats of these rare, threatened or endangered species are not commonly known, and are not necessarily part of an existing privately conserved parcel of land or zoned for Resource Protection, they are potentially vulnerable to being lost or impaired due to development. Current local regulations do not require routine checking of known databases, such as the Beginning With Habitat Program, Maine Natural Areas Program, or the Department of Inland Fisheries & Wildlife when applications come before the Planning Board, or any check by the Code Enforcement Officer of a map of these features when receiving applications for building permits.

3. Undeveloped Habitat Blocks and Habitat Fragmentation

Harpswell has always had an abundance of wildlife and a diverse range of habitats for plants and animals. This level of abundance and diversity has historically been supported by the large areas of undeveloped land and the many riparian and wetland habitats that link these larger undeveloped blocks. With the rapid development of the last decade, including new roads to support the new residential development in Harpswell, a phenomenon known as habitat fragmentation has gradually been taking place.

The size of the large blocks of unbroken habitat has decreased as new roads have extended into or crossed them, and as development has located along previously undeveloped stretches of existing roads.

Similarly, the important links between such large habitat blocks, including the riparian areas along streams and associated wetlands have become more narrowed or interrupted and less able to function effectively as wildlife travel corridors between habitat areas.

The Natural Resources Map¹⁴ shows where the remaining large blocks of comparatively unfragmented habitat remain. While some of these areas are wholly or partially protected from further fragmentation by conservation easements or by public ownership decisions to dedicate them to conservation uses, large areas of Harpswell are not protected from fragmentation due to development or isolation by development of presently undeveloped wildlife travel corridors to surrounding important habitat areas.

Table 5 below shows the typical effects of shrinking undeveloped habitat block size on the diversity of wildlife species supported in Maine.

¹⁴ Map available at the Town Office

Table 5
Habitat Block Size Requirements for Wildlife in Maine

Tier 5	Tier 4	Tier 3	Tier 2	Tier 1
1-19 Acres	20-99 Acres	100-499 Acres	500-2500 Acres	Undeveloped
RACCOON	RACCOON	RACCOON	RACCOON	RACCOON
	HARE	HARE	HARE	HARE
				COYOTE
SMALL RODENT	SMALL RODENT	SMALL RODENT	SMALL RODENT	SMALL RODENT
	PORCUPINE	PORCUPINE	PORCUPINE	PORCUPINE
				BOBCAT
COTTONTAIL	COTTONTAIL	COTTONTAIL	COTTONTAIL	COTTONTAIL
	BEAVER	BEAVER	BEAVER	BEAVER
SQUIRREL	SQUIRREL	SQUIRREL	SQUIRREL	SQUIRREL
	WEASEL	WEASEL	WEASEL	WEASEL
		MINK	MINK	MINK
				FISHER
	WOODCHUCK	WOODCHUCK	WOODCHUCK	WOODCHUCK
		DEER	DEER	DEER
MUSKRAT	MUSKRAT	MUSKRAT	MUSKRAT	MUSKRAT
			MOOSE	MOOSE
RED FOX	RED FOX	RED FOX	RED FOX	RED FOX
SONGBIRDS	SONGBIRDS	SONGBIRDS	SONGBIRDS	SONGBIRDS
		SHARP-SHINNED HAWK	SHARP-SHINNED HAWK	SHARP-SHINNED HAWK
			BALD EAGLE	BALD EAGLE
SKUNK	SKUNK	SKUNK	SKUNK	SKUNK
		COOPER'S HAWK	COOPER'S HAWK	COOPER'S HAWK
		HARRIER	HARRIER	HARRIER
		BROAD-WINGED HAWK	BROAD-WINGED HAWK	BROAD-WINGED HAWK
		KESTREL	KESTREL	KESTREL
		HORNED OWL	HORNED OWL	HORNED OWL
		BARRED OWL	BARRED OWL	BARRED OWL
		OSPREY	OSPREY	OSPREY
		TURKEY VULTURE	TURKEY VULTURE	TURKEY VULTURE
		TURKEY	TURKEY	TURKEY
MOST REPTILES	MOST REPTILES	REPTILES	REPTILES	REPTILES
	GARTER SNAKE	GARTER SNAKE	GARTER SNAKE	GARTER SNAKE
	RING-NECKED SNAKE	RING-NECKED SNAKE	RING-NECKED SNAKE	RING-NECKED SNAKE
MOST AMPHIBIANS	MOST AMPHIBIANS	MOST AMPHIBIANS	AMPHIBIANS	AMPHIBIANS
		WOOD FROG	WOOD FROG	WOOD FROG

Source: A Response to Sprawl: Designing Communities to Protect Wildlife Habitat and Accommodate Development, Maine Environmental Priorities Project, July 1997.

Of course, occasional instances of seeing wildlife species on smaller undeveloped habitat blocks do occur. This is often due to the presence of undeveloped riparian areas or other wildlife travel corridors linking smaller blocks to larger blocks beyond the area of the sighting. And various species of wildlife typically only found in large undeveloped habitat blocks, do occasionally venture into more densely developed areas than indicated on the chart. But overall, as the density of development moves from Tier 1 to Tier 5 over time, it shows the typical effects of habitat fragmentation on the numbers, diversity and composition of species remaining.

Harpswell's approach to mapping undeveloped habitat blocks has been modeled after and updates and adapts the data provided by the "Beginning With Habitat" Project, a joint partnership of several state agencies, including the Maine Department of Inland Fisheries and Wildlife, the Maine Natural Areas Program, and the Maine State Planning Office, with the US Fish & Wildlife Service, and the Maine Audubon Society.

Scenic Resources

The topographic setting of Harpswell and its subsequent development, has created an area of great scenic diversity. Whether one enters the Town by Route 123 and the rolling fields of Merriconeag Farm or by Route 24 and the Gurnet Strait, the route passes by the open spaces, forests, bays, coves, villages, and harbors that define, in part, Harpswell's unique rural character.

Map 5 from the 1993 Harpswell Comprehensive Plan identifies scenic areas associated with the Town's major public roads. Although Map 5 is not a comprehensive inventory of the Town's scenic areas, it does offer a sample of the types of scenic resources identified by town residents, as important areas to be preserved as Harpswell grows. These areas include:

1. Scenic corridors identified by either underdeveloped open spaces and forests, or areas that have been developed in a manner whereby structures are setback from the road and are screened by natural vegetation;
2. Scenic village areas such as Harpswell Center or Cundy's Harbor as identified by a concentration of historical buildings; and
3. Scenic views of the Town's topographic features and the ocean.

Although shoreland zoning does provide some protection of the scenic appearance of opposite shores and the frequent scenic vistas of opposite shores visible from roads, the absence of visual screening on treeless shores and islands can allow even a singly home on an outer island to have a significant scenic impact.

Another kind of scenic impact to which Harpswell remains vulnerable is the impact of hillside development, where clearing for a view can become clearing for an eyesore for others if all viewers' interests are not balanced against each other.

HOUSING ANALYSIS

Housing is a key issue for the community. During the past decade, Harpswell experienced dramatic increases in housing prices fueled by substantial in-migration. Land prices have escalated to the point where many people can no longer afford to buy a lot. This has created a situation in which young adults who have grown up in the community find it increasingly difficult to find housing that is affordable. Rental housing, while available, is limited. This section looks at the current housing situation in Harpswell and the issue of affordability.

Housing Availability

The 2000 U.S. Census shows that 50% of housing units in Harpswell are year-round, owner occupied, 33% are seasonally occupied, and at that time 4% were vacant. Of the year-round housing stock (Table 6), almost 79% is owner-occupied and just over 21% is occupied by renters. This pattern of tenure remained consistent over the past decade. In 1990, the non-seasonal vacancy rate was 6% for all housing units in Harpswell, and decreased to 4% in 2000. The homeowner vacancy rate decreased from 1.9% in 1990 to 0.8% in 2000. The rental vacancy rate decreased from 8.5% in 1990 to 6.2% in 2000.

Table 6
Housing Stock 1990-2000, Town of Harpswell

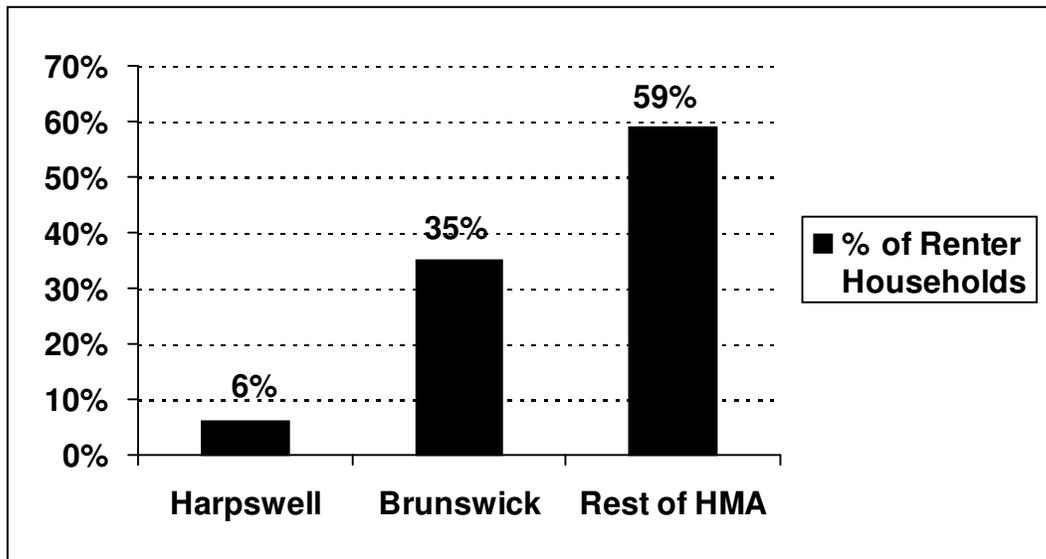
	1990	2000	% Change 1990-2000
Total Housing Units	3432	3701	8%
Year-Round Units	2250	2488	11%
occupied	2051	2340	14%
- owner	1569 (76.5%)	1843 (78.8%)	
- renter	482 (23.5%)	397 (21.2%)	
vacant	199	148	
Seasonal	1182	1213	3%

Source: U.S. Census Data 1990, 2000

According to the 2000 U.S. Census, Harpswell has 6% of the renter households in the Bath-Brunswick Housing Market Area¹⁵. Fifty-six percent (56%) of the year-round renter householders in Harpswell were younger than 45 years of age and candidates to become first-time homebuyers. During the same year, only 1% of the first-time homebuyers in the housing market who accessed loans from the Maine State Housing Authority purchased their first home in Harpswell. Potentially, half of the renter households in Harpswell could be homeowners, but these renter households may be looking outside of Harpswell for their first home

¹⁵ See Figure 13 showing a map of the Bath-Brunswick HMA in this section for names of towns included in the HMA.

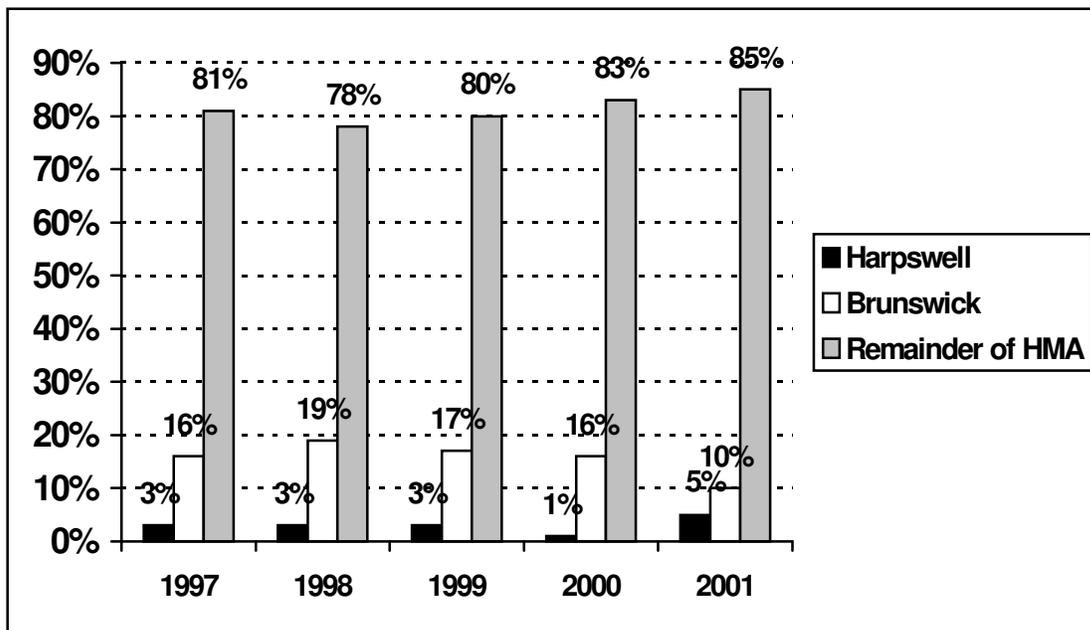
Figure 6
Distribution of Year-Round Renter Households within the Housing Market Area, 2000



Source: 2000 U.S. Census

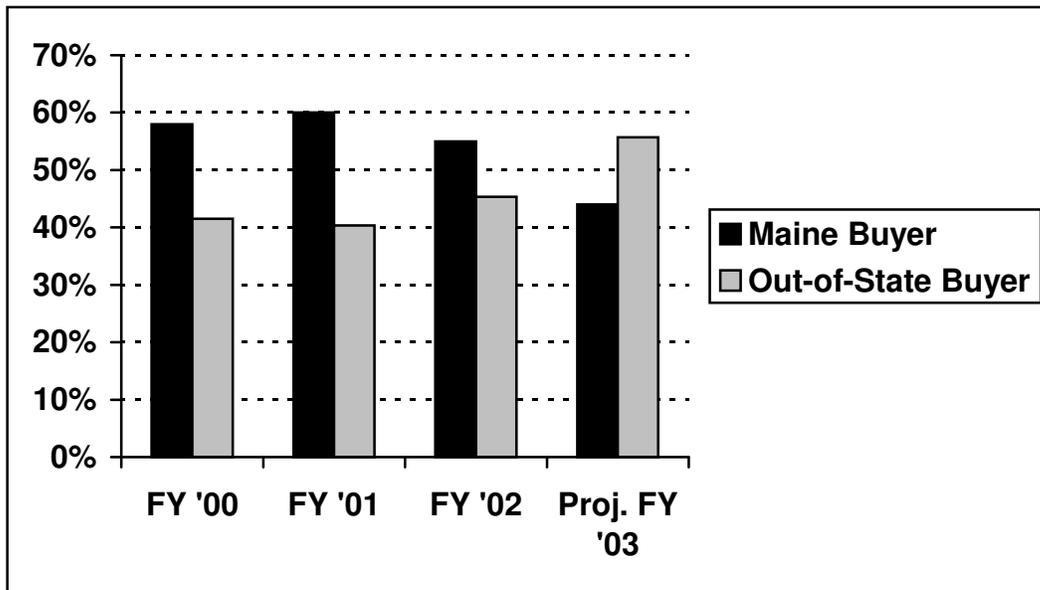
A study of the Harpswell real estate tax transfer records from fiscal year 2000 (July 1999 to June 2000) to the present indicates that the proportion of real estate transfers to out-of-state buyers has increased slightly in the past three years and is projected to increase in the future.

Figure 7
Distribution of Buyers with the Maine State Housing Authority First-Time Homeowners Program within the Housing Market Area, 1997-2001



Source: Maine State Housing Authority

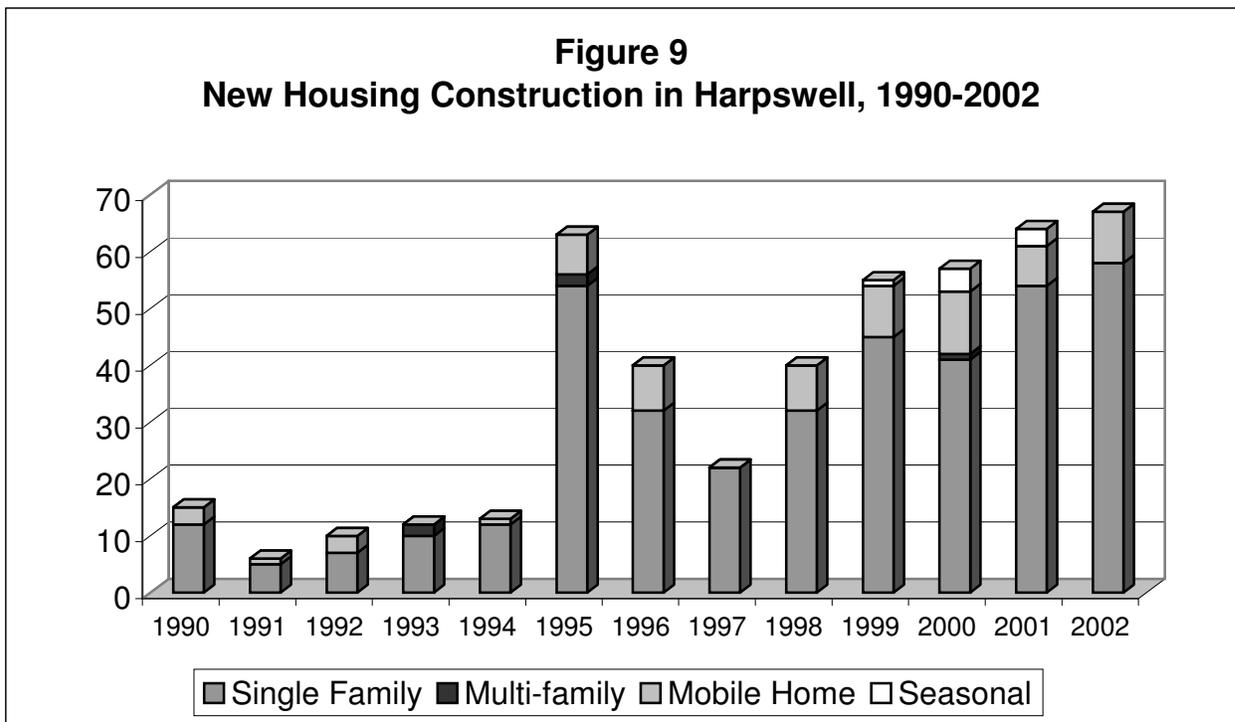
Figure 8
State of Origin of the Percent of Buyers for Real Estate in Harpswell



Source: Data Compiled by Harpswell Planning Department

In response to this demand, there was a net increase of 305 single-family structures built in Harpswell from 1990 to 2000 (Table 7). There was also a net increase of 50 mobile homes or trailers. At the same time, there was a 2% decrease of two unit structures. Harpswell experienced an 8% net increase in the total number of housing units from 1990 to 2000, the majority being single-family homes. Figure 9 shows approximate changes in the distribution

Figure 9
New Housing Construction in Harpswell, 1990-2002



Source: Maine State Housing Authority

and number of new housing units by structure type between 1990 and 2002. In this figure, two-unit structures are included in the multifamily category.

Table 7
Comparison of Housing Units by Structure-types, 1990 and 2000

	Single family structures	Two unit structures	3 or 4 unit	5 to 9 unit	10 to 19 unit	20 or more	Mobile home/trailer	Other	Total
1990	2974	67	30	19	50	0	216	76	3432
	86.7%	2.0%	0.9%	0.6%	1.5%	0.0%	6.3%	2.2%	100.0%
2000	3279	66	23	34	17	16*	266	0	3701
	88.6%	1.8%	0.6%	0.9%	0.5%	0.4%	7.2%	0.0%	100.0%

Source: U.S. Census Data 1990, 2000

*Per Harpswell’s assessor, the town contains no residential or lodging structures with more than 20 units.

