

TOWN OF ORONO
COMPREHENSIVE PLAN
2014 UPDATE
Volume 1 Inventory & Analysis



TOWN OF ORONO
COMPREHENSIVE PLAN

2014 Update

Recommended to Town Council
By Comprehensive Plan Committee
June 5, 2014

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Introduction and Acknowledgements

The Comprehensive Plan Committee was appointed by the Town Council in early 2012 to update the Comprehensive Plan. A part of the plan was updated in 2009, when a similar committee undertook a full review of the rural area of Town – the area then zoned as Forestry & Agriculture – and recommended wide-ranging changes. The Town Council adopted these revisions in March 2009, most of which have since been implemented. The charge to the Comprehensive Plan Committee was to leave these changes in place but to update the Comprehensive Plan in all other respects.

The Committee's first meeting was in May 2012, and it met monthly for more than two years, completing its work in June 2014. All meetings were open to the public. Along the way, the Committee conducted five, well attended and facilitated Public Forums: two devoted to spotting issues and opportunities (Nov. 7, 2012 and Apr. 24, 2013); two to developing policies and actions (June 6, 2013 and Nov. 12, 2013); and one to reviewing and revising the policies and actions (Mar. 27, 2014). During February and March 2014, it also conducted an on-line survey to get advice on several key issues; 250 citizens responded and the results were discussed at the March 2014 Public Forum. A formal, advertised public hearing was conducted on May 29, 2014. The Committee made further changes based on the comments at the public hearing and unanimously recommended the Plan to the Town Council, as submitted in this document, on June 5, 2014.

The Committee and staff wish to thank the many members of the public who presented ideas, comments, and critiques; Jane Haskell for facilitating the five Public Forums; Town Manager Sophie Wilson and all of the departments who provided essential information on all aspects of the town; the Orono Economic Development Corporation and the Orono Village Association; and the outside experts who gave their time and insights to the Committee on a wide range of matters – on transportation and utility systems, housing, economy, Pushaw Lake and the Town's natural resources, farming and woodlands, recreation and open space, and the future of the University of Maine, among others.

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2014 DRAFT UPDATE
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**VOLUME 3. ADDENDUM TO COMPREHENSIVE PLAN
AMENDING LAND USE INVENTORY, POLICIES,
AND FUTURE LAND USE MAP AS THEY AFFECT
THE FORESTRY & AGRICULTURE DISTRICT**

**Adopted March 2009 and Incorporated By Reference into the
2014 Update of the Comprehensive Plan**

VOLUME 1
INVENTORY & ANALYSIS
Update of Town of Orono
Comprehensive Plan

Recommended to Town Council
By Comprehensive Plan Committee
June 5, 2014

CHAPTER 1 – POPULATION AND HOUSEHOLDS

A. Population Trends

Total Population: As of the 2010 Census, Orono’s population was 10,362. The Town’s population has remained flat since 1980, when the population was 10,578, with peaks and valleys in between depending on student enrollment at the University of Maine. The low point over the last 30 years was in 2000, when population dipped to 9,112.

Prior to 1980, population growth was steadier, increasing from 7,504 in 1950 to 10,578 in 1980.

Table 1-1 presents the 50-year trend (1960-2010) for Orono compared to the adjacent city of Old Town, Penobscot County and State of Maine.

Table 1-1. Population, Orono vs. Old Town, Penobscot County, Maine 1960 - 2010				
Year	Orono	Old Town	Penobscot Co.	Maine
1960	8,341	8,626	126,378	970,689
1970	9,989	9,057	125,332	992,048
1980	10,578	8,422	137,020	1,124,660
1990	10,573	8,317	146,643	1,227,928
2000	9,112	8,130	144,919	1,274,923
2010	10,363	7,840	153,923	1,328,361
% ch, 1960-70	19.8%	5.0%	-1.1%	2.2%
% ch, 1970-80	5.9%	-7.0%	9.3%	13.4%
% ch, 1980-90	0.0%	-1.2%	7.0%	9.2%
% ch, 1990-00	-13.8%	-2.2%	-1.2%	3.8%
% ch, 2000-10	13.7%	-3.6%	6.2%	4.2%
% ch, 1960-2010	24.2%	-9.1%	21.8%	36.8%

Source: U.S. Census

Components of Change: The change in population is the result of births, deaths, and people moving to and away from the community. Analysis of the components of change provides a window into some of the dynamics of growth (or decline).

Table 1-2 tracks the components of population change in Orono from 1990 to 2010. Deaths have outnumbered births in Orono for at least the last 20 years, with an acceleration in the trend between 2000 and 2010. Over at least the last 20 years, net migration has switched between negative (more people moving away than moving in) and positive (more moving in) depending largely on enrollment at the University. Enrollment grew between 2000 and 2010, and the result was strong net in-migration. This more than compensated for the excess of deaths over births during the decade.

Table 1-2. Components of Population Change, 1990 – 2010	
	Population
1980	10578
Births 1980-89	675
Deaths 1980-89	483
Natural Ch	192
Net Migration	-197
1990	10573
Ch 1980-90	-5
1990	10573
Births 1990-99	477
Deaths 1990-99	506
Natural Ch	-29
Net Migration	-1432
2000	9112
Ch 1990-2000	-1461
2000	9112
Births 2000-09	417
Deaths 2000-09	578
Natural Ch	-161
Net Migration	1411
2010	10362
Ch 2000-2010	1250
Source: U.S. Census; Maine Bureau of Vital Statistics	

Population by Age Group: The forces at work become clearer by looking at the Town’s population by age group over time. The Town is notable for the large bulge of people between 15 and 24 years old, which includes the college-aged years. Between 1970 and 2010, this group accounted for between 50% and 60% of the Town’s population. But it is in other age groups where many of the important dynamics lie. As shown in **Table 1-3**, the under-14 age group has dropped by nearly half since 1970, including by 25% since 1990.

Adults in their household formation and parenting years – 25 to 54 years old – increased from 1970 to 1990, driven by the full entry of the baby boom generation into this cohort, but between 1990 and 2010 dropped significantly, by 18%. The pre-retiree/young retiree age group – 55 to 74 years old – is now receiving the baby boomers and has increased steadily. And the 75+ year old group more than tripled its numbers.

Table 1-3. Population Change, 1970-2010, by Age Group

Age Group	1970		1980		1990		2000		2010		Change 1970-90	Change 1990-10	Change 1970-10
	No.	%	No.	%	No.	%	No.	%	No.	%			
Total Persons	9989	100.0%	10578	100.0%	10573	100.0%	9112	100.0%	10362	100.0%	5.8%	-2.0%	3.7%
Under 5	398	4.0%	253	2.4%	243	2.3%	262	2.9%	217	2.1%	-38.9%	-10.7%	-45.5%
5 to 9	453	4.5%	321	3.0%	372	3.5%	283	3.1%	244	2.4%	-17.9%	-34.4%	-46.1%
10 to 14	503	5.0%	406	3.8%	343	3.2%	307	3.4%	257	2.5%	-31.8%	-25.1%	-48.9%
15 to 19	2608	26.1%	2864	27.1%	2574	24.3%	1906	20.9%	2306	22.3%	-1.3%	-10.4%	-11.6%
20 to 24