Housing Conditions

As the table below shows 49% of the year-round renter occupied multi-units were built in 1939 or earlier and 51% were built in the 1970’s and 1980’s. No multi -unit structures were constructed in the 1990’s. An additional 59 mobile homes were occupied by year-round renters in 2000 compared to 1990, but none of these were manufactured in the 1990’s. With the exception of multi-units, most of the housing stock that is year-round renter occupied was built after 1960.

Table 8
Age and Type of Housing for Year-Round Renter Occupied Housing In Harpswell

	1939 or prior	1940-1949	1950-1959	1960-1969	1970-1979	1980-1989	1990-2000	Total 2000	Total 1990
1 unit, detached or attached	89	0	13	75	62	37	55	331	344
multi-units in structure	49	0	0	0	15	36	0	100	113
mobile home	0	0	10	7	28	20	0	65	6
other (boat, RV, van)	0	0	0	0	0	0	0	0	19
Total	138	0	23	82	105	93	55	496	482
% of total renter occupied in 2000	28%	0%	5%	17%	21%	19%	11%	100%	

Source: 2000 U.S. Census

A majority of the owner occupied housing units in Harpswell are relatively new, 60% were built in 1970 and after (Table 9). Fifty-four percent (54%) of the year-round owner occupied

mobile homes were built in the 1980's and 1990's. Construction of year-round owner occupied housing units peaked in the 1980's with 462 new homes being built, while only 346 new year-round owner occupied homes were built in the 1990's.

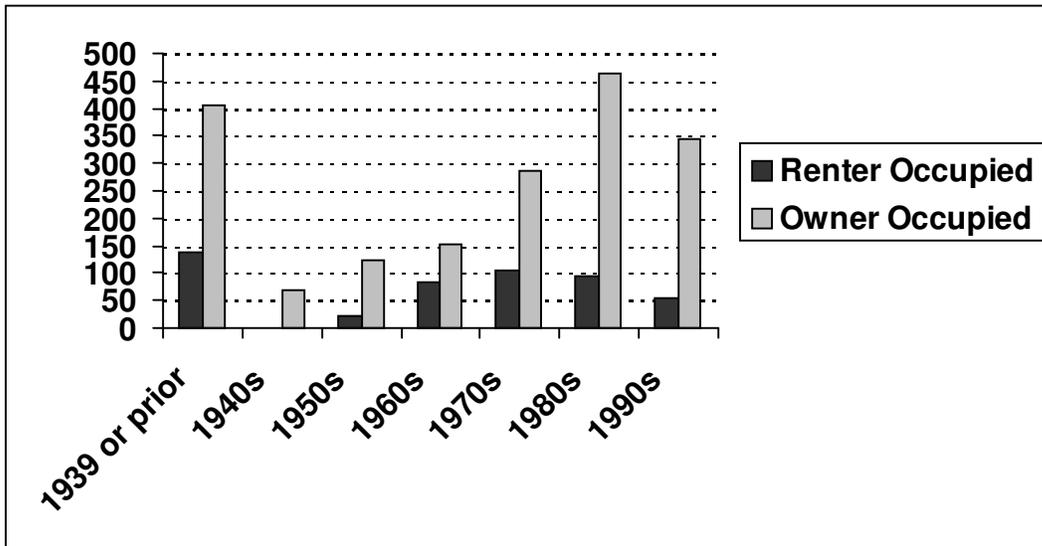
Table 9
Age and Type of Housing for Year-Round Owner Occupied Housing in Harpswell

	1939 or prior	1940- 1949	1950- 1959	1960- 1969	1970- 1979	1980- 1989	1990- 2000	Total 2000	Total 1990
I unit, detached or attached	407	68	115	153	222	392	311	1,668	1,452
multi-units in structure	0	0	0	0	0	21	0	21	11
mobile home	0	0	7	0	64	49	35	155	106
other (boat, RV, van)	0	0	0	0	0	0	0	0	0
Total	407	68	122	153	286	462	346	1,844	1,569
% of total owner occupied in 2000	22%	4%	7%	8%	16%	25%	19%	100%	

Source: 2000 U.S. Census

Figure 10 summarizes change in age distribution of year-round renter and owner occupied housing units in Harpswell.

Figure 10
Age of Year-Round Renter and Owner Occupied Housing Units in Harpswell



Source: 2000 U.S. Census

Seasonal Housing

At the community forum on October 29, 2002, the issue of seasonal homes in Harpswell was raised. There was concern that the increasing number of seasonal homes would change the character of Harpswell. There was also concern that year-round homes were being converted into seasonal homes resulting in a loss of year-round housing.

According to the U.S. Census, the number of seasonal housing units in Harpswell has not changed considerably from 1970 to 2000. The number of seasonal housing units only increased by 21 units, or 2% from 1970 to 2000. On the other hand, the composition of the housing units in Harpswell has changed from 1970 to 2000. The table below shows that in 1970 48% of the housing units were seasonal; by 2000 this decreased to 33%. Therefore, Harpswell is becoming more of a year-round community.

From the U.S. Census data we are not able to determine what has been happening in the past two years, but the available data does not indicate that the addition of seasonal homes has an effect on the available number of year-round homes. From 1990 to 2000 there was an increase of 31 seasonal households in Harpswell, during this same time there was an increase of 401 year-round occupied housing units that were built. Even if all 31 new seasonal households were the result of converting year-round housing into seasonal this is a small number of lost year-round housing compared to the gain in new year-round housing.

Table 10
Seasonal Housing in Harpswell

	1970	1980	1990	2000
# of Seasonal Housing Units	1,192	1,249	1,182	1,213
% of Total Housing Units	48%	42%	34%	33%

Source: 1970, 1980, 1990, & 2000 U.S. Census

Housing Affordability

A home or apartment is considered affordable if an individual or family earns sufficient income to pay monthly housing costs and still has enough money left over to pay for other necessities. The rule of thumb adopted by the Federal government is that an owner household should spend no more than 28% of its gross income on housing costs (i.e. mortgage, insurance, and taxes). A renter household should spend no more than 30% of its gross income on housing costs (i.e. rent and utilities). Below is a range of affordable home prices and rents for various household incomes.

Table 11
Home Prices by Household Income

Household Income	Affordable Home Price	
	With 0% down	With 5% down
\$30,000	\$67,600	\$71,200
\$40,000	\$102,700	\$108,100
\$50,000	\$137,700	\$145,000
\$60,000	\$173,000	\$182,000
\$70,000	\$207,900	\$218,800

*Source: Compiled by Planning Decisions, Inc.
Assumes a 7% interest rate, 30 year mortgage, \$250 for taxes, insurance, and PMI per month*

Table 12
Rent by Household Income

Household Income	Affordable Rent
\$15,000	\$375
\$20,000	\$500
\$25,000	\$625
\$30,000	\$750
\$35,000	\$875
\$40,000	\$1,000

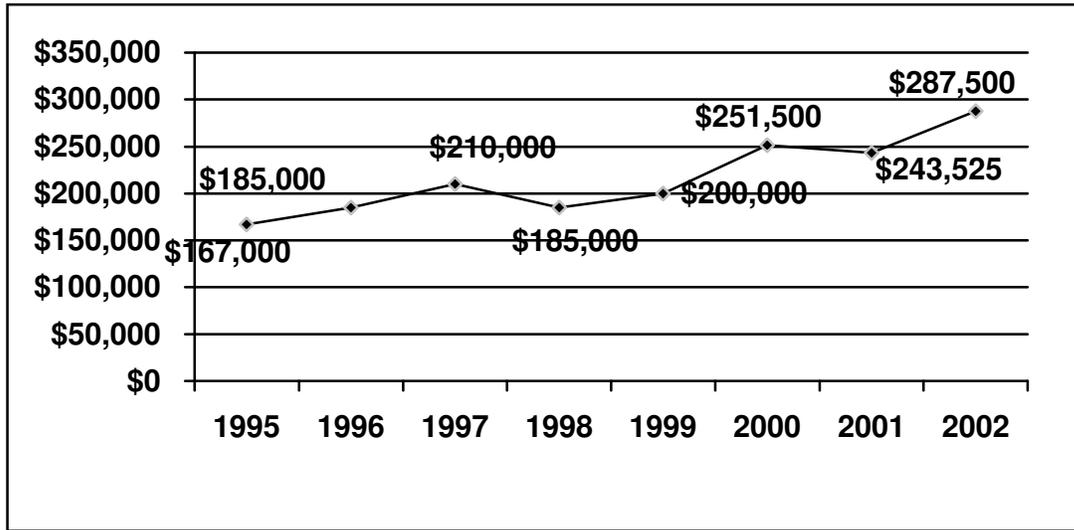
*Source: Compiled by Planning Decisions, Inc.
Utilities are considered included in total rent*

According to the 2000 U.S. Census, 4 out of 5 year-round occupied housing units in Harpswell are owner occupied. This is a high proportion for Maine generally, and is an increase from 1970 when 3 out of 5 year-round occupied housing units in Harpswell were owner occupied.

Data from the Statewide Multiple Listing Service shows that the sale price of all homes (single-family, condominiums, and mobile homes) in Harpswell have increased in the past seven years. The median sale price for the 39 homes sold in Harpswell in 1995 was \$167,000. By 2002 the median sale price for the 76 homes sold in Harpswell had increased to \$287,500. This is an increase of 72% in seven years.¹⁶

¹⁶ The Maine State Housing Authority provided a preliminary estimate of the median home sale price for a home in Harpswell in 2004: \$495,000. Due to a staffing change at MSHA a final estimate of this figure is not yet available. It is likely, if this figure is correct, that Harpswell has the highest median home sale price of any Town in Maine.

Figure 11
Median Sale Price of Homes in Harpswell, 1995-2002

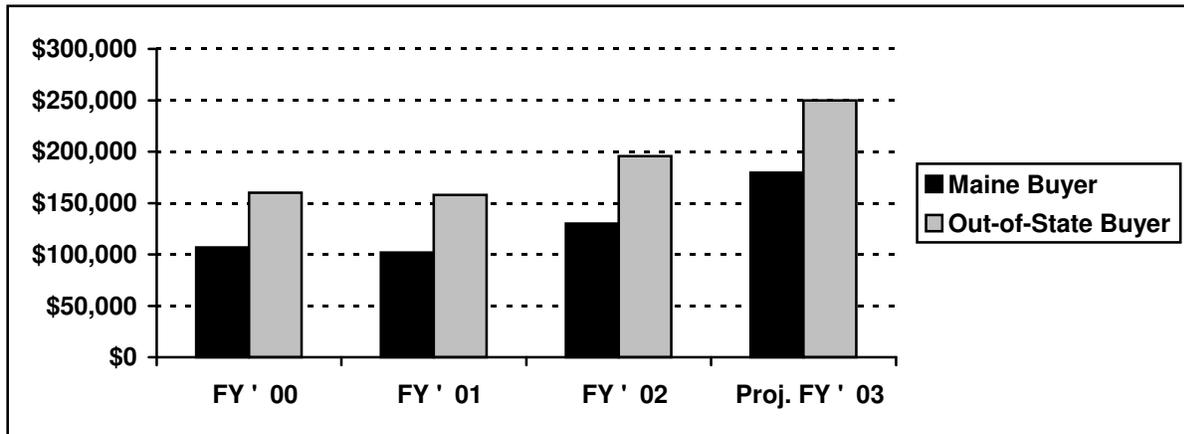


Source: Maine State Housing Authority and Statewide Multiple Listing Service

The median price of a home sold in Harpswell in 2001, according to the Maine State Housing Authority, was \$243,525, which is double the median price of \$118,000 for a home in Maine and almost double the median price of \$129,000 for a home in the Bath-Brunswick housing market area for the same year.

A study of the Harpswell real estate tax transfer records from fiscal year 2000 (July 1999 to June 2000) to the present also shows an increase in the price of homes. Land transfers are included in the information therefore the calculated median prices may be slightly lower due to the inclusion of all transfers. The median price a person from out-of-state is paying for real estate in Harpswell is about 1.5 times as much (or about 50% more) as a Maine resident is paying.

Figure 12
Median Sale Price of Real Estate Tax Transfers in Harpswell

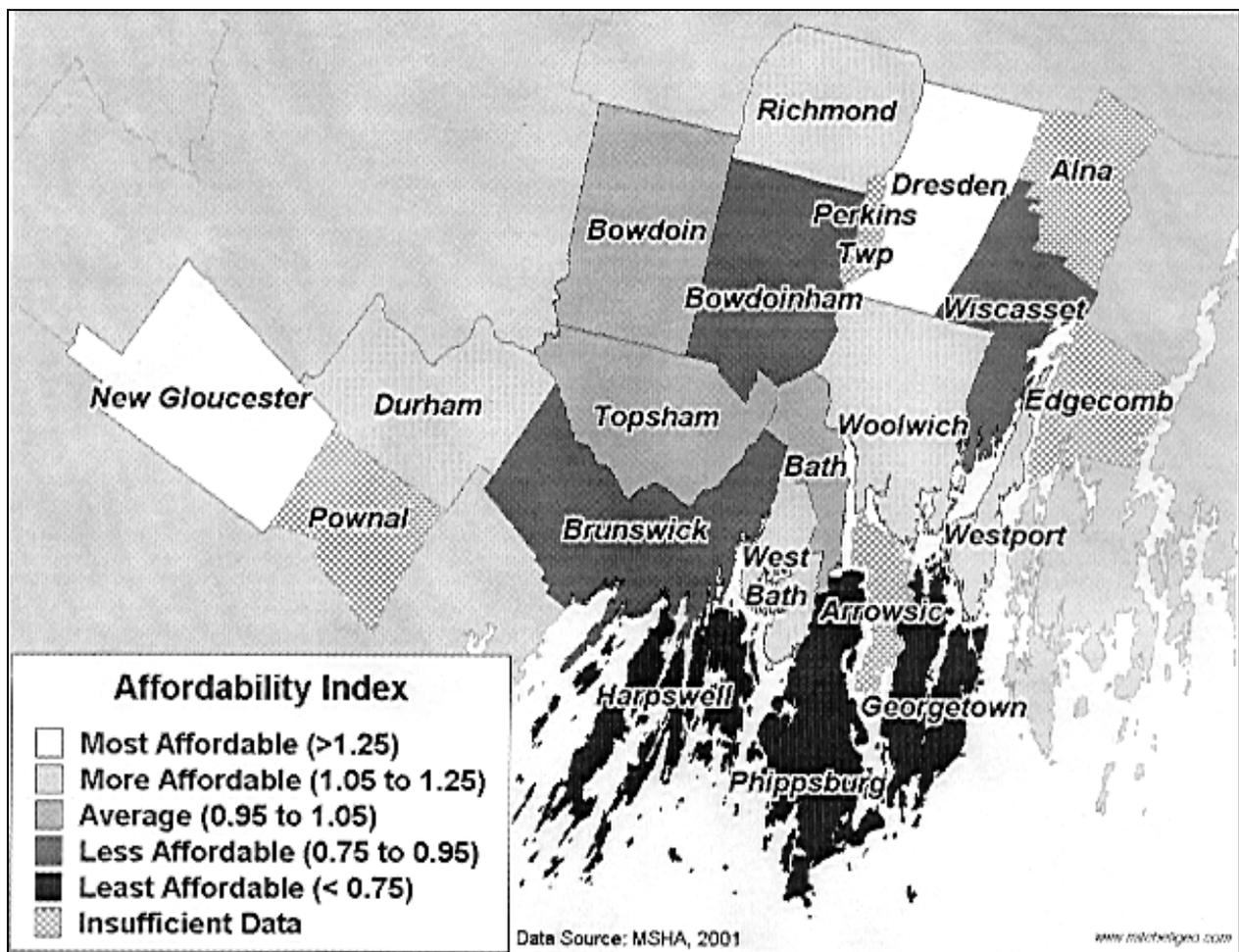


Source: Data compiled by Harpswell Planning Department

When median incomes are compared to median home costs, an affordability index can be constructed. Harpswell's affordability index in 2001, as calculated by the Maine State Housing Authority, was 0.70. This means that the typical family can afford about 70% of the price of the typical house in Harpswell. In Maine as a whole the affordability index is 0.95. In other words, the typical Maine family can afford 95% of the typical home price. As can be seen in the map below, Harpswell is one of the three least affordable towns in the housing market area when it comes to homeownership (Figure 13).

For the 1 in 5 year-round Harpswell households who are renters, costs are rising as well. In 1997, the average rent for a two-bedroom apartment in Harpswell was \$618, according to the Maine State Housing Authority. By 2001, the average rent for a two-bedroom apartment had increased to \$650. The Maine State Housing Authority estimates that in 2001 there were about 153 renter households in Harpswell with very low incomes (50% of the area median income) who were paying more than they could afford for rent.

Figure 13
Affordability Index for Bath-Brunswick Housing Market Area, 2001

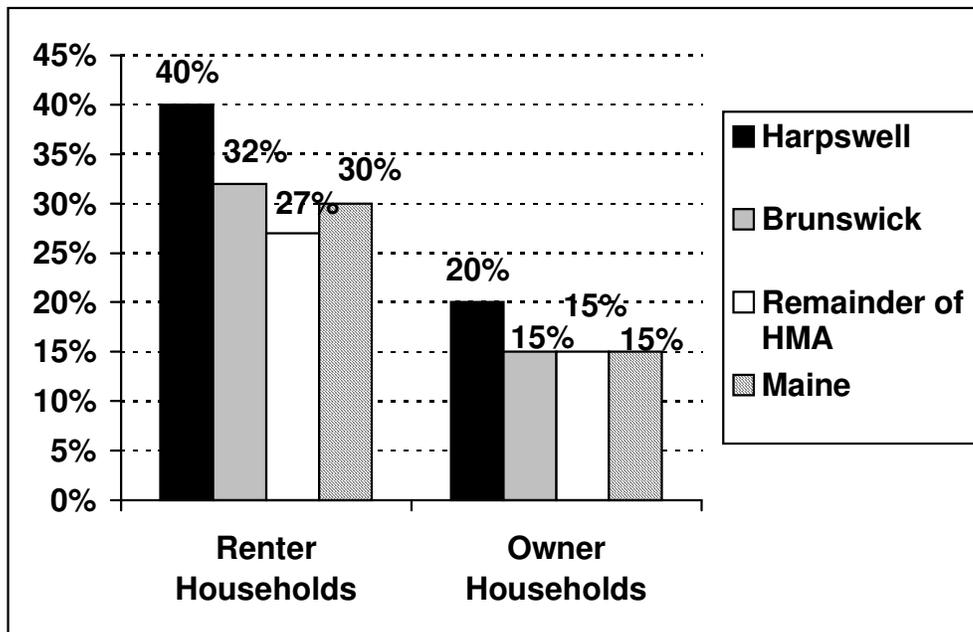


Source: Maine State Housing Authority, Mitchell Geographics, Inc.

Similarly, the 2000 U.S. Census shows that a higher proportion of Harpswell households are burdened with high rents and homeowner costs than is true for nearby towns and Maine as a whole. Figure 14 below shows that 40% of Harpswell year-round renters paid over a third of their incomes for rent in 1999, and 20% of Harpswell year-round owners paid the same in monthly homeownership costs. The federal government considers housing costs to be “affordable” if a renter is paying no more than 30% of their gross income and a homeowner is paying no more than 28% of their gross income on housing costs. In 1999, there were roughly 269 year-round owner households and 166 year-round renter households in which the cost of housing was more than what is considered affordable. As a result, Harpswell is one of the least affordable communities in which to live within the Bath-Brunswick Housing Market Area.

In summary, housing prices are very high in Harpswell, in part due to competition in the market from out-of-state buyers. Two in five renters, and one in five owners in Harpswell pay over a third of their incomes for housing costs. The cost of housing makes it difficult for young families to buy a first home here. The proportion of households under 44 years of age has gone from 43% in 1990 to 32% in 2000, and is projected to be 28% in 2007.

Figure 14
Percent of Households Paying 35% or More of Their Income on Gross Monthly Rent or Monthly Owner Costs, 1999



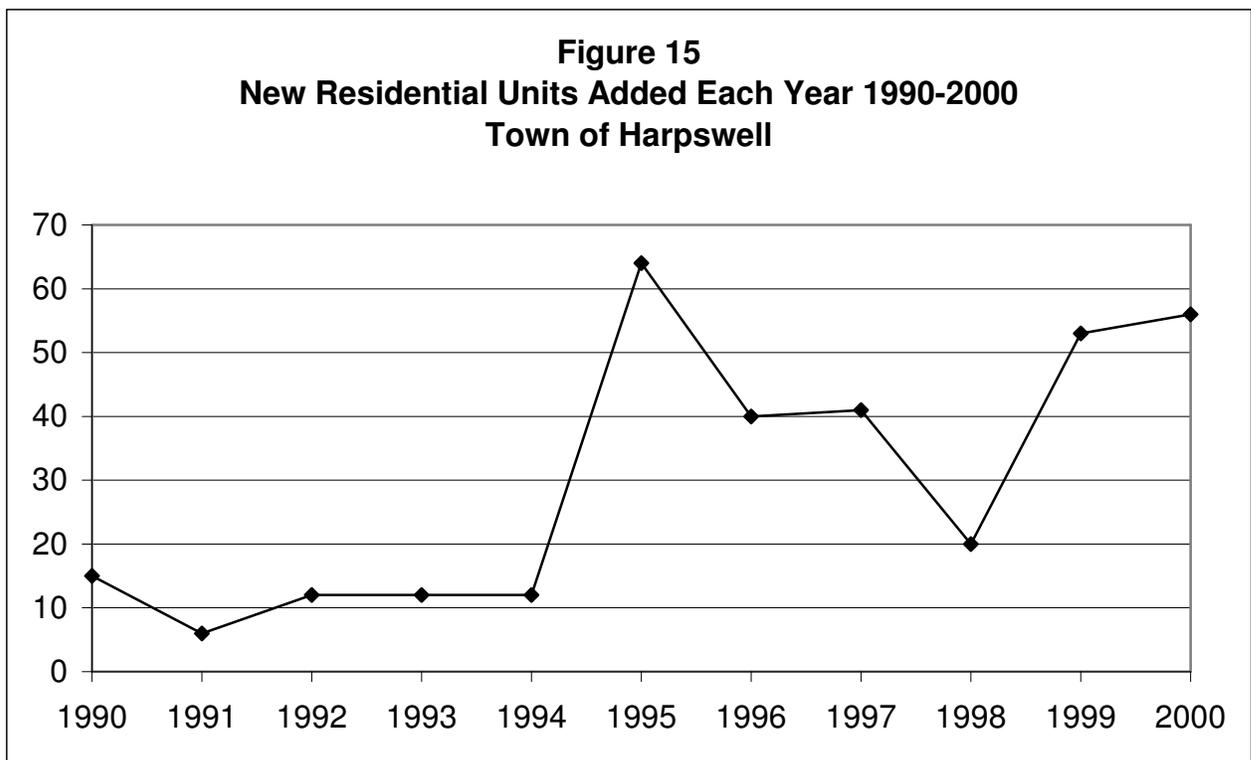
Source: 2000 U.S. Census

Also, household population has increased over the years, but more important is the increase in the number of households. As average household size continues to decline the demand for houses to shelter a given population increases. In 1990, 458 households were occupied by

one-person. By 2000 one-person households increased to 639, a 40% increase. All these factors have contributed to making Harpswell the town it is today and may continue to do so in the future.

Still another factor that is likely contributing to increasing housing prices and costs, regarding which there is presently little if any readily available data for Harpswell or surrounding communities, is the phenomenon of the “tear-down”, also sometimes called, “mansionization”. Over the last several years, developed coastal properties are sometimes sold to new owners who tear down the existing house and construct a much larger, more costly house in its place. Following reassessment, that property’s assessed value increases and neighboring properties, which may be occupied by owners of limited means, are also drawn upward, potentially leading to higher tax burdens on these surrounding properties. To the extent that these neighboring households of limited means may not be able to afford such an increased tax burden, should it arise, affordable housing may become a problem even for those who already own a house. Anecdotally, teardowns or mansionization have been occurring in Harpswell and other Maine towns, but there is as yet no Harpswell- or Maine-specific study of the phenomenon and its impacts.

Housing Projections for 2015



Source: State Planning Office

During the 90’s, the Town saw its housing stock expand by almost 300 units (Table 7), half of the housing increase between 1980 and 1990. This growth mirrored the economic cycle. In the first half of the decade, the Town experienced residential development at a rate of 6 to

Table 13
Population and Housing Projection Calculations for Harpswell and Bath-Brunswick Labor
Market Area

<u>Housing Unit Analysis</u>	<u>Harpswell</u>	<u>LMA</u>
Projected Population 2015	5,737	86,425
Projected Group Quarters 2015 (same as 2000)	4	2,423
Projected Population in Housing Units, 2015	5,733	84,002
Household Size, 2000	2.24	2.49
Household Size, 1990	2.44	2.57
%Decrease in Household Size, 1990-2000	-8%	-3%
Projected Household Size, 2015 (5% decline for Harpswell)	2.14	2.38
Projected Total Occupied Housing Units needed, 2015	2,679	35,325
Owner Occupied (80% for Harpswell)	2,143	25,869
Renter Occupied (20% for Harpswell)	536	9,457
Total Occupied Housing Units, 2000	2,340	31,318
Owner Occupied (78.7% for Harpswell)	1,843	22,935
Renter Occupied (21.3% for Harpswell)	497	8,383
Projected Change in Occupied Housing Units, 2000-2015	339	4,007
Seasonal Units, 2000	1,213	3,636
Seasonal Units, 1990	1,182	3,039
% Increase, 1990-2000	2.6%	19.6%
Projected Total Seasonal Units, 2015	1,261	4,350
Projected Change in Seasonal Units, 2000-2015	48	714
Vacant, Not Seasonal Units, 2000	148	1417
Total Not Seasonal Housing Units, 2000	2,488	32,735
Year Round Vacancy Rate, 2000	5.9%	4.3%
Projected Total Occupied Housing Units needed, 2015	2,679	35,325
Projected Total Not Seasonal Housing Units, 2015	2,838	36,855
Projected Total Vacant, Not Seasonal, 2015	159	1,529
Projected Total Seasonal Units, 2015	1,261	4,350
Projected Total Housing Units, 2015	4,099	41,205

Source: GPCOG, 2003

15 units per year (Figure 15). From 1995 through 2000, residential growth boomed at a rate of 20 to 60 units per year, significantly expanding the housing stock. It is unlikely that

Harpswell will experience a development boom in the 2000's of a similar magnitude to that which occurred in the 1990's, as land prices will slow down the rate of in-migration.

The Greater Portland Council of Governments used the following assumptions to predict housing growth in Harpswell through 2015:

- Given the current development pressures on coastal communities, land availability, and housing prices, the annual number of new housing starts will be more like the average for the last decade. Therefore, approximately 30 housing units per year will be used annually for the next ten years.
- The rate of seasonal housing conversion was not accounted for in the projection. Instead, 2000 figures were applied to calculate year-round housing in 2015.
- The projection of housing growth in Harpswell over the next decade is based on an average household size of 2.14 persons per household or 5% decline in average household size from 2000 to 2015. This number was based on the state and town historic trends, extrapolation of these trends through 2015, and correlation between town and state figures. For the Bath-Brunswick Labor Market Area housing projection the decrease in average household size followed the 1990-2000 trend.
- The 2015 population projections for Harpswell and the communities of the Bath-Brunswick Housing Market Area done by the State Planning Office served as the population growth assumed for this plan's housing projections.
- The proportional make-up of housing units by structure type will not change substantially. Single-family homes will still predominate, but there might be slight percentage increases in two-family and multi-family units (Table 14).

Table 14
Breakdown of Structure Type: 2000 and 2015

	Single family	Two unit	Multi Family	Mobile home/trailer	Other	Total
1990	2974	67	99	216	76	3432
	86.7%	2.0%	2.9%	6.3%	2.2%	100.0%
2000	3279	66	90	266	0	3701
	88.6%	1.8%	2.4%	7.2%	0.0%	100.0%
2015	3632	74	98	295	0	4099
	88.6%	1.8%	2.4%	7.2%	0.0%	100.0%

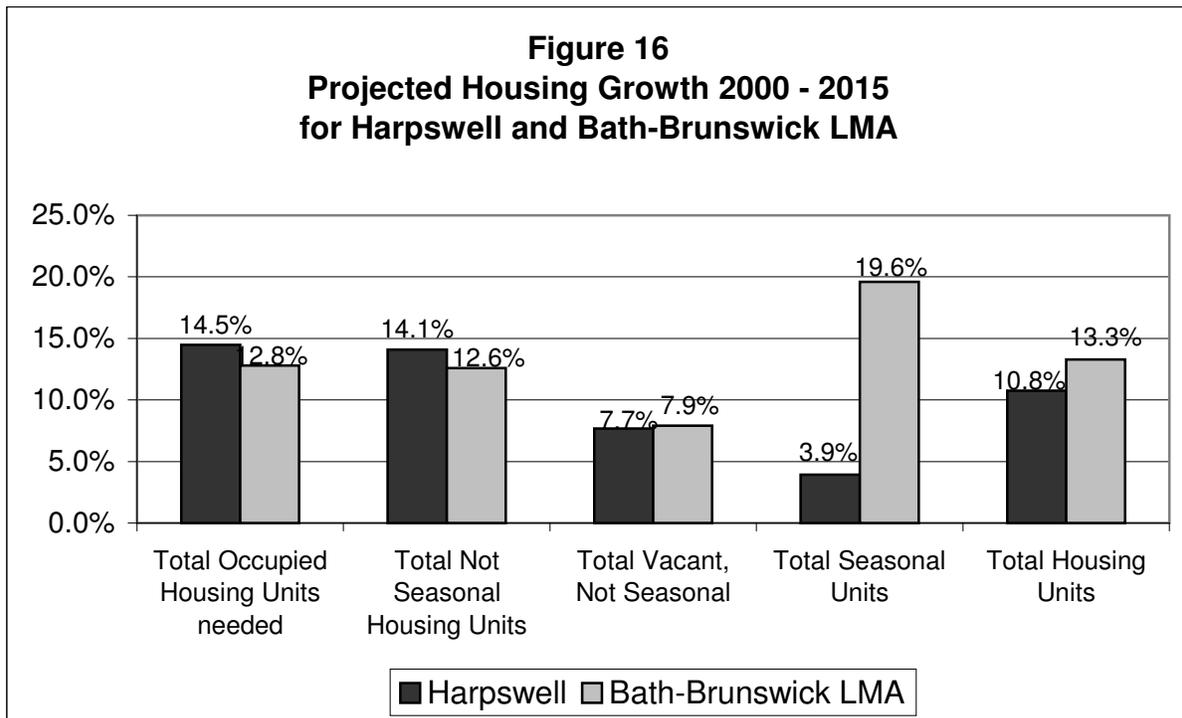
Source: GPCOG, 2003

- Owner-occupied units in Harpswell will remain high, but the percentage of housing units that are rented will decrease another percentage point below the figure shown in the 2000 Census data , from 21% to 20% following the 1990-2000 trend. This still

represents a significant increase in the number of rental units. The ratio of vacant, not seasonal housing units will stay about the same. For the region it was assumed that housing tenure would remain at the 2000 level (73% owner occupied and 27% renter occupied housing).

- Projected change in the number of total seasonal housing units for Bath-Brunswick Labor Market Area is estimated to be at the same rate as it was in the last decade (19.6%). The rate of seasonal homes change for Harpswell (3.9%) is calculated by extrapolating the rate in the previous decade to the year 2015.

Applying these assumptions, the Greater Portland Council of Governments projects that total number of housing units in Harpswell will reach 4,099 by the year 2015, a total increase of 398 housing units from 2000 that will be needed to accommodate 498 new persons (Table 13). The number of total occupied housing units will increase by 339, a 14% increase in comparison with 2000. Of that number, 271 units will be owner occupied and the remaining 68 will be rented. Figure III-12 below shows this projected housing increase for the year 2015 for Harpswell and the Bath-Brunswick Labor Market Area. Projected change in the number of new occupied housing units in Harpswell is somewhat higher than the regional figures. At the same time, change in seasonal housing for the Labor Market Area is predicted to be significantly higher than the change projected for Harpswell. .



Change in the number of housing units depends substantially on the average household size. Harpswell's housing projection shows that the average number of persons per household in the town is below the level of Bath-Brunswick Labor Market Area. Age distribution figures represent a substantial increase in population of 45 years and older. Population aging, in-

migration of retirees, and the nationwide trend of decrease in average household size suggest that over the next ten years there may be an unmet need for elderly housing. The Town's land use ordinances allow for a wide spectrum of housing types. Accessory, or in-law, apartments are currently allowed in Harpswell, outside the shoreland zone, without requiring a doubling of the minimum lot size. Some of the demand for housing may also be satisfied by future conversion of seasonal housing into year-round homes. Obviously these projections are subject to variation based upon economic conditions, major employment changes, and other unforeseen changes in the region.

Housing is a key issue for the community. During the past decade, Harpswell experienced dramatic increases in housing prices fueled by substantial in-migration. Land prices have escalated to the point where many people can no longer afford to buy a lot. This has created a situation in which young adults who have grown up in the community find it increasingly difficult to find housing that is affordable. Rental housing, while available, is limited.

Projected Need for Affordable Housing

According to the U.S. Department of Housing and Urban Development, 35% of Harpswell's current residents live in households which earn less than 80% of the county's median income. To maintain the town's current level of diversity, the Greater Portland Council of Governments estimates that of Harpswell's projected need for 398 new year round housing units by the year 2015, 80, or 20% of new units, will need to be affordable. This assumes that factors currently contributing to the need for affordable housing, cited above, will remain at least as significant as they are at present. Should the price of land and housing continue to escalate and/or the cost of financing, property taxes and insurance also continue to increase faster than household incomes, the need for affordable housing in Harpswell could ultimately be higher.

Section 4326, subsection 3A. of Maine's Planning and Land Use Regulation Act requires each municipality, whether working independently or as part of a multimunicipal region, to 'Ensure that the municipality's or multimunicipal region's land use policies and ordinances encourage the siting and construction of affordable housing within the community and comply with the requirements of section 4358 pertaining to individual mobile home and mobile home park siting and design requirements. The municipality or multimunicipal region shall seek to achieve a level of at least 10% of new residential development, based on a 5-year historical average of residential development in the municipality or multimunicipal region, that meets the definition of affordable housing. A municipality or multimunicipal region is encouraged to seek creative approaches to assist in the development of affordable housing, including, but not limited to, cluster housing, reduced minimum lot and frontage sizes, increased residential densities and use of municipally owned land;'

Section 4301 defines "affordable housing" as meaning, "...a decent, safe and sanitary dwelling, apartment or other living accommodation for a household whose income does not exceed 80% of the median income for the area as defined by the United States Department of Housing and Urban Development under the United States Housing Act of 1937, Public Law 412, 50 Stat. 888, Section 8, as amended."

MARINE ECONOMY

Harbors and Anchorages

There are multiple harbors and anchorage areas in Harpswell that serve commercial fishing and recreational vessels alike. The principal harbors include: Cundy's Harbor, Ridley and Hen Coves, Quahog Bay, Lowell Cove, Mackerel Cove, Harpswell Harbor, Merriconeag Sound, Harpswell Sound, Potts Harbor, Garrison Cove, and Lookout Point.

Marine Related Economy ¹⁷

Commercial Fishing In 1998 the town of Harpswell commissioned a study to better understand the importance of the commercial fishing industry in the economics of the town. This study represents one of the best collections of data available for Harpswell's and Cumberland County's commercial fishing industry. According the study¹⁸, Harpswell and Portland are the two main centers for commercial fishing in Cumberland County. In 1998 there were approximately 522 different individuals licensed for commercial marine harvesting who live or work in Harpswell. There were over 200 lobster boats. Commercial fishing is responsible for a significant portion of Harpswell's local economic activity. The Fishing Industry Profile estimates there were there were about 200-250 active licensed commercial fisherman and about an equal number of full and part time crew. With another estimated 60-80 people estimated to be working in related local industries, including dealer establishments and related marine services, there were probably 460- 580 full or part time jobs in fishing and related industries. This represents approximately 50%-60% of the local full and part time jobs.

Value of the Catch and Related Income The Fishing Industry Profile estimates, based on the value of County landings by species for 1997 and 1998, that the range in gross landed value of the catch attributable to Harpswell is between \$12 and \$14 million, and that of that amount, \$9 to \$10 million was landed in Harpswell. The total landed value attributed to Harpswell represented about 24% of the Cumberland County total landed value. On the basis of \$12 -\$14 million in gross receipts earned by fishermen, total person income in Harpswell from these receipts was estimated at \$6 to \$7 million.

Economic Impact of Harpswell Commercial Fisheries on the Region The total of direct and indirect induced sales for the Harpswell-based fishing industry represented an estimated total sales impact on the region of between \$20 and \$23 million in consumer and business sales which created an additional 238 to 280 jobs in other economic sectors.

¹⁷ Students at the Edmund S. Muskie School of Public Service completed substantial portions of the following research. The Comprehensive Plan Committee would like to thank Jennifer Stowell, Maria Kerley, Sarah Demers, and Kevin Beal for their hard work and assistance.

¹⁸ "Town of Harpswell Fishing Industry Profile" prepared for the Community Development Committee, by Bruce C. Mayberry, Planning Consultant, Yarmouth, Maine, Sept. 1999.

Recreational Boating and Tourism The importance of recreational boating and tourism in the marine economy is growing as more and more people come to vacation in Harpswell. These industries create jobs at marinas, hotels, restaurants, and in other tourism based retail and service sectors. The long rocky coast and numerous outer islands provide ample spots for recreational boating.

Fishing and Shellfish Licenses

A comparison of the current status of licenses issued by the state and town for fishing and shell fishing provides a sense of the trends. An obvious caveat is that issuing licenses is no guarantee they will be used, and, standing alone, provides no data regarding licensees' individual landings or income. The following chart, reflecting the number of licenses issued to individuals listing Harpswell addresses, or anchorages, is an update to 2004 on data first assembled in the 1999 Fishing Industry Profile:

<u>License</u>	<u>199</u>	<u>95</u>	<u>96</u>	<u>97</u>	<u>98</u>	<u>99</u>	<u>200</u>	<u>200</u>	<u>2004</u>	<u>Change</u>
	<u>4</u>						<u>0</u>	<u>1</u>		
Commercial Fishing (Finfish, Groundfish), Total	125	123	137	11	117	53	62	61	63	- 62
<i>Crew</i>	74	78	86	70	69	36	39	40	47	-27
<i>Sole Operator</i>	51	45	51	44	48	17	23	21	16	-35
Non-Resident Commercial Fish	0	0	1	0	0	0	1	1		N/A
Commercial Shellfish	67	70	74	84	85	67	69	70	77	+10
Eel / Elver			23	8	24	13	14	12	7	-16
Commercial Lobster/Crab, Total	394	427	430	41	431	280	281	289	317	-77
<i>Student</i>			32	38	44	41	50	53		
<i>Apprentice > 18</i>						6	4	7		
<i>Apprentice < 18</i>						3	0	1		
<i>Class 1</i>	222	236	215	18	177	94	74	65	92	-130
<i>Class 11</i>	91	105	112	12	143	91	107	107	145	+54
<i>Class 111</i>	20	17	30	27	33	31	35	43	54	+34
<i>Over age 70</i>	21	19	19	17	18	8	7	6	18	-3
<i>Under age 18</i>	40	50	22	21	16	6	4	7	8	-32
Non-Commercial Lobster	0	0	3	14	21	13	20	30		
Mussel Total	0	0	2	2	4	3	5	6	2	+ 5
<i>Boat/Dragger</i>	0	0	2	0	2	1	3	3	1	+1
<i>Hand</i>	0	0	0	2	2	2	2	3	1	+1
Marine Worm Digger	0	1	2	5	3	5	11	13	10	+10
Mahogany Quahog	0	1	5	6	5	1	0	1	3	+ 3
Scallops, Total	35	43	45	41	24	15	26	29	24	-11
<i>Boat/Dragger</i>	29	35	32	31	16	10	19	20	21	-8
<i>Diver/Hand</i>	6	8	12	9	7	5	7	9	3	-3
Sea Urchins. Total	90	58	49	33	17	24	20	19	6	- 84
<i>Boat</i>	45	22	14	7	3	1	1	1	5	-40
<i>Hand</i>	45	36	35	26	14	21	19	18	1	-44
Scallop/Sea Urchin Tender	33	29	30	21	15	11	12	10		

Scallop/Sea Temp.	Urchin	Tender,	0	0	0	1	2	0	1	0	N/A	
Seaweed			5	16	13	19	15	10	8	10	5	N/A

The chart shows declines of about ½ in the number of commercial fishing crew and sole operator licenses, a small increase in recent years in commercial shellfishing licenses, and a decline in eel/elver licenses. Lobster and crab licenses declined until the late 1990’s and then began a rising trend to just over ¾ of their 1994 number. Diggers of marine worms have increased in number from 0 in 1994 to 10 ten years later. Mussel and mahogany quahog licenses are slightly up. Sea urchin licenses are in steep decline. Scallop licenses have declined slightly. Many of the declines in licenses reflect changes in state and federal regulations, and the health of the fisheries for particular species.

Marine Related Water Quality

The Maine Department of Marine Resources (DMR) monitors coastal waters for a number of contaminants. Over 25 percent of the mussel and clam habitat along the Maine coast is closed to shellfish harvesting due to the threat of contamination by domestic sewage.

In Harpswell, the shell fishing industry is directly affected by the environmental impacts of wastewater discharge - both stationary, and seaborne. In 1993, 50% of Harpswell' s shellfish areas were closed, though that figure represented a substantial improvement over past peak closures, such as the closure of 89% of Harpswell' s shoreline to clamming for part of the year of 1989.

Today, a significant portion of Harpswell' s potential shoreline shell fishing flats remain closed at any given time as a direct result of non-point source pollution, failing septic systems, and the existence of nearby overboard discharge systems. Harpswell currently has 93 licensed overboard discharges. As evidenced by the accompanying maps produced by the Maine Department of Marine Resources, Harpswell has made progress on decreasing the number of licensed overboard discharges in the past ten years. Since the inception of the program in 1994, 34 of 127, or about 27%, of overboard discharge sources in Harpswell have been eliminated.

Public Access to Water

Public access to water is critical to several commercial fisheries as well as to tourists and other residents with recreational boating interests. Because businesses that depend on tourism such as motels, campgrounds, restaurants, marinas and other non-commercial fishing businesses also depend on access and on the presence and/or products of commercial fishing to some degree, public access benefits the whole marine economy, and thereby a majority of the local job base.

Taking inventory of public access and understanding its degree of permanence or transience is an uncertain science. Access types can range from publicly and privately owned wharves and boat ramps to roads that end at the water’s edge to lease agreements to courtesy extended

among neighbors or the public informally or by easement. Title to traditional access points is not always clear.

A 2002 report¹⁹ that studied and surveyed 25 working waterfront communities in Maine found six ways that communities experience loss of commercial fishing through loss of access:

1. Access to intertidal areas lost through no trespassing signs
2. New coastal property owners closing off/contesting public access
3. Commercial fishing access tenuous through lease arrangements
4. Singular reliance on public facility—competition from other users
5. Land-use access problem: limited parking
6. Conversion of working wharves to residential/recreational uses

Harpswell was among the 25 communities studied and surveyed. In Harpswell, the fisheries and related industries impacted by loss of access included groundfish, lobster, sea urchin, clam, worm, seaweed, mussel, scallop, lobster pounds, bait dealers, boat yards, fuel and ice, co-ops, and others. At the time of the survey there were 421 commercial resource harvesters in Harpswell. Total moorings, berthing, slips and tie-ups, commercial and recreational combined included 2,380, of which commercial fishermen used 21%.

According to the same report, the number of commercial private and public waterfront facilities in 2002 was 33. Of these, 17, just over one half, were dedicated to commercial fishing use. Thirty-one percent of commercial fishing access that is achieved through private residential piers or wharves that are owned or leased by fishermen.

The most numerous category of access points was “other” access points that included beaches and land crossings and not actual facilities. 100 of these access points were identified in Harpswell.

Among the 25 communities studied, Harpswell was determined to have an index of vulnerability to loss of commercial fishing access of 4 on a scale of 1 to 7 where one is least vulnerable and 7 most vulnerable.

In 2003-2004, a brief report²⁰ summarizing their findings with respect to public access points in Harpswell was prepared by some Bowdoin College students. The group visited thirteen public access locations including:

Hildreth Road
Wharf Road
Lookout Point Town Landing
Wood Point Road Town Landing
Graveyard Point Town Landing
Giant Stairs
Mackerel Cove Town Landing

¹⁹ Preserving Commercial Fishing Access: A Study of Working Waterfronts in 25 Maine Communities, prepared by the Coastal Enterprise Institute for the Maine State Planning Office, 2002

²⁰ “Harpswell Waterfront Public Access Location Database” by Truc Huynh, Melissa Stiebert, Grace Cho and Greg Goldsmith, 2004.

Bethel Point Town Landing
Potts Point Town Landing
Potts Point Wharf
Stover's Cove (Eider Road)
Steamboat Wharf Town Landing
Steamboat Road Town Landing/Chaplin Property

There are other public access sites, not inventoried in this report, and at least some of these sites are located on the Existing Land Use Map. With regard to the inventory above, 8 are Town Landings, most have little or no beachfront, parking is non-existent, in short supply and/or off-site or by permit only, and boat launches are present at just three.

The report made the following observations of general trends and recommendations:

“Several trends are characteristic of Harpswell public access locations. Most of the sites are small in size, limited to the width of a road easement. Most of the sites do not possess any public parking, forcing visitors to walk or park on private land. There is a general feeling that the sites have become the well-guarded secrets of neighboring residents, such other than these residents, only long term commercial marine interests know of them any more. A resident on Graveyard Point Road told us that the only people who reach the easement are those “who get lost on the way to Estes Lobster House.” Giant Stairs is a notable exception. The location of sites also holds noticeable patterns, including the large number on Bailey's Island, the lack of sites in Cundy's Harbor and the appearance of sites in aggregations.

“The town may benefit from an open discussion of the purpose of maintaining these locations for public access. The status of many of these sites as “public” seems questionable and the town's ability to clarify their goals may help to direct future action. Pursuing maintenance at these sites will increase their usefulness to the general public and should be discussed so as to attain mutual understanding between vested parties. Discussion as to whether the sites will become more common knowledge to the general public should be pursued as a part of this discourse. This will clearly vary according to the different uses and needs of the sites and their surroundings.

“In planning for new public access spaces, the town should seek to pursue larger locations in a more diverse spatial array. Sites generally did not possess enough open space for general recreation, let alone any parking for residents to utilize during their visit. The Harpswell Heritage Land Trust's site at Pott's Point, while lacking in available parking, maintains sufficient space for multiple uses including swimming, boating, walking and exploring. Emphasis for new public access could be placed on finding sites in unique locations of Harpswell, such as Dyer Cover or Harpswell Sound.”

The 1993 Comprehensive Plan identified 13 areas of shoreline public access “that are believed to be publicly owned.” Organized according to geographic distribution, these include:

Bailey Island	Mackerel Cove, Garrison Cove, Giant Stairs and York Landing
Orrs Island:	Steamboat Hill Road
Great Island	Bethel Point
Cundy’s Harbor	Holbrook Street
North Harpswell	Wharf Road, Hildreth Road
Harpswell Center	Lookout Point, Wood Landing Point
South Harpswell	Pott’s Point, Basin Cove/Ash Point, Stover’s Cove.

Harpswell has just one State owned and maintained public boat access site. This is maintained by the Department of Conservation and is classified as a landing facility only. The Maine State Planning Office and the Department of Marine Resources have listed Harpswell as First Priority Area²¹ for increased water access.

Fishing Industry Issues

A major objective of the Fishing Industry Profile was to identify planning and community development issues facing the fishing industry, including those that local government might be able to do something about. Issues are listed from the results of Harpswell interviews and small focus groups. The principal local issues identified in the process that fall within the influence of local government are selected and listed below.

Environmental Changes/Resource Protection

- The Town has estimated its coastline frontage at 216.8 miles. With this extensive maritime area, Harpswell has one of the longest coastal shore frontages in the State, representing a tremendous resource as well as a management challenge.
- With two full time wardens, the Town has a relatively high level of effort in enforcement for its shellfish ordinance compared to other towns. Given the length of the Harpswell coastline, however, poaching remains a problem.
- There are about 100 [now down to 93 at this writing] overboard discharge sites remaining in Town. Remediation using state programs allows the Town to eliminate about 3 per year, which may gradually allow the opening of some new areas to clamming. However, most of the potentially productive flats are already open to harvesting.

²¹ SPO and DMR completed a statewide survey of coastal water access and have assigned this status in a report entitled, “Coastal Water Access Priority Areas for Boating and Fishing” through the Maine Coastal Program.

- Discharge of oil and bilge into the water from commercial fishing boats may not be adequately addressed by enforcement (comment from waterfront facilities interviews, 1999 Port Inventory report).

Potential For Use Conflicts

- Moorings demand has continued to rise, with pleasure boats consuming an increasing portion of total moorings. [Since 1990, the number of moorings has increased from 1,532 to 2,001 in 1998, and increase of 469 (31 %) over an eight year period.]
- Some believe there to be a large number of unregistered moorings in Harpswell, and that the problems of harbor traffic and moorings management will continue to intensify as residential use, second homes, and recreational boating increases. Given the number of harbors in the Town and their distance apart, there may be a need for more resources devoted to harbor management and enforcement.
- There has been a big increase in non-commercial boat traffic. A major increase in recreational boats, notably in upper Middle Bay, has been observed.
- Waiting lists for tie-ups at available waterfront facilities in Harpswell are entirely for recreational boating use, evidencing the increased demands from residential and pleasure boating.
- There is a concern that, with the increase in residential development in the Town, that newer residents will begin to lobby for land use regulations or ordinances that are adverse to fishermen storing traps or equipment on their residential lots.

Changing Real Estate Values and Taxes

- Unlike their Downeast counterparts, most local fishermen don't live in on-shore properties. Increasingly, fewer fishermen will be able to live in Harpswell, become less able to access the waterfront, and retain only marginal ties to the community at large.
- Increasing real estate values and property taxes make fishermen less able to live in Harpswell, and puts pressure on waterfront property to be sold or converted.
- If owners continue to sell waterfront property at high prices, it will continue to bid up the price of real estate and eventually reduce facilities and access to support commercial fishing.

- Concern that increased real estate values will result in displacement of commercial fishing and less access to the waterfront and coves, especially for shellfishing. In addition, bottom leases could reduce availability of the shellfish resource to local fishermen.
- The fishing infrastructure (existing piers and wharves; waterfront access lots) could be converted and lost to other uses under real estate pressure if action is not taken to preserve waterfront facilities and access for the future.

Waterfront Access and Public Facilities

- A 1999 Port Inventory infrastructure survey identified 18 privately owned wharves or piers used primarily by the commercial fishing industry in Harpswell. Generally, the conditions ratings for Harpswell facilities were high, with evidence of recent and ongoing maintenance of facilities. Only one facility was identified as having a marine pump-out station. [There are now three accessible to Harpswell boats.]
- Town launch facilities were identified in the 1999 Port Inventory. Of seven town boat launch or ramp locations identified, only one has any parking and it is limited to 3-4 spaces.
- Town landings and boat launch facilities exist, and there are other undeveloped publicly owned ROWs. However, neither the developed nor the unimproved sites provide space for parking.
- The Town needs to maintain public access to the water. It could purchase or improve ROWs for commercial fishing access points or use the Fuel Depot. Fishermen also need places for short-term loading/unloading of gear and minor repairs.
- Use of the Fuel Depot's existing facility is not practical for most working fishing boats due to the height of the pier. Development of public facilities for commercial fishing using public dollars could be viewed as subsidizing one part of the local fishing industry to the detriment of others who have already invested in developing and maintaining private waterfront facilities.
- The Fuel Depot site has a good potential to support aquaculture uses and marine research.
- There is a need to preserve access to the water and related facilities, and the Town's capacity to support the catch and marketing of fisheries products.

Community Character and Heritage

- The Town used to be an agricultural and fishing town. Now it is becoming a professional bedroom community. This trend can eventually price out and displace the commercial fishing industry.
- The Town needs to have a plan to preserve fishing as an industry. It should make findings or resolutions to the effect that commercial fishing is an important priority to the Town, and that its basic supportive infrastructure needs to be preserved. It could consider setting aside future water access locations with some areas reserved exclusively for commercial fishing access.

The Town needs to ask what would happen to the basic character and heritage of the community if lobstering and commercial fishing were to be lost to other replacement uses on the waterfront. The loss in talent and experience of fishermen would not easily be replaced, nor could the “character of the community” that residents and tourists enjoy be easily reconstructed.

Cundy’s Harbor Working Waterfront Study

In the summer and fall of 2004, the Town retained consultants to perform a study of Cundy’s Harbor village and its working waterfront in order to identify policy and planning options for protecting the village from the possibility of losing access to the water for commercial fisherman. The consultants worked with the people of Cundy’s Harbor and the Town to create a detailed profile of the village and the development pressures it is experiencing, and to explore a range of policy and planning options with them to develop policy and planning recommendations. The consultants have completed a report²² that contains a village profile and policy options. Here are the findings and recommendations from the study:

Conclusion

Findings

Cundy’s Harbor has a strong commercial fishing culture and strong public support for maintaining that culture and preserving the infrastructure that supports commercial fishing. Cundy’s Harbor has been able to maintain its working waterfront and sustain its commercial fishing industry with relatively little recent change. Many of the concerns of working waterfront communities elsewhere are not urgent matters in Cundy’s Harbor. But it would be unwise to ignore the influences and pressures at work on coastal communities throughout Maine and New England. The relatively moderate and manageable change in Cundy’s Harbor is not necessarily an indicator that issues such as loss of access or conflict between

²² “Cundy’s Harbor Working Waterfront Study, Village Profile and Policy Options” by Teresa Oleksiw, Hugh Coxe and Judy Colby-George

fishermen and residents will not become a problem in Cundy's Harbor as they have in so many other working waterfronts.

But Cundy's Harbor has options open to it that may help to ensure the continued vitality of the working waterfront. This report lists many of these options. It is important to note, however, that most of the options involve tradeoffs that require the community to make decisions about what it values and what it wants to be in the future. The community expressed support for considering many of the options and for engaging in the discussion necessary to plan for the future.

We found that marine infrastructure needs in Cundy's Harbor are minimal but could be enhanced to promote and protect the fishing industry. While most people considered water access to be the most important factor in sustaining the fishing industry, we found that Cundy's Harbor has experienced remarkably little loss of water access over the last decade. Despite this relatively modest loss of access, the residents and users of Cundy's Harbor change. Coastal properties are in high demand in Harpswell and in other Maine coastal communities resulting in dramatic increases in the value of coastal properties in recent years. The pressure created by increased demand for recreational boating facilities is significant. The future of Holbrook's, one of the larger commercial wharves, is uncertain.

Residents of Cundy's Harbor expressed mixed opinions concerning the need and desire for additional public water access sites or a public wharf in the village. Additional public access would likely encourage additional recreational boating, something seen by many as anathema to commercial fishing. Also, public access for commercial fishing might be perceived as unfair to owners of private docks and wharves.

We found that available land for parking is limited throughout Cundy's Harbor and parking is likely to continue to be in high demand. We also found there is an adequate supply of basic marine related goods and services but that many people are concerned about maintaining current levels of supplies and services.

The current land use regulations make the fishing industry an exclusive use on most of Cundy's Harbor's waterfront. While this zoning generally has been successful in promoting and protecting the fishing industry, we identified several aspects of the regulations that might be made more effective without imposing substantial new burdens on residents and property owners. Residents of Cundy's Harbor seem to prefer to keep regulations to a minimum but they also would like the village to stay, as much as possible, as it is now. For instance, changes in ownership of properties may lead to alterations that are out of character with the current village and may eventually pose a threat to the continued vitality of the working waterfront. So residents of Cundy's Harbor seemed to generally favor stricter land use regulations to stem the potential for future large-scale changes in the culture and built environment of the village. Moreover, to the extent commercial fishing operations may be in conflict with residential or other uses, people felt that the residents and users of Cundy's Harbor should defer to the fishing industry needs.

We also found that much of the challenge to Cundy's Harbor's working waterfront comes from influences that are beyond the control of the town and its policies. Factors such as federal regulation, market conditions for seafood and for coastal property, and environmental conditions will continue to be key determinants to the future of Cundy's Harbor. Nevertheless, local efforts to preserve the working waterfront play a vital role and generally enjoy broad community support.

Recommendations

Based on the information gathered for this study and particularly the feedback from people interviewed and people in attendance at the community forum, we recommend the community take the following actions.

Immediate actions:

- Include stronger working waterfront policies and strategies in the town's comprehensive plan update.
- Educate the community, both seasonal and year round, on the importance and facts of living in a fishing environment. Use a brochure to achieve this purpose, and request or require that real estate agents give this to prospective buyers viewing homes and land in Cundy's Harbor. An educational brochure could inform newcomers and seasonal residents of the realities of living in a fishing village.
- Review assessment methodology in Harpswell to ensure that small unbuildable and highly restricted waterfront lots are assessed appropriately.
- Disseminate this report to the residents and users of Cundy's Harbor.

Longer-term actions:

- Institute the goal of working to preserve and protect the working waterfront.
- Select some of the promising land use options (such as more restrictive bulk and lot coverage standards for new and expanded residential in CF zones, combined with more targeted drawing of those zones) and further analyze the benefits and impacts (pros and cons) and engage the community to decide which, if any, to implement.
- Work with other coastal communities to convince the legislature to amend state laws so that coastal marine related property is assessed at current use value.
- Review the current land use regulations to determine if they should be amended to include protection of scenic views and if the current zoning boundaries for the commercial fisheries districts are accurate and adequate.
- Engage in discussion about the need and desire for improved or additional public access.
- Form a committee to review the desire and need for a dedicated commercial fisheries fund to be used for investments in the waterfront including purchase of land for access if desired.
- Form a committee to review the future potential uses of Holbrook's. Consider the possibility of the Town acquiring the property to ensure public access and other benefits.

RECREATION AND OPEN SPACE

Recreational opportunities in Harpswell exist in both organized and unorganized and informal ways. The geography and natural environment of Harpswell have traditionally provided the "field of play", whether on land or at sea. However, the Town' s rapid growth over the past few decades has resulted in the loss of some traditional recreational areas and has threatened many more. There is an active land trust in Harpswell and the Town has recently come into possession of land suitable for recreation, as well. Organized recreational facilities and programs in Harpswell have grown in number and variety. These programs use a diverse group of facilities in the town and in neighboring towns.

Recreational Facilities and Programs

The Town of Harpswell has limited outdoor facilities for formal, organized recreational activity. Both of the elementary schools have extensive playgrounds and a ballfield. The Town owns a Picnic and Rest Area on Route 24 on Orr' s Island. The Harpswell Neck Physical Education Association has a facility on land leased from the Kellogg Church that includes two tennis courts, a basketball court, playground, and a small crafts building. Use is limited to residents of Harpswell Neck. There are also outdoor basketball hoops at the Cundy' s Harbor Community Hall. The only State-owned recreational facility in the Town is "Sawungun," the former summer home of Admiral Robert E. Peary on Eagle Island. The facility is operated as day-trip park with no camping allowed. The park is reachable only by boat. It is one stop on a summer ferry route linking Bailey Island with downtown Portland.

Sports and physical fitness activities are organized by a number of groups. Two years ago the Town hired a part-time recreation director. She works with the Harpswell Recreation Committee to organize recreation programs for residents of the Town. These include:

Recreation Offerings 2002-2004

Adult Offerings: Digital Photography, Jewelry Making, Healthy Italian Cooking, Marine Knot Tying, German Cooking, French Cooking, Hiking in Maine, Map and Compass Skills, Camping In Maine, Outdoor Skills, Knitting, The Four Essentials of Health, Ocean Shell Rowing, Kayaking, Mountain Hike, Skiing, Quilting

Community Activities: Bike, Ski, Skate and Ride Helmet Sale, Kite Fly Day, Horse Drawn Sleigh Rally, Family Underwater Egg Hunt, Yard Sale, Local Artists Featured at the Town Office, Fairy House Building on the Cliff Trail

Family Activities and Sports: Parent Child Kayaking, Family Swim, Lost Valley Ski/Ride Program, Children's Museum Pass, Harpswell TV Toddler Music Show, Parent/Child Soccer for 3 yr. olds.

Youth Sports: Fall and Spring Cross Country, Pee Wee Soccer, T-Ball, Baseball, Softball, Youth Basketball, Developmental Basketball, Family Swim, Summer Swim, Karate

Arts: Music and Movement Classes for age's 1-3, 3-5, and elementary school, Birdhouse, Bat House, Bee House Building, Jewelry Making, Mask Making, Zoo Sculptures, Heroes, Stories and Art, Celebrate Peace, Art 'n' Angels, Fairies and Trolls, Visions of Peace, Holiday Crafts.

Clinics and Camps: Basketball Clinic, Camp Harpswell (sports/art/music)

Adult Sports: Coed Softball, Coed Basketball, Skiing, Lap Swimming

Harpswell youth also have access to recreational activities in nearby communities. Students in SAD #75 can participate in Topsham's recreational programs. Harpswell's young people participate in regional soccer and Babe Ruth baseball programs. There are also a number of scouting troops in the Town.

In addition to these public and quasi-public facilities, there are also a number of private areas that are used for recreational purposes. A number of private ponds are popular hockey and skating ponds. Local residents quietly and lightly use a couple of beach areas on private land. In recent years, however, some locally used recreation areas have been lost.

Marine-Related Recreation

The coastal waters of Harpswell comprise the largest playground in Town. Boating, recreational fishing, island picnics, swimming and duck hunting are favorite activities of residents and visitors alike. About 1,500 boats are registered in Harpswell. An unknown number of boats registered in other towns are regularly moored in Harpswell waters. Hundreds of day-trippers from out-of-town make use of the Town landings. Numerous larger boats cruise through the area and anchor overnight in the protected bays and marinas. There has been an explosion in recreational boating over the past 15 years and many want to come to Harpswell. During the last several years additional mooring space in neighboring towns has become scarce or non-existent, even as these towns have continued to grow. People who cannot find mooring space in their own town are finding it in Harpswell.

Demand for access to the water by recreational boaters, with and without moorings, is growing. The greatest obstacle to the public's enjoyment of the water is the limited public access to the shore. Title and the right of the public to use such access points is not always clear. The Town Lands Committee has recently taken inventory of access points to the water and, in a 2004 report, has made recommendations, as follows for improvements to several:

Harpswell Neck

- Basin Cove, Ash Point, South Harpswell:
- Graveyard Point Town Landing: Public Launch sign, Parking sign, needs widening
- Hildreth Road Landing: Public Landing sign, No Parking sign, reinforce banking, needs widening if it is to become a boat-launching site.
- Lookout Point, Harpswell Center: Public Launch sign, Parking sign(s), Rules sign.

- Potts Point Ramp: Public Launch sign, Parking sign, needs surveying.
- Potts Point Wharf:
- Stover's Cove Road, South Harpswell (easement):
- Stover's Cove, South Harpswell (Eider Road) (easement):
- Tide Mill Cove Town Landing: Public Launch sign, Parking sign, needs widening, needs bush cutting. (Canoes and kayaks).
- Town Wharf-Float: Public Access sign, Parking sign, bank reinforcement, (parking area).
- Wharf Road Landing: Public Landing sign, Parking sign(s).
- Wood Landing: Leased-monitor it.
- Wood Point Road Town Landing:

Bailey Island

- Garrison Cove Town Landing: Public Launch sign.
- Land's End:
- Mackerel Cove Town Landing: Public Launch sign, Parking signs, Rules?, mowing, needs clean-up.
- York's Landing: Public Landing sign, Parking sign. (Canoes and kayaks).

Cundy's Harbor/Great Island

- Bethel Point Town Landing: (has Public sign, No Parking sign, Private Parking at Bethel Point Boatyard –Terry Dunning, permitted parking for island access).
- Giant Stairs: (no facilities)
- Holbrook Road Town Landing: Public Launch sign, Parking and No Parking signs, (may be 2 parking spaces), ramp needs pavement.
- Strawberry Creek:

Orr's Island:

- Merritt House Landing: Public Landing sign, needs widening, (potential launch, mowing, potential parking).
- Steamboat Hill Road (Merritt House Hill): (no facilities)
- Steamboat Wharf Town Landing:

In a 1973 report, the Conservation Commission noted that:

"Certain facts seem clear:

- Some Town Landings still allow public access to water.
- Others might possibly be cleared for public use.
- None can be adapted to handle auto and trailer traffic.
- They should be identified, but not advertised."

There are also a number of private points of access to the shoreline that serve specific groups. A number of owners' associations have facilities that are available to their members. Boat yards, marinas, lobster dealers, and yacht clubs provide facilities on a restricted basis to their members or customers.

The Town landings can become quite congested with vehicles and trailers on sunny weekends, frustrating local residents and fishermen who have traditionally used the landings as their access to the water. As listed above, parking at the landings is limited or nonexistent, and the roadsides are often clogged with parked cars and trailers, creating traffic hazards and annoying the neighbors.

Increased development on offshore islands has created conflicts at some landings as new users compete with traditional long-term users, including fishermen and long-time residents of offshore islands for space for haul-off lines. Recent changes in shoreline zoning mandating deeded access to the mainland shore for any new offshore development should assure that this problem does not worsen.

Land-based Recreational Transportation

Summer and winter recreational facilities must be self-generated. Bicycle paths are not available since roads are too narrow to allow for this addition. Also, the summer tourist traffic adds an element of danger to bicycling.

Formal snowmobile trails are also not available in Harpswell. Most snowmobilers create their own trails such as the pipeline from Mitchell Field to the Naval Air Station, or trails on private property.

Open Space

Much of Harpswell is undeveloped and the open space that exists is a major factor in the Town' s character. While most of this land is owned privately, the Town, the State and federal agencies, and conservation organizations own several tracts. The following is a brief description of these areas:

1. Town-owned open space

The Town now owns approximately 177 acres of land adjacent to the Town Office and Recycling Center. Nearly all of this land is undeveloped and offers possibilities for recreational and open space use. The Town has recently opened a 1.5-mile trail loop called the Cliff Trail, on Great Island, which crosses near the highest point in Harpswell. This marked trail features a shore walk along Strawberry Creek and spectacular views from 150-foot cliffs overlooking Long Reach.

In the mid-1990s, the Navy gave its 117.5-acre Fuel Depot to the Town of Harpswell. The Town has renamed the site as the George J. Mitchell Field.

The Town also owns open land on both sides of Route 24 at the north end of Orr's Island. In addition, the Town owns Elm Island, a small, offshore island.

2. State-owned open space

Significant portions of five offshore islands, Haskell, Little Birch, Pond and Mouse Islands are managed for wildlife purposes. The fifth State-owned island, Eagle Island, is a historic site. The State of Maine owns a number of parcels of land in the Town. The State owns the Admiral Peary Home, which is open to visitors. In addition, the State has a conservation easement over the southern half of privately owned Whaleboat Island. The State also owns Mark Island. The State also has sizeable holdings at the Great Island marsh on either side of Doughty Cove. This area is open to the public, but no parking or other facilities are provided. The State also owns a parcel of land at Allen Point that extends to the shore. No parking or other facilities are available.

The Baxter State Park Authority manages the 222-acre Austin Cary Lot, which is owned by the State, for timber harvesting and limited recreational use. Logging and old 'woods' roads form a network of unmarked walking and cross-country ski trails. Hiking is challenging since there is little trail maintenance with the 'passive' recreation stipulation imposed on this demonstration woodlot. Some bushwhacking is required to get to the shore.

3. Federally-owned land

The federal government controls Little Mark Island, Ram Island and the southern tip of Whaleboat Island, both of which have navigational aides.

4. Nature Conservancy land

The Nature Conservancy, a national conservation organization, has three major holdings. The organization controls Upper Goose Island. The island is closed to the public from March 15th to August 15th because of its value as a bird nesting ground.

5. Harpswell Heritage Land Trust

The Harpswell Heritage Land Trust, a local land trust, owns, or holds the rights to land or conservation land at 27 sites in Harpswell. Of these, at least 10 sites allow public access. These sites include 43 acres on Birch Island, the 3.35-acre Mackerel Cove Field, the 0.86-acre Mackerel Cove Town lot, the 1-acre McIntosh lot, the 40-acre Doughty Point Preserve and 2-acre island, 4 acres of pebble beach and salt marsh at Stover's Point, the Potts Point Preserve, the 100 acre Long Reach Preserve, the northern 60 acres of Whaleboat Island, the 21-acre Skolfield Shores Preserve, and 3-acre Crow Island. The Trust also holds conservation easements on 890 acres of other private land, including 328 acres on other islands.

6. Harpswell Garden Club

The club owns a parcel at Stover' s Point that has a beach, parking, and a bird sanctuary. This area is open to the public. In addition, the club maintains the Anne Frances Hodgkins Park adjacent to the Old Town House and has an easement to Porter Pond for nature study purposes.

Private Land

Harpswell' s fields and forests have long been areas for recreation: hunting, hiking, snowshoeing, skiing, sledding, snowmobiling, etc. While some of this occurs on publicly owned land, most occurs on private land. But with many large tracts being broken up by development, it is becoming increasingly hard to walk very far in the woods before coming upon a residence. The shrinking open space has reduced wildlife habitat. More land is now posted against hunting and trespassing. Many private owners of land have traditionally allowed people to hunt, hike, picnic, or camp on their land. But with changes in ownership or development of the parcel, many of these privileges have been lost. In some cases this has been due to vandalism and lack of respect for the property; in others it is due to increased concerns for liability risks.

Analysis

The Town faces a number of significant issues as it considers open space and the current and future recreational needs of the community. In recent years the Harpswell Heritage Land Trust has preserved several additional sites that allow public access to the land preserved. The Town has acquired land at Mitchell Field, added to its holdings near the Town Office, and acquired significant land on northern Orr's Island. At the same time that demand for access to the water and for mooring space is increasing, changes in land ownership and other factors are having the effect of decreasing available points of access to the water, not just for recreational boaters but for fishermen as well. The records of who owns existing public access are sometimes uncertain, just when it is becoming more important to establish clear title, manage parking, and establish more access.

The growth pressures of the next decade will add to the current need to create a coordinated network of open space recreational opportunities. Ancillary purposes related to growth pressures and shrinking open space can also be served by careful planning of a network of existing and future open spaces. These include protecting important wildlife habitat from being further fragmented by new development, protecting scenic views, and protecting important aspects of Harpswell's rural character. Linkages between parcels of open space, particularly along streams and shorelines that serve as wildlife travel corridors, can also help keep Harpswell's wildlife populations healthy and abundant well into the future.

The Town needs to examine its public access to the shore, identify the problems and needs, and take appropriate action to guarantee access to the shore for both fishermen and recreational boaters, including parking. The opportunity exists for discovering additional public rights of access to the shore. Therefore, the Town should consider continuing to research and clarify the ownership of these areas. The retention of private open space is a key issue. This has been the source of much "traditional" recreational activity. This role is threatened by high property and estate taxes that make holding these parcels difficult, leading to increased development and changing patterns of ownership. The Town Lands Committee has made a good beginning with its 2004 report, but there are many remaining questions to be answered about these and other less prominent public access points. Public access to water can be integrated into an open space plan as well.

As the Town grows, the average age of a Harpswell resident is expected to continue to increase. Organized recreational activities and programs will need to serve an expanded range of age groups as a result. Children's programs will always be needed, but increasing programs and activities for older adults will also be in demand.

One of the defining characteristics of Harpswell's recreational programs and activities is that they are wide-ranging and involve an amazing variety of municipal, educational, religious, private and civic properties and facilities. Another defining characteristic is that there is no one central recreational facility that can host multiple programs and activities where they will be equally accessible for all persons desiring to participate. The lack of recreational facilities for formal, organized activities is significant, and the recent growth of the Town has increased the need for community facilities. Land adjacent to the Town Office and Recycling Center offers the possibility of locating municipal functions centrally within the Town. One question facing the Town is whether recreation is a municipal function that can be served in this location.

Another recent addition to Town property, Mitchell Field is not centrally located, but it also offers the potential for serving the recreational needs of many nearby residents and others.

At this time, the Town and State own significant undeveloped land. These holdings offer the possibility for developing recreational uses. The opportunity exists for Town committees and organizations to work with local and State officials to develop plans for recreational use of public lands in Harpswell.

Meeting the increasing demand for recreational services during the next ten years may also take more than a part-time recreation director and a Recreation Committee.

PUBLIC FACILITIES AND SERVICES

Increasingly, operation of the Town has become a more complex and formal system relying on full-time and part-time professional staff. This section summarizes the major public facilities of the Town and the services provided to the residents of Harpswell. The section also looks at the capacity of these facilities and services to accommodate projected growth over the coming decade. This section updates the text of the 1993 background section on public facilities and services.

General Government

The principal administrative functions of the Town are located in a newly expanded and modernized Town Office building located on the Mountain Road. The building was built in 1986. Expansion and modernization were completed in 2003 and the building now provides space for the following Town Departments and staff:

- Board of Selectmen
- Town Administrator
- Town Clerk
- Tax Collector
- Assessor
- Codes Enforcement
- Town Planner
- County Sheriff' s Patrol
- Marine Patrol
- Recreation Director
- Administrative offices
- Welfare Office
- Animal Control
- Meeting facilities for Town boards and committees with Cable TV cameras
- Public Restrooms
- Internal space for additional offices when needed

This facility is adequate to meet the Town' s general administrative ~~need~~ for the foreseeable future.

Public Safety

Public safety services in the Town of Harpswell are provided by a number of independent organizations. The Cumberland County Sheriff' s Department provides police services on a contractual basis. Fire and ambulance services are provided by local all-volunteer organizations. These organizations have seen a growth in the need for their services over the past decade.

The volunteer emergency services continued to see increases in the volume of both Fire and Emergency Medical Services (EMS) calls in 2003. This has been the steady trend for the last several years. The trend is anticipated to continue as the population grows and ages, with the largest volume growth in calls for Emergency Medical Services. The total number of runs from all three fire and rescue departments in 2003 were as shown in Table 20.

Table 20
2003 Fire and EMS Run Totals

Department	Fire	EMS	Totals
Cundy's Harbor	61	96	157
Orr's & Bailey	59	101	160
Harpswell Neck	78	131	209
Total Calls	198	328	526

1. Fire Protection

Fire protection in the Town is provided by three independent, volunteer organizations, each with its own board of directors and chief. Each department owns its own buildings and equipment. The three departments are the Cundy's Harbor Fire Dept. (CHFD), Harpswell Neck Fire Dept. (HNFD), and Orr's and Bailey Islands Fire Dept. (OBIFD). In 1986 the Orr's Island Fire Department and Bailey Island Fire Department combined their boards, buildings, and equipment into one department. CHFD and OBIFD also maintain the ambulance services in their communities. Historically these departments were totally independent of each other (and the Town) and were very territorial. Beginning in the late 1980s, the department chiefs have changed to a course of closer cooperation with mutual aid for major fires and coordination of training, communication, and equipment purchases. During this time the departments retired some "antiques" and undependable trucks and purchased newer firefighting trucks with increased capacities to effectively fight structure fires. Also, more frequent training with State instructors has produced a safer more experienced volunteer force. Much of the training is now done on a townwide basis. Communications were changed to a dispatch system through Cumberland County Sheriff. Each firefighter and rescue person carries a pager or radio. Response time has improved dramatically, and the single communications network has enabled all the departments to work together.

Recognizing the need for sufficient personnel and equipment to handle a major fire, the three chiefs have instituted Automatic Mutual Aid for structure fires. The most limiting factor in Harpswell is available water. With no hydrant system in Town, all water must be shuttled to the fire scene in tank trucks. A number of "dry hydrants" have been installed in ponds throughout the Town in order to refill these trucks for continuous shuttling of water. In order to make the water shuttle system more effective and dependable, all three departments purchased new tank trucks in the late 1980s or early 1990s. Only Bailey Island lacks a water supply and must shuttle water from Wilson's Pond on Orr's Island. Island fires present even more difficult challenges. Firefighters and equipment, including portable pumps, must be

transported to the scene, often requiring that any available boat be commandeered.

In addition to the mutual aid agreements they have with each other, the three Harpswell fire departments have a verbal mutual aid agreement with the Brunswick, Topsham and West Bath fire departments, and a written mutual aid agreement with the Brunswick Naval Air Station.

Harpswell' s fire chiefs feel that the Town has enough dependable equipment to handle most fires in Town. The number of trained volunteers is sufficient for coverage at night, but daytimes are usually understaffed due to out-of-town jobs of many firefighters. Recruitment of new volunteers is getting harder because of increasing demands on time for training and because of the busier lives most people lead today. The chiefs all feel there is need for more training, especially on a townwide basis. They also express their desire for more coordination in the purchasing of equipment by individual departments that will also fit the Town' s needs, to enhance rather than duplicate the firefighting capability of the Town.

Table 21
Inventory of Fire Departments Apparatus

Department	Truck	Year and Make	Pump Capacity (Gallons Per Minute)	Water Capacity (Gallons)	Future Life (Years)
Cundy' s Harbor Fire Dep	Engine 1	' 97 Internat' 1	1,250	1,000	10
	Tank Truck	' 92 Ford	500	1,950	5-7
	Squad Utility Truck	' 04	NA	NA	10
Bailey Island Fire Station	Cl. A Eng. 1	'93 Ford, Central States	1,000	1,000	18
	Mini Attack Truck	'87 GMC, American LaFrance	250	250	1
	Parade Truck	'53 Ford	--	--	Infinite
Orr's Island Fire Station	Cl. A Eng. 3	'00 GMC, Emergency Vehicles of Me.	1000 + Compressed Air Foam System	1000 + 25 gallons foam	21
	Tank 1	'87, GMC	350	1,425	7-8
	Squad Utility Truck	'00 GMC, Emergency Vehicles of Me.	NA	NA	25
Harpswell Neck Fire Dept.	Cl. A Eng. 1 Pumper	'81 Ford Grumman	750	750	3-4
	Cl. A Eng. 2	'90 Ford FMC	1,250	1,000	10
	Eng. 4	'84 Ford Grumman	1,000	750	3-4
	Tank 1	'85 chassis Int'l '92 body Valley Fire Apparatus	500	1,800	15-20
	Tank 2	'85 chassis GMC '02 body EVM	700	1,500	6-7

Table 22
Firefighting Personnel

Cundy' s Harbor Fire Department	18 firefighters (12-14 steady), 4-5 junior firefighters
Orr' s & Bailey Islands Fire Department	16 firefighters (8-10 steady), including 6-7 cross-trained EMTs, 1 paramedic
Harpswell Neck Fire Department	18 firefighters (12 steady), 3 junior firefighters

1990 was the first year the Town made a significant financial contribution to the fire and rescue organizations. Previously, each department raised its own funds through donations and fundraising events. Each fire and rescue department has an annual operating budget (exclusive of capital expenses such as new trucks or buildings) of about \$33,000. Fundraising has been more difficult in recent years and the cost of equipment has climbed steadily. Even though the fire departments are all private non-profit organizations that do fundraising, the Town also contributes annually to their operating, training and capital budgets. Each fire and rescue department received about \$20,000 to \$25,000 annually that is earmarked for capital expenditures.

The Cundy's Harbor Fire Department receives about ½ of its operating budget, plus or minus, from the Town, plus some support for training. It's major capital needs include a new roof (\$8,000 to \$10,000) and a new furnace (\$10,000) for the Community Hall, which is also the fire station, which it will probably purchase in the summer of 2005. The Chief estimates that the Department's 1992 Ford tank truck has another 5-7 years of life left. He estimates it will take at least \$200,000 to replace, and probably more because the prices of fire equipment continue to rise rapidly. The number of Department volunteers remains approximately what it was in 1993 with minor fluctuations. Training is increasingly important as fighting fires becomes more complicated. The Chief says he could use an additional ten trained volunteers now in order to have a force adequate to the present firefighting need.

The Orr's & Bailey Islands Fire Department has two stations, one on each island. The Orr's Island fire station is in good condition, but will need a new roof and furnace in the next 5 years. The Bailey Island fire station is a new facility that will need nothing but regular maintenance for the next ten years and beyond. Their Squad Utility Truck is a relatively new acquisition that has several important features that enhance the department's ability to fight fires effectively and safely. These include scene lighting on a 30-foot telescoping tower, a 15-kilowatt generator, a mobile cascade system capable of recharging up to about 100 compressed air tanks for self-contained breathing apparatus (SCBA), and an extrication tool that is owned by all three departments. The cab contains 4 SCBA and is being outfitted to serve as a command center. The back of the vehicle has medical supplies and can be used to keep injured persons warm and treated until an ambulance arrives.

The Harpswell Neck Fire Department's station is located in South Harpswell. The Station is adequate with continued maintenance. It is projected to need a new generator around 2015.

Two capital improvements to the Station soon to be installed are a fire alarm and freeze protection alarm at a combined estimated cost of \$8,000.

2. Ambulance Service

Like the fire departments, each community in Harpswell has its own ambulance and crew. The Cundy' s Harbor Fire Dept. and the Orr' s and Bailey Island Fire Dept. provide ambulance service in those parts of the community. Ambulance service in West Harpswell is provided by the Harpswell Neck Volunteer Ambulance Association. All three EMS units have fairly new and up-to-date ambulances and well-trained and dedicated attendants, as shown in Table 23.

Table23
Ambulance Inventory and Available Attendants, 2005

	Fire and Rescue Department		
	Harpswell Neck	Orr's & Bailey Islands	Cundy's Harbor
Ambulance	' 04 Ford	' 95 Ford	' 99 Ford
Years of useful service left	10	5-10	6
Anticipated Replacement Cost	\$120,000-150,000	\$150,000	\$120,000
<u>Attendants:</u>			
Physicians*			
Paramedic		1	
EMT (critical care)	1		
EMTI (intermediate)	3	2	3
EMT (basic)	5	17	10
First Responder	2		
AVOC-certified Drivers	10	10	7

*State of Maine Statutes governs EMS Protocols.

The rescue services use the Cumberland County Regional Communication Center for dispatching their calls. The three services cooperate as needed, especially at multiple injury traffic accidents. There is also much coordination with the fire departments, with numerous volunteers performing both fire and rescue duties. Firefighters often drive the ambulances in Cundy' s Harbor and Orr' s/Bailey Islands. The number of available drivers in the Cundy's Harbor Rescue Department has decreased from 10 in 1993 to 7 in 2005 due to higher requirements for certification than in 1993.

All three ambulance captains feel they presently have well-trained and equipped crews to adequately serve their communities. There is, however, a need for more daytime coverage while many volunteers are off at work. Recruitment of new volunteers is always a concern. It takes about 110 hours of classroom training to become a Basic EMT, and another 100+ hours to become an EMT Intermediate. Since each of these licenses must be renewed on a 3-year cycle, the need to reserve time and money for training is ongoing, even for long time volunteers. In order to be in a location from which it is feasible to respond to calls as a

volunteer it is important to be in Harpswell. This means that for a volunteer ambulance service to function it needs local, land-based employment opportunities for volunteers to remain close enough to respond to calls. The Cundy's Harbor Rescue Service depends substantially at present on young retirees who have the time and do remain local. So that local volunteer ambulance service can survive, it will be important in coming years to be sure that land use regulation continues to allow the establishment of small businesses so that the local employment base will not shrink further.

Currently, 25% of Orr and Bailey Islands' attendants are over 65, and some of Harpswell Neck's seasoned personnel are retiring. Costs for replacing or upgrading equipment also continue to rise, so the ambulance services have the same financial concerns as the fire departments. The Town has contributed about \$33,000 annually to the operating budgets of each of the three rescue services, at Townwide total of about \$100,000 per year.

The Cundy's Harbor Rescue Service will need to purchase a new ambulance in about 6 years. As a matter of pride and of being able to tell their contributors they are doing so, they have so far been able to pay for new equipment out of accumulated funds and do not need financing. In recent years, this rescue service has been able to realize its aspiration to acquire extrication equipment and shares the Squad Utility Truck for this purpose, among others, with the Cundy's Harbor Fire Department. They are also updating their coldwater immersion suits for winter rescue of people from ponds and the ocean.

Cundy's Harbor Rescue does not bill for services. Harpswell Neck Rescue does bill for services. Orr's & Bailey Islands Rescue does not bill for services. All services depend for most or all of their funding on a combination of Town funds and private contributions.

As Harpswell's population continues to grow, its average age is rising. As the population includes more retired people, the nature of rescue calls is shifting in response. When the population was younger, there were more calls for accidents, injuries or sudden illnesses such as strokes and heart attacks. In recent years, a growing proportion of rescue calls involve flare-ups of more chronic or complex medical problems, often involving patients on multiple prescription drugs. For such emergencies that involve the need for advanced life support, and/or involve patients taking several prescription drugs, there is a new interceptor service that provides Advanced Life Support administered by paramedics. This service is regional, being provided by Midcoast Hospital in Brunswick to an area that includes Harpswell and extends east to Georgetown. The hospital provides a mobile team of paramedics that can be called by a local ambulance en route to the scene to meet an ambulance at the scene to provide paramedical services to the patient. The paramedics drive a 'Fly Car' also referred to as MC-1 that has a mobile two-way radio.

As the population of Harpswell ages and grows, paramedical services will likely be needed more often. However, paramedics have to invest so much in training and practicing their skills that current demand for them in Harpswell is insufficient to support this level of training and practice in real-life rescue calls. Even paramedics who live in Harpswell but must work elsewhere are not generally interested in serving in the home community. They have such stressful day jobs that they are unlikely to have the energy to volunteer during off

hours.

3. Police Protection

The Cumberland County Sheriff's Department, under a contract with the Town, provides police protection in Harpswell. The Cumberland County Regional Communication Center provides dispatching for the deputies as well as the dispatching for Harpswell' sfire and rescue units. The selectmen oversee the Harpswell Town Patrol and provide office space at the Town Office. Five deputies cover the Town in 10-hour shifts. Harpswell pays for three deputies and their cruisers, and the county pays for the other two (one is half-time). Another deputy is hired in the summer for more coverage on weekend nights. With the current staffing there is 20 hours of coverage each day. Additionally there is one countywide deputy who can respond to Harpswell calls at night. However, he may be too far away in another corner of the county at any given moment.

In 1990 the patrol responded to almost 1,700 complaints and made 66 arrests. In 2003, there were approximately 2,200 calls for service. Of these about 22% were criminal, about 32% were traffic related, and about 46% were calls characterized as other. In general, crimes against people have increased, while crimes against property are decreasing slightly.

Due to Harpswell' s geography, response time to a call can be long if the deputy is on the other side of Town, or if he is occupied with another call. Also, there is no coverage for four hours each day (except for the one countywide deputy). Population growth has put increased pressure on the Town Patrol as more people inevitably leads to more crime, accidents, and traffic violations.

4. Marine Patrol

In recent years, the Town has contracted with the Cumberland County Sheriff's Department to provide two full-time marine patrol officers to enforce shellfish regulations. Until the last two years, there were problems with high turnover, but recent adjustments to the contractual arrangements appear to have addressed this problem. Marine Patrol officers work on shifts that follow the tides. They are also fully licensed law enforcement officers, so they can be called into duty as police officers if needed during the hours when the Sheriff's deputies in Harpswell are not on duty. In 2003, the Marine Patrol issued 19 warnings, checked 2,579 pecks of shellfish, issued 14 summonses, and made 1 arrest.

5. Summary

Public safety in Harpswell has improved greatly over the past decade. Better training and equipment of the volunteer services, as well as closer cooperation, has made Harpswell a safer place to live. Houses almost never burn down to the cellar anymore, and residents receive faster and more skilled emergency medical treatment. There is more response by county deputies to traffic violations, complaints, and criminal activity. For a small town with an inconvenient geography, Harpswell does quite well. But as the Town grows, there will be more pressure on all the departments, forcing the Town to make some hard choices. To

maintain or improve current levels of protection will mean committing more money and volunteer time to the fire, ambulance, police, and marine rescue organizations. What level of protection at what cost is the decision to be made.

Highway Department

The Road Commissioner, through contractual services with the Town, provides summer and winter road maintenance. The Town constructed a new salt and sand storage shed in compliance with State requirements in the early 1990s.

The Town's policy has been to allow new roads in residential developments to be private roads. In the past, the Town provided financial assistance to road associations to maintain these roads. Changes in State law have restricted the Town's ability to do this. The Town's Road Commissioner has expressed concern about the standards for the construction of new roads if in the future they are to be accepted as public roads and maintained by the Town. The Town has since adopted a Roads Ordinance that sets forth minimum specifications for road construction for any roads that are to be offered to the Town for acceptance as Town roads.

The subject of roads is discussed in more detail in the Transportation Background section of this Plan.

Solid Waste

The Town provides for the disposal and recycling of solid wastes at the Strawberry Creek Recycling Center. The Recycling Center began operation in the spring of 1979, and now is in its 26th year of operation. It replaced two open burning dumps. The area is also used for temporary storage of "white goods" (major appliances), scrap metal, and tires pending their sale and removal.

Harpwell was one of the first fifteen municipalities in the State to institute both mandatory recycling and to enact a Solid Waste Ordinance. The Center recycles corrugated cardboard, newspaper, magazines, catalogues and books, mixed paper, cans, glass containers, metal items, returnables, used clothes, rags, plastics, batteries, waste oil, paint cans, and universal waste (fluorescent tubes and lights, mercury thermostats, and non-leaking PCB ballasts). The Recycling Center also accepts bulk materials, including construction and demolition debris, furniture, white goods, large metal items, tires, large batteries (e.g. auto), ashes, brush, wood, leaves & yard waste, and propane tanks.

For disposal of waste that is not recycled, the Town no longer uses the Bath landfill, but has a three-year contract with Waste Management, a private trash hauler.

State Mandated Recycling Goals: Legislation passed in 1989 established a State goal of recycling 50% of the statewide solid waste stream by 1994. In 2003, the Town's recycling rate reached 75% of the municipal solid waste stream – well above the state goal of 50%, and second among municipalities in the state.

Capital Needs through 2015: The Recycling Center manager says there is sufficient capacity in Harpswell's recycling and solid waste disposal systems to meet needs from the growth in population projected through 2015. The existing building conditions are generally good and are expected to remain so with continued regular maintenance. Over the next 5 years the manager hopes to replace or repair equipment for a total of about \$300,000. Among other items, this amount includes, 1) a backhoe, estimated cost: \$80,000, 2) a forklift, estimated cost: \$20,000, and 3) a skid steer, estimated cost: \$20,000.

Library Services

The Town financially supports the Curtis Memorial Library in Brunswick, which provides Harpswell residents with full access to the library and its services. In 1990 almost 1,800 Harpswell residents were cardholders. The Town of Harpswell is represented on the library's board of directors and also on the board of the Friends of the Curtis Memorial Library. Harpswell provides 8.58% of the municipal funding for the library, while accounting for 12.8% of the cardholders and 13.3% of the borrowing activity.

In addition, the Town partially finances the operation of two local libraries, the Cundy's Harbor Library and the Orr's Island Library. These facilities provide part-time service to the local areas. Each of these libraries is open on three days each week.

Education

Public education in Harpswell is provided by School Administrative District #75. The SAD serves students residing in Harpswell, Topsham, Bowdoin, and Bowdoinham. As of April 1, 1991, the district had a total enrollment of 3,159, of which 657 students, or 20.8%, were Harpswell residents. In 2004, the district had an actual enrollment of 3,345 students of which, 598 students, or 17.9% were Harpswell residents.

Over the past six years, Harpswell's total enrollment in the district has declined at an increasing pace, as shown in Table 24, below.

Table 24
Declining Total School Enrollment, 1999-2004

	April 99	April 00	April 01	April 02	April 03	April 04
Total Harpswell SAD #75 Enrollment	684	680	669	660	625	598

The district operates two elementary schools in Harpswell. The West Harpswell School located on Harpswell Neck serves grades kindergarten through 6. The Harpswell Islands School is located on Great Island and also serves grades kindergarten through 6.

Enrollment at Harpswell’s two elementary schools has declined in recent years as shown in Table 25. It seems very likely that the rising cost of land and housing in Harpswell may be forcing younger households from Harpswell to relocated out of Harpswell, and that this contributes to declining elementary school enrollments. These same factors make it more difficult for families with children to move into Harpswell.

Table 25
Declining Elementary School Enrollment, 1999-2003

	Fall 99-00	Fall 01-00	Fall 02-01	Fall 02-03	Fall 03-04
West Harpswell Elementary School	125	110	82	80	75
Harpswell Islands School	226	203	173	185	173

Source: Maine Dept. of Education.

Middle school and high school students attend the Mt. Ararat Middle School and Mt. Ararat High School, both of which are located next to one another in Topsham.

State educational grants and the four participating municipalities fund the operation of SAD #75. The local share of the district’ s budget is apportioned among the four towns based upon State valuation of property in each community. This results in Harpswell paying a higher percentage of the district’ s local costs than its percentage of pupils. This disproportionate share may increase as Harpswell completes its current revaluation, and as the price of land and housing continues to rise.

Analysis

The growth of the Town over the past decade has required the municipality to expand its services and construct new facilities to meet the needs of the community. At this point, the community has the basic systems in place to service the Town over the coming decade. Major areas that may require attention include the need to provide daytime staffing for the fire and ambulance services. In addition, continuing decline of elementary school enrollments is of concern. Harpswell’s schools play a vital role in the community. It is hard enough now, due to the rising price of land and housing, and the shortage of rental housing, for a young household to stay or relocate to Harpswell. If the schools were not to remain viable, there would be little reason for young households with children to locate here as well.

The Town is fortunate to have plenty of municipal land in a central location within the Town. The large parcel on which the Town Offices and the Recycling Center are now located has plenty of land for additional municipal facilities whenever they may be needed.

TRANSPORTATION

Routes 123 and 24 are Harpswell's land link to the rest of the world. While these routes provide a reasonably high level of service, increasing traffic volumes combined with continuing development of small commercial uses along these roadways creates the potential for future congestion and safety problems.

Roads and Highways: There are three types of roads in Harpswell – State highways, Town roads and private roads. The 1993 Comprehensive Plan lists 28 miles of State Roads, 27 miles of Town roads, and an unknown length of private roads. As of 2001, the Maine Dept. of Transportation (MDOT) gave 28.64 miles as the total mileage of State-Aid highways in Harpswell. The Town gives the total length of Town roads as 27.78 miles.

There are an unknown number of miles of private roads in Harpswell. However, a figure that may offer some perspective is the combined total length of all paved and gravel roads, including State, local and private roads, in 2001, which was 148.80 miles.

Unfortunately, we do not have a figure from 1993 to compare to the 2001 total road mileage, so we cannot say precisely by how many miles the total length of roadways in Harpswell has changed. However, we can say that nearly all, if not all of the subdivisions approved by the Planning Board in the last 10 years were approved with private roads maintained by homeowners associations.

Functional Classes: From a functional standpoint, the MDOT classifies 23.94 miles of the State-Aid highways as Major Collectors (Mountain Road, Bailey Island Road and Rtes 123 and 24), and 4.70 miles as a Minor Collector (Cundy's Harbor Road). All 29.68 miles of the Town Ways are classified as Local Roads.

Traffic Volumes: As new residential and commercial development have increased along Rtes. 123 and 24, as well as along the Mountain Road and the Cundy's Harbor Road, and on roads that feed into these four major roads, there is the common perception that traffic volumes on the four major roads have increased. MDOT Annual Average Daily Traffic (AADT) figures for 1997 and 2000 for these roads do not in all cases confirm this perception, as reflected in Table 26, below. MDOT AADT figures for 2003 are not yet published.

In each year shown these traffic counts are lowest at the points nearest the ocean and highest at points nearest to Brunswick. The MDOT does recognize seasonal variation in AADT counts by placing the roads on which it makes traffic counts into one of three groups. Of the major roads listed above, all but Cundy's Harbor Rd are in Group III – "Recreational" which is the group with the most seasonal variation. Cundy's Harbor Rd is in Group II – "Arterial" which has only a moderate amount of seasonal variation in traffic volumes.

Given that Harpswell has continued to develop between 1997 and 2000, that there are no new alternate routes to other towns, and that nearly all new residents that work are likely to commute out of town, the traffic counts in Table 26 for all but Cundy's Harbor Road and the

northern part of Rte. 24 seem suspect. However, this is the data provided by the Maine DOT and in the absence of another count, it is the only source available.

Table 26
MDOT Annual Average Daily Traffic Counts

<u>Location</u>	<u>1997</u>	<u>2000</u>	<u>Change '97-'00</u>
Rte 24 north of Oceanside Drive	1,420	1,930	+510
Rte 24 at Orrs Island bridge	3,130	3,070	-60
Rte 24 south of Cundy's Harbor Rd.	3,680	3,890	+210
Mountain Rd northwest of Rt. 24	2,220	2,180	-60
Mountain Rd southeast of Rte 123	2,660	2,480	-180
Rte 123 southwest of Allen Point Rd	2,620	2,460	-160
Rte 123 southwest of Mountain Rd	3,900	3,390	-510
Rte 123 northeast of Mountain Rd	4,850	4,600	-250

Source: Maine Department of Transportation

The higher traffic volumes on roads in the north of Harpswell are to be expected, if only due to the geographic positions of the ocean to the south and the mainland to the north. However, they also reflect that, since at least 1990, about three quarters of Harpswell's workforce commutes to other communities. See Table 29, below.

Table 27
Place of Work for Harpswell Residents

	2000		1990	
All Places	2484	100%	2265	100.00%
Harpswell	634	25.50%	464	20.50%
Outside Harpswell	1850	74.50%	1801	79.50%

Source: US Census

A much smaller, though substantial number of workers commute to Harpswell from other communities. In 1990, 16%, or 124 people, employed in Harpswell commuted here from outside of Town. In 2000, 26 %, or 228 people, employed in Harpswell commuted here from outside of Town.

Highway Condition: Of particular concern is the condition of State Routes 123 and 24, the only road links beyond Harpswell's borders. Parts of these require fundamental

reconstruction. Cosmetic, periodic repaving and filling potholes by the state are inadequate maintenance of these roads. A capital improvement program was accepted at Town Meeting in 2003 for upgrades some of the Town's local roads. The program should be analyzed annually to review priorities and costs. Professional engineering review is necessary to develop proper specifications and bid procedures. Private roads serving multiple subdivisions often are poorly maintained, causing safety concerns in provision of emergency services.

In 2002 and 2003, the Road Commissioner, with technical assistance from engineering contractors and subcontractors, performed a comprehensive inventory of the pavement condition existing roads. The inventory of existing pavement condition among the 27.78 miles of Town roads, broken out by road mileage, was found to be as shown in Table 28, below.

Table 28
Town Road Pavement Condition Inventory Mileage

Pavement Condition	Very Poor	Poor	Poor to Fair	Fair	Fair to Good	Good	Very Good	Total Mileage
Mileage	0	0.83	0.68	1.32	2.86	3.69	18.40	27.78

The Town estimates that it will spend \$5 million to \$7 million to reconstruct and pave Town roads from 2005 through 2015.

Safety: The Maine Dept. of Transportation keeps records of where accidents involving motor vehicles occur on the entire State's road network. From 1997 through 2001 MDOT has identified several segments of highway in Harpswell that meet the State criteria for High Crash Locations. These include one on Cundy's Harbor Rd from Bethel Point Rd to Dingley Island Rd, and three on Harpswell Neck Rd (Rte 123) from Ash Point Rd to Palmer Rd, from Lookout Point Rd to Skassen Rd, and from Sunset Hill Farm Rd to Peabody Rd. These sections of road should be given priority for study to receive possible improvements in road surface, signalizations, signage, lighting etc.

Another aspect of safety is the reliability of access by emergency vehicles. Nearly all of Harpswell's local roads have only one point of access from the main road for emergency service vehicles. In some communities, the local subdivision ordinance will require that subdivisions with new roads have at least two points of access from the main highway in order to ensure access by an alternate route if the main entrance to the subdivision is blocked. With only short distances to the waterfront from the main roads and a preference by the marketplace for developing waterfront lots, sometimes at the base of steep slope, Harpswell may be particularly prone to development with just one point of access in the future, judging from the present roadway network outside of coastal village areas.

Access Management: In 2000, the Town adopted a new Site Plan Review Ordinance that included some access management provisions regulating the number, spacing and design of access points for new development subject to site plan review. Shortly thereafter MDOT and the Legislature adopted new entrance permit rules for entrances onto State and State-Aid

highways. In Harpswell these rules apply to entrance permits on Rtes 123 and 24, the Mountain Road and Cundy's Harbor Road. The idea behind both the local and the MDOT rules is to prevent the gradual creation of dangerous combinations of entrance locations within a single property or on neighboring properties as these roadway corridors gradually develop over time. Sight distances, entrance and exit design, corner clearances, intersection of local roads with the highway and other entrance design elements are regulated by these rules and local ordinance standards, with both permits required on the highways listed in this paragraph.

To help manage the impact on highway corridor mobility and rural character from driveways in new residential subdivisions, the Town's subdivision standards can be amended to require that individual driveways link to existing or new side roads. This can limit both the number and frequency of new entrances onto the main highways and help retain their mobility and safety.

A more indirect way of enhancing access management for both ease and safety is to be sure the subdivision ordinance standards allow the Planning Board to require development of an interconnected road network that allows for more than one route to the main roads. Also see discussions above on safety and access management for indication of possible tradeoffs involved.

Public Parking. Public parking is in local driveways, on-street, on some local roads, and on-site for some local businesses. The Town's site plan review ordinance applies minimum parking requirements based on the type of use. Parking is often tight in older more dense settlements and points of public access to water. Most points of public access have very limited parking if any, and little or no space on-site in which to locate even limited public parking. The Town Lands Committee has begun to evaluate the needs for parking and other amenities at points of public access.

Bicycles and pedestrians: Questions as to widening and bicycle usage of Routes 123 and 24 relate to possible higher traffic volumes and speeds. The Highway Safety Committee is considering these issues and how best to relay them to the State Department of Transportation. Harpswell should develop a clear policy on these matters.

Public Transportation. Coastal Trans, Inc. (CTI) is a private, non-profit corporation providing public transportation to Knox, Lincoln, and Sagadahoc Counties, as well as the towns of Brunswick and Harpswell in Cumberland County. Coastal Trans provides transportation services to MaineCare-eligible appointments. In Harpswell there is no regular route or schedule, service requires calling to make an appointment to be picked up and dropped off. The Casco Bay Island Transit District provides access to Bailey Island in the summer months from the CBITD terminal in Portland. This is a once daily round trip, and is passenger service only. This is the only public ferry service to any part of Harpswell. Harpswell has no rail lines, no regular commercial or public bus service, and no airports.

EXISTING LAND USE

Background

The Town of Harpswell consists of two long, narrow, parallel rocky landmasses stretching from northeast to southwest. These are irregular in width and very convoluted. The soil depths vary from a few inches near the shore to depths of many feet at some inland points. Rock outcroppings occur with great frequency in shoreline areas but can also be found in many inland spots. There is virtually no place in Town more than one half mile from the ocean. There are approximately 15,304 acres in the Town, 2,200 of which are on outer islands, and about 216 miles of shoreline. Of the shoreline, forty-one miles are zoned for commercial fishing, less than one mile is zoned for business, and the rest is zoned residential. Except for a thin marshy strip of land at the north end of Harpswell Neck, the Town is completely surrounded by water. There are also some 40 outer islands of various sizes, some of which are partially inhabited in the summer, but most are not.

The eastern land mass consists of three large islands: Great Island (Sebascodegan), Orrs Island, and Bailey Island. These are connected to the mainland by four bridges. With the completion of the bridge between Orrs and Bailey islands in 1927, all of these islands were then accessible from the mainland by road. All access to both sides of Harpswell is through the Town of Brunswick. Until a bridge was built between Harpswell Neck and Great Island in 1974, the only way to get from one side of Town to the other was through Brunswick.

With land access so limited, it was natural for the Town to grow from the ocean and to use it for transport. Until shortly after World War II, South Harpswell, Orrs and Bailey Islands received mail and some freight by boat from Portland.

Isolated fishing villages grew up at various spots where harbors are protected. Among these were Cundy's Harbor on Great Island, Mackerel Cove on Bailey Island, and Potts Point, South Harpswell. Away from the fishing villages, the land was cleared for timber and farming. Boat building took place at numerous spots wherever good timber was available. Many of the original farms are still held by family members, although in some cases they have been subdivided by inheritance or sale and much of the shore property has been sold for summer or full-time residences.

There are four principal roads in Town. State Route 24 runs from Brunswick down through the islands to terminate at Lands End on Bailey Island. State Route 123 runs from Brunswick down Harpswell Neck to terminate at Potts Point, South Harpswell. The Mountain Road connects Routes 24 and 123. The fourth road extends from Route 24 to the Cundy's Harbor area. With few exceptions, roads in Harpswell branch from the four major roads and run towards the ocean. A few roads are Town-owned and paved, but the great majority are private. The private roads are often unpaved. Most have a small association of residents who band together to maintain it and possibly plow it in winter.

The Harpswell Existing Land Use Map shows how land is used from place to place within the Town as of 2003. While there is still much open land and forested land that has not yet been developed, the most dominant land use involving structures is residential.

Recent Development Trends

1. Residential Development

Over the past ten years a substantial amount of the new residential development in Harpswell has occurred on the waterfront as well as inland.

- Approximately 50 new homes were built per year from 1992 to 2001: 76 new homes permitted in 2002, a 50% increase in the average number of new home permits.
- Most new homes were built in shorefront zones or nearby.
- Many older cottages and camps on non-conforming lots are being expanded or replaced with much larger structures.
- These larger structures are often built on nonconforming lots, which are frequently much smaller than the minimum 40,000 sq. ft lot size required for construction of a new home.

Two analyses, one conducted in 2000 based on review of permit records for 1995 through 1999 in the Codes Enforcement Office, and the other, for the period 1998 through 2003, conducted using the Town's GIS and spreadsheets of permit records provided by the Town, give an overview of residential development trends over the past decade.

Since the total number of permits issued for new residential units was compiled for each year in both of these analyses, we can reasonably assume that total number of permits for new residential units for the period 1995 through 2003 comes to a total of 544 permits. However, because of different methods used to collect the data for the two analyses, numbers from both analyses for most other measures of development should not be combined. There are small discrepancies in permit counts for 1998 and 1999, the two years common to both analyses. Still, taken separately, they offer reasonably accurate measures of development activity in each of the two time periods for which the data was collected.

a. New Residential Building Permits and New Lots

From 1995-1999:

- the total dwelling units in Harpswell increased by 282 units
- 85% (232) of these units are modular or site built; 15% (50) are mobile homes
- 93 new subdivision lots were approved

From 1998 – 2003:

- a total of 369 building permits for new homes were issued.
- 96% (350) of these units are modular or site built homes or additions with apartments; 4% (14) are mobile homes

The total number of parcels in Harpswell in 2001 was 4,673, supporting a total of 5,218 buildings. By the end of 2003, the total number of parcels had increased by 267 to 4,940. This represents a 5.7% increase in the total number of parcels over the two-year period.

b. Distribution of New Residential Permits and Subdivision Lots

Here are some statistics from each analysis about where new residential development is has been taking place:

From 1995-1999:

- The 282 new residential permits are distributed as follows:
 - 2 (1%) on the Outer Islands
 - 28 (10%) on Bailey Island
 - 18 (6%) on Orr's Island
 - 85 (30%) on Harpswell Neck
 - 149 (53%) on Great Island
- In new subdivisions, a total of 93 new lots were approved, distributed, in number and as a percentage of the Townwide total for the period, as follows:
 - 14 (15%) on the Outer Islands
 - 8 (9%) on Bailey Island
 - 10 (11%) on Orr's Island
 - 9 (10%) on Harpswell Neck
 - 52 (55%) on Great Island
- 55 (59%) of approved subdivision lots were waterfront lots. Of these:
 - 42 (76%) were created in the Shoreline Residential zone
 - 13(24%) were created in the Commercial Fisheries zone
- In 2000, of the 55 subdivision lots approved in the shoreland zone from 1995-1999:
 - 17 (31%) were occupied by dwellings
 - 38 (69%) did not yet have dwellings on them.
- Building permits issued for lots in subdivisions and for other lots:
 - 32 (11%) for lots in subdivisions approved from 1995 through 1999
 - 250 (89%) for lots in not in subdivisions or approved as part of a subdivision before 1995

From 1998-2003:

- Of the 369 lots for which new residential building permits were issued, 345, or 93% have been mapped. These 345 are distributed as follows:

- 17 (5%) on the Outer Islands
 - 21 (6%) on Bailey Island
 - 35 (10%) on Orr's Island
 - 113 (33%) on Harpswell Neck
 - 159 (46%) on Great Island
- Of the 369 lots for which new residential building permits were issued, at least 199, or 54% of the permits were issued for new houses on waterfront lots. Since only 32% of the land in Harpswell is waterfront land, the fact that 54% of permits were granted for lots with waterfront shows that the waterfront is under substantially higher development pressure than lots without water frontage.
 - Of the lots for which these 199 permits were issued, 76 lots, or approximately 38% are located in the Commercial Fisheries Zone, about 122 lots, or about 61% are located in the Shoreline Residential Zone, and 1 lot, about 0.5% of these lots is located in the Shoreland Business Zone.
 - Of the lots for which the these 199 permits for new residential development were issued, 23 lots, or about 12% are located entirely within a shoreland zone adjacent to tidal waters.
 - Of these 23 lots, 8 lots, or about 35% are less than the 40,000 square-foot minimum lot size within the shoreland zone adjacent to tidal waters.

In addition to new residential development, some unknown number of existing seasonal residential properties have been converted to year round use, as retirees, pre-retirees, and seasonal residents move to Harpswell to live here year round or simply convert their dwelling so that it has that capability for future year round use.

Another growing trend in Harpswell in recent years is the phenomenon of the “teardown”, in which older waterfront homes are purchased and then torn down and replaced by a new and much larger home.

2. Commercial/Industrial Development

Because Harpswell is located on a peninsula and islands and is by passed by coastal Route 1 in Brunswick, well to the north, where existing and developing local and regional commercial centers serve most of the region's needs for retail goods and services, it seems unlikely that Harpswell will experience large scale retail development any time soon. Unless it involves a water-dependent use, most commercial development seeks to locate along one of the four main roads in Harpswell, especially Routes 123 and 24, which are more heavily traveled.

a. Recent Commercial/Industrial Development

In contrast to the high numbers of residential building permits, there have been very few commercial developments in Harpswell in the period from 1998-2003. The record of building permits for this period shows only about 12 permits for new commercial construction, several of which are for additions or outbuildings for existing commercial and marine establishments.

3. Institutional Development

a. Recent Changes

Broadly speaking this land use category includes civic, public, and religious land uses. Beginning in 1998, Town building permit records show that the Town of Harpswell has completed a major Town Office expansion, a 24' x 50' yard sale building, and another 22' x 30' building. The Cundy's Harbor Fire Department took out a permit for an addition and renovations, and the Orrs Island-Bailey Island constructed a new fire station. The Orrs Island Library put on a small addition. A new Roman Catholic Church was constructed.

Analysis/Issues

1. General

There is no existing policy and ordinance framework that effectively encourages growth to locate in designated Growth areas and discourages it from locating in designated Rural areas, as called for by the State's Growth Management Law. As a consequence, and due to the strong pull of coastlines for development, new construction permits have been issued for nearly all parts of Harpswell in a geographic distribution that reflects, "sprawl".

While current market forces dictate this pattern, a more compact pattern would, if implemented, help to reduce the adverse impacts of new development on the marine and natural environment, community character and Town service costs and tax rates from each new unit of development. More compact development would mean shorter road length per new unit. Shorter roads cost less to maintain and plow, whether the cost is privately or publicly borne. School bus routes need not lengthen as fast to serve additional students in a more compact pattern.

In Harpswell, there is such a strong pull exerted by the waterfront that it seems unlikely that shortened minimum road frontage requirements would be utilized in subdivisions of parcels with water frontage, except possibly on roads that carry traffic along that water frontage just behind waterfront housing. Road lengths on such parcels would be unlikely to diminish, since their ultimate destination is the shore.

For parcels without shore frontage, to the extent shorter road frontages and/or smaller lot sizes can be utilized, more open space is likely to remain, habitat fragmentation is more

likely to take place at a reduced rate, and people may be able to walk rather than drive to see more of their friends and neighbors.

At the same time, groundwater and soil type limitations and other constraints may limit how densely local new development should be concentrated. While the emerging new generation of septic systems and other wastewater disposal and treatment technologies for individual and small community scale use may afford more flexibility with respect to lot size than in 1982, Wright-Pierce, in 2001, endorses the recommended minimum lot sizes based on soils that were identified by the Gerber-Rand study.

Also, Harpswell is unique among Maine towns dominated as it is with many islands and peninsulas, so suitable locations for compact development are themselves uncommon and spread about the landscape. Even so, the rate at which the adverse impacts of development can be reduced using these limited options may be substantial.

a. Residential

It is clear that market forces are creating great demand for waterfront homes and home-sites and Harpswell is part of a New England-wide housing market. These forces create pressure to convert the commercial waterfront (“working waterfront”), by which owners earn their living, to new, and often larger, homes. In each of the analyses examining development in Harpswell between 1995 and 2003, more than half of the new development is taking place on the waterfront.

This increase in the number of large homes on the waterfront and increasingly rapid rate of development can lead to greater impacts from pollution upon the Town’s most valuable resources – the ocean and groundwater for consumption.

Lot by lot development inland, or on the waterfront, occurs with no overall guidance other than in the Shoreland Zoning Ordinance. So, large blocks of open land that give the community its rural appearance, are gradually being consumed. Harpswell’s wooded character, as viewed from main roads, and its traditionally modest vacation and fishing community homes viewed from the water, are giving way to suburban patterns.

Ever larger homes on the waterfront and less open space along major roads change not only the Town’s character, but also its culture. The heritage of Harpswell’s values of independence, self-sufficiency and tight-knit community are giving way to suburban anonymity. In the process, local growth contributes to the relentless sprawl occurring in most Maine coastal communities.

A significant side effect of this process is the escalation of property values for land on and near the waterfront. This escalation drives up property taxes, creating particular hardship for those who earn their living on the working waterfront, and for seniors who live on fixed incomes on or near the shore.

While market forces pull new development in all directions toward the waterfront, this is also generally where groundwater resources have the most limited capacity for serving additional development without creating water shortages, salt intrusion, or pollution in neighboring wells.

At the same time, State comprehensive planning policy calls for concentrating new growth near older, existing concentrations of development. In Harpswell, near coastal villages and the older more dense summer colonies, this edge of existing concentrations of development is also where groundwater resources are least able to continue to support both existing and new development. Salt intrusion, older, pre-Plumbing Code septic systems and the lack of any public water system already cause pollution problems in some of these areas (see Groundwater Resources).

2. Impacts of Continuing Residential Development

The above-listed trends and the following concerns over the impacts of continuing residential development need to be considered in development of Goals, Policies and Action Recommendations for future residential land use in Harpswell:

- Larger residential waterfront structures on non-conforming lots often have larger sewage systems, which can have an adverse impact on the ocean and groundwater used for wells.
- Nearly half of Harpswell's waterfront is generally closed to shellfish harvesting due to pollution of flats. Pollution is the result of overcrowding development on the waterfront, outdated home sewage treatment systems, overboard discharges, and stormwater runoff in heavily developed areas.
- Inland development often consists of lot-by-lot development on main roads, leading to a gradual elimination of the Town's fields and woods, which have given the town its rural character.
- The Town has a limited range of housing types - with few apartments, starter homes, homes for seniors requiring care or assisted living, duplex, or condominium homes - eventually resulting in a population that will be less diverse than it is today.
- There are very few year-round rental properties in existence in Harpswell. While mobile homes are allowed throughout Town very few new mobile homes (14) have been installed for either rental or owner occupancy from 1998 – 2003. This represents a substantial decrease in the rate of new mobile home installation over the 35 new mobile homes installed in the preceding three years, 1995 – 1997. This decrease may reflect the effects of steeply rising land values in Harpswell.
- With the spiraling cost of land in Town, the prospects for smaller, less expensive homes appear fewer as time goes on.

- Projected population growth in Harpswell to 2015 will require 398 new dwelling units on the landscape. State law requires that the Town's comprehensive plan designate "growth" and "rural" areas on a "future land use map", and take measures to encourage projected growth to locate in designated growth areas and discourage it from locating in designated rural areas.

3. Commercial/Industrial

a. Impacts of Continuing Commercial/Industrial Development

There are several issues to be considered in establishing Goals, Policies and Action Recommendations regarding future commercial land use, including the following:

- Currently, commercial development of nearly any kind can be located anywhere in Town outside of the Shoreland Zoning districts.
- Existing commercial retail development except for boat services and fishing presently provides a bare minimum of services and is widely scattered through Town.
- New commercial services are beginning to create too many curb cuts for business entrances along some major town roads, causing traffic conflicts, increased stormwater runoff, and adverse impact on adjacent homes.
- The close proximity of commercial development to residential development has created conflicts in several parts of Town.
- Home occupation businesses exist as an important entrepreneurial activity throughout Town.

These offer part- or full time employment for owners and limited numbers of employees. These small business operations face expansion difficulty when they outgrow their premises, and may present traffic and other conflicts with adjacent residential uses.

4. Institutional

Current locations of municipal properties appear to be central to the populations they are designed to serve. This is true of the Town Offices, the recycling center and the fire and rescue stations, and even the Town-owned open space on Orrs Island is quite central to the Town population as a whole.

Perhaps the largest future land use question regarding future uses of municipally owned land is the future use of Mitchell Field and its existing wharf.

5. Undeveloped Land and Open Space

As land is developed and the amount of developed land increases, the amount of remaining undeveloped land also decreases. If we assume that about 2 acres of land is converted to residential use for every new unit created under Harpswell's current ordinances, then the 544 residential units created from 1995 through 2003 resulted in an effective cumulative loss of about 1,088 acres of undeveloped land over an eight-year period.

Some of Harpswell's remaining undeveloped land is protected, at total of about acres, as noted near the beginning of this section. However, most of the remaining undeveloped land is not protected from further development. This means Harpswell is not immune to further losses of unprotected scenic views, important unprotected wildlife habitats, groundwater recharge area, open fields, forests, and all the existing and potential recreational values these types of land provide.

This comprehensive plan calls for an Open Space Plan, as part of its Future Land Use Plan. Here are some considerations that should govern its development and integration into the Future Land Use Plan:

- "Open space" is defined here to mean undeveloped land that is protected from building development by means of ownership of the public, or by private land trusts, or by beneficial easements that restricts building development from privately owned lands.
- "Natural resources" include soils, geologic formations, groundwater, surface water, flora, fauna and air.
- Environmental functions of open space that cannot be used actively by residents include aquifer recharge, air purification, wetland functions, and wildlife habitat.
- Complementary use of open space is desirable – i.e., aquifer recharge areas and recreation, dedicated subdivision open space and residential wastewater discharge areas, conservation lands and residential development.
- The amount of open space publicly owned, or privately owned and under conservation easement is currently about 2000 acres, or one-eighth of the Town's total land area.
- Types and amounts of various types of open space are not currently inventoried.
- Planning standards for amounts of various types of open space for a given population exist.
- Access to open space is necessary for use and enjoyment of residents. We don't know how much open space is readily accessible.
- The Town has not developed priorities for location, type and cost of open space preservation.

6. Energy

- "Energy" refers to the resources used to power our world. Our reliance on fossil fuels to power our economy and heat our homes costs our society greatly in direct costs to obtain and process these resources, and in indirect costs in the form of pollution and adverse health impacts. Global warming continues to be a related concern.
- Fossil fuels are finite, whereas other sources of energy are renewable and increasingly viable, including solar power, wind, wood, corn, and soy.
- Conservation is the easiest way to reduce direct costs and indirect costs of energy.
- Opportunities exist for individuals, and groups to choose alternative energy sources to achieve environmental conservation.

FISCAL CAPACITY

The fiscal capacity of the Town is an important consideration in the planning process. The ability Harpswell to spend local funds or take on new debt to implement the ideas of the plan is an important factor in the development of the Town' s policies and implementation program.

Tax Base

The Town of Harpswell is predominantly a residential and seasonal community. The Town does not have any significant commercial or industrial sector to support the cost of municipal government. The presence of a large number of seasonal homes, most of which are owned by nonresidents, provides a significant source of property tax revenue for the Town. However, this benefit is counterbalanced by high county taxes and assessments by School Administrative District #75 as a result of the high total property valuation in the Town.

In 2004, the State set the full market value of all real estate and taxable personal property in Harpswell at \$1,024,400,000 (based on 2002 sales figures). This represents an increase of over \$430 million since 2000, reflecting the escalation in property values that has expanded the tax base. The total valuation used by the Town (which was less than the State figure) for property tax purposes, (real estate and personal property) as of April 1, 2003, was \$841,360,681. A revaluation in 2005 will bring the Town valuation more nearly in line with the State. Market price for waterfront and water view real estate drives the escalating property valuation of the Town. Given the demand for waterfront properties, the Town will likely see continued substantive growth in its total taxable value; however, not all residents of the Town have incomes that keep pace with the rate of the property valuations.

Table 29
State Valuation Figures for Harpswell

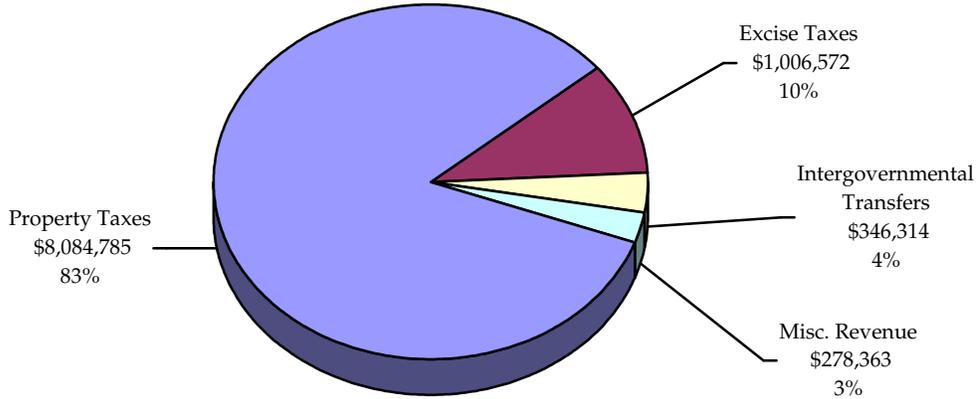
2000	594,300,000			
2001	621,850,000			
2002	775,800,000			
2003	892,850,000			
2004	1,024,400,000	72.37%	Increase since 2000	
2005	1,184,800,000	proposed		

Revenues

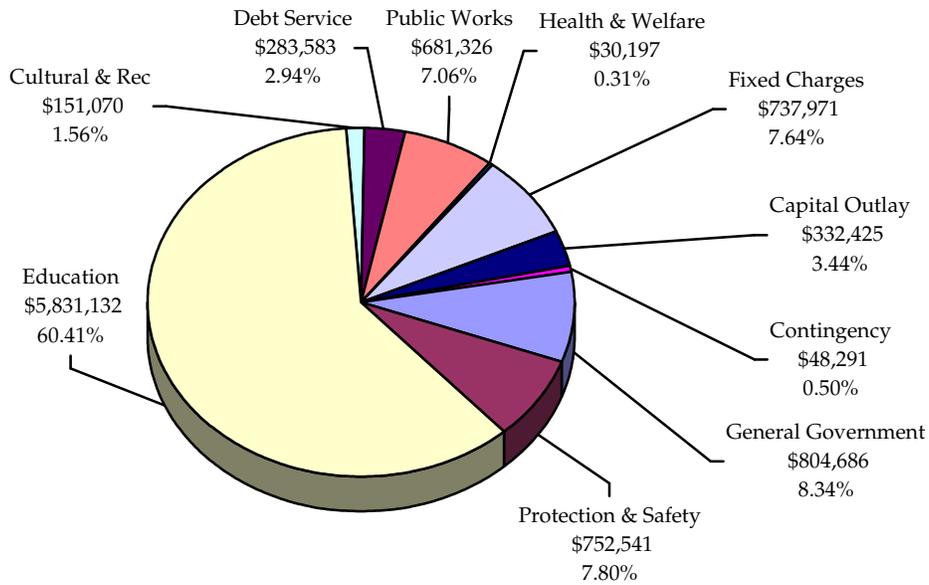
Like most Maine communities, the predominant revenue source for the operation of the Town of Harpswell is the local property tax. In 2003, property taxes accounted for over \$8 million of the Town' s revenue, or 83.3%. Excise taxes produced another \$1,006,572, resulting in the Town' s residents and property owners providing almost 94 % of the Town' s income.

Figure 17
REVENUES AND EXPENDITURES
Town of Harpswell

2003 Revenues



2003 Expenditures



Expenditures

During 2003, the Town spent \$9,653,222 to operate its municipal government, support the operation of SAD #75, and pay its proportional share of the operating budget of Cumberland County. Payments to SAD #75 are the largest single item in the budget comprising 60.4% of all municipal expenditures (Figure 17). Because Harpswell is part of a School Administrative District (SAD) and subject to a cost-sharing formula that uses valuation in part as a basis for paying its costs to the District, it is paying significantly higher per pupil costs than the other three towns in the school district. As the state considers modifications to its general purpose aid to education formula it remains unclear what the local fiscal impact will be to Harpswell as a member of the District and how that change may affect the continuing relationship with SAD 75.

The Town' total expenditures have grown by \$2.2 million between 1999 and 2003. In 1999, total expenditures were just over \$7.4 million. From 1999 to 2003 when expenses grew by approximately \$2,2 million, major components of this increase were payments to SAD #75 (up \$1,294,210 or 28.5%), capital outlay (up \$305,717 or 1144 %), county tax (up \$277,591 or 60.3%), and the cost of general government (up \$172,737 or 27.3%).

Capital Debt

As of December 31, 1999, the Town had \$585,000 of outstanding long-term debt. This included borrowing to finance recycling center upgrades, construction of the municipal building, the addition to the Harpswell Island School and the 1997 revaluation. As of December 31, 2003, the Town's outstanding long -term debt was \$2,025,000 primarily as a result of a major construction and renovation project of the municipal building, purchase of land at Doughty Point Road and a contribution to the Harpswell Heritage Land Trust. The Town debt service payment in 2004 was \$368,219. New borrowing in 2004 for a capital road project, revaluation, and Old Town House restoration project totaling one million dollars will increase the annual debt service cost to the Town in 2005 to \$552,772. The Town is well within statutory borrowing limits in accordance with 30 MRSA, Section 5061, which limits a municipality from incurring debt in the aggregate in excess of 15% of its stated assessed valuation (Harpswell is at 0.1%). Improved capital planning has resulted in the development of five-year capital plans for the Town, its recycling center and the three independent fire departments.

Analysis

Compared to many Maine communities, the Town of Harpswell is quite well off financially with a general undesignated fund balance exceeding two million dollars, and capital debt that is well within statutory limits.

Continued growth through the 90's and into the new millennium has significantly changed the form of municipal government and the costs associated with it. Over the past decade, the municipal government has evolved to offer a more professionally trained, full-time staff

providing a higher level of service. Growth in number of Town employees in Codes, Planning and Assessing, expansion of the sheriff's patrol and addition of marine patrol, and increased costs associated with managing a recycling/transfer facility are only a few indicators of the changes that have occurred. The Town is planning prospectively for major capital projects, one of the largest components being road reconstruction.

A major issue for 2005 and beyond will be the increased role the municipal government should play in addressing the issues raised in this plan and the willingness of the taxpayers to pay for these activities.

TABLE 30
Expenditure Trends 1999-2003
Town of Harpswell

	1999	2000	2001	2002	2003	5 Year Difference	% of Difference
General Government	\$ 631,949	\$ 692,385	\$ 766,112	\$ 850,502	\$ 804,686	\$ 172,737	27.33%
Public Works	737,326	693,773	924,281	725,787	681,326	(56,000)	-7.60%
Protection & Safety	651,155	753,547	791,586	676,746	752,541	101,386	15.57%
Education	4,536,922	4,765,225	5,108,174	5,490,820	5,831,132	1,294,210	28.53%
Health & Welfare	44,247	46,886	47,027	35,637	30,197	(14,050)	-31.75%
Cultural & Recreational	119,027	110,064	106,690	155,248	151,070	32,043	26.92%
Debt Service	184,600	223,885	222,587	282,933	283,583	98,983	53.62%
Capital Outlay	26,708	2,852	129,858	477,778	332,425	305,717	1144.66%
Contingency	21,372	2,335	7,480	794	48,291	26,919	125.95%
Fixed Charges	460,380	459,228	494,871	713,063	737,971	277,591	60.30%
	\$ 7,413,686	\$ 7,750,180	\$ 8,598,666	\$ 9,409,308	\$ 9,653,222	\$ 2,239,536	30.21%

APPENDIX A

A Vision for Harpswell

On May 4th 2002, Harpswell residents gathered and created a vision of the town's future. This vision will be used to aid policy decisions, to direct town resources, and as a common picture of the town's future. The following vision statement reflects what residents said during the visioning meeting.

Introduction

In Harpswell the ocean is all around. Rocks, trees, fields, islands, farms, and stone walls combine to create an ever-changing landscape. The smell of salt water and mud flats hang in the air. The peaceful evenings are lit up by stars. Harpswell has a diverse natural beauty.

There is diversity in the people as well. There are newcomers and old-timers, fishing families and retirees. They meet in the town's small historic villages, or on their boats in the harbors. They meet at the post offices, or in the libraries, or on walking trails, or at school events. Harpswell is a cozy, caring community, where people see each other often. Every citizen is equal, and every citizen is listened to in town meetings.

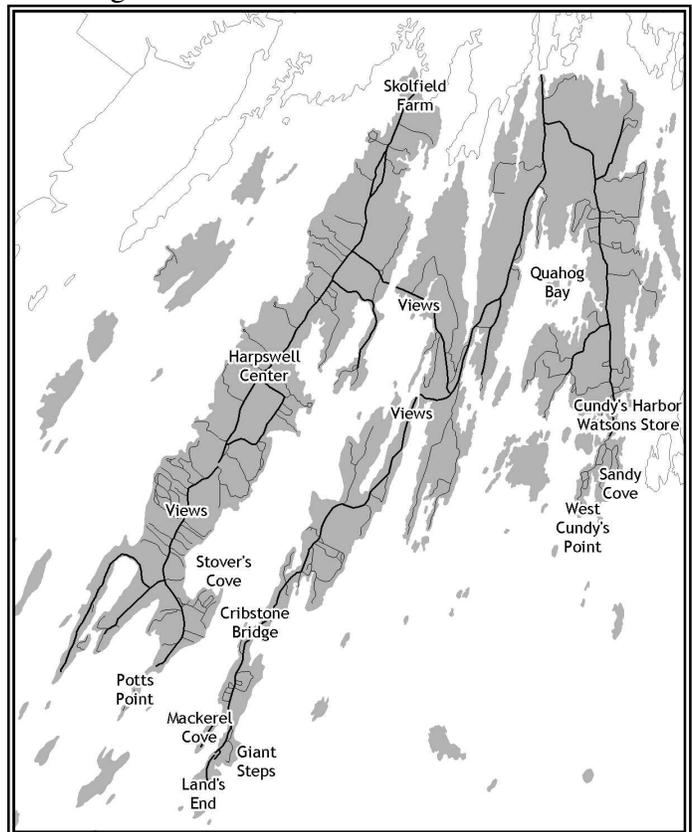
This is the special character of Harpswell that must endure forever.

Special Places

The character of Harpswell is reflected in its special places.

Harpswell consists of long narrow peninsulas. The views along the roadways driving through Town, Routes 123 and 24, capture its diversity and beauty. There are inlets and farms, forests and historic churches, harbors and villages, stone walls and winding paths.

The tips of the Harpswell peninsulas are special places to visit and look out on the ocean, including Potts Point, Land's End, and West Cundy's Point. Special coves and beaches include Sandy Cove, Mackerel Cove, and Stover's Cove.



Harpswell's Future Development

The Town of Harpswell wishes to keep its rural and peaceful atmosphere, and preserve its natural environment; but at the same time remain affordable and home to a diversity of people,

young and old, fishing families and business leaders, newcomers and old-timers.

To accomplish both goals, the Town's future development needs to be carefully managed. The Town's water supply must be protected, and to achieve this alternative sources – such as desalinization – might be considered. Access to the waterfront should be preserved, especially for fishermen and women. Pump-out facilities could be established in each harbor, in order to protect water quality. Open space can be purchased and protected, at the same time that land for affordable housing is identified and made available. In particular housing for the elderly should be developed within existing village areas. Libraries and post offices should also remain in village centers. Historic preservation activities should maintain the buildings and surrounding character of old houses and village centers. Bike and walking paths can connect the villages and school and recreation areas. Road improvements, street lights, and signs can be limited to preserve the rural, peaceful, unhurried feel of the community. Local stores and businesses should be encouraged, particularly inside village areas, and chain operations discouraged. The re-establishment of regular ferry service to Portland, either at Bailey Island or South Harpswell, could reduce automobile traffic.

Harpswell's Villages

Within this general framework, here are the visions for the individual villages, neighborhoods, and areas within Harpswell.

Cundy's Harbor should remain a village that accommodates multiple activities – from fishing access to tourist/restaurant to village center (library, church, retail – and a re-located post office). Because the village sits atop a fragile water supply, and is limited in land availability, future development ought to be on a very small and careful scale. New housing should be sized to fit with the existing buildings, be located on land near the village (not spread out along Cundy's Harbor Road), and be planned in a way that does not harm the water supply or further burden traffic. The village itself should be made more walkable to discourage driving – new sidewalks put in, utility poles buried below ground, and bike paths created to connect to other parts of Town. Retail should be locally-owned and small in scale. Holbrook Wharf ought to be maintained with a small restaurant and working fishing operations, and restrooms and a pump out facility might be added. Land could be purchased to create beach access to Sandy Cove for local residents.

Great Island should continue to develop as a community center. It could include a town recreation area – with ball fields, tennis courts, skate-boarding, a place for seniors – either near the Town Hall or at a more intensively-used school complex. The area is a good location for a post office (moved from South Harpswell). Route 24 should be preserved as an open, winding, beautiful entrance to Town – curb cuts for new developments restricted, street lights discouraged, and bike trails set alongside. This is an area where marine-related and home-based businesses can develop – but not strip malls. Water activities should remain quiet, with controls place on jet ski usage. Open space can be identified and purchased, and walking trails can be developed to connect the areas.

Orrs and Bailey Islands should also retain their village/fishing/rural character. Restaurants, shops, post office, and church ought to remain in the village center. The Orrs Island Library

should be preserved and become a community center. Town landings with parking should be added to both islands. A ferry connection to Portland might be re-established here (or in South Harpswell). Public transportation and bike paths could connect to the villages, thus reducing car traffic. Public access to the waterfront for fishermen and women, and to Cedar Beach (including access for the handicapped), should be created and maintained. Mackerel Cove ought to be preserved in its current state. Development and seasonal conversions should be limited in order to protect water supplies.

North Harpswell should retain its current historic character. Skolfield Farm's buildings and orchards and fields ought to be fully protected by a land trust. A village center could be created near the church and Bailey Store. There small-scale stores and home-based businesses might be encouraged, so long as they do not require too much parking, and are done in ways sensitive to the historic architecture of the area. Public access to the water can be created at Lookout Point and on the state property off Allen Point Road. The vegetable corner is a special place, but traffic at the intersection of Mountain Road and Route 123 needs careful management. At the north end of Route 123 a cluster affordable housing development with green space could be built. Route 123, like Route 24, should retain its rural character, with protected open space, bike paths, no street lights, junk removed from yards, and no strip commercial development.

South Harpswell should also retain its historic village character. The old Fuel Depot is a key resource for the future. It can be redeveloped with recreation and open space in mind for local residents. The Dolphin Marina is currently and should remain a focal point for a restaurant, fishing boats, and pleasure boats. More water access should be created for fishermen and women. Parking should be added to the existing wharf. The school library could be open more hours, and serve as a community center. The West Harpswell School should remain open for early grades. The post office might move to Mountain Road. Craft stores, gas and food stores, should be encouraged. The historic character of Potts Point and the Auburn Colony should be preserved. Development should be carefully controlled to protect clam flats and preserve the water supply. More recreation in the form of a bathing beach, recreation area, biking and walking trails, should be created.

The Challenge for Harpswell

After many years of relative stability, Harpswell has been discovered as a beautiful place to live by the outside world. New people and new houses are part of Harpswell's future. This is unavoidable. This vision describes one way that the future change can be directed to occur in ways that enhance the community as a whole. The challenge for the Town and its Comprehensive Planning Committee is to put in place the tools to accomplish this vision.

*Vision Statement drafted by
Planning Decisions, Inc.*

*with assistance from the
Harpswell Comprehensive Planning Update Committee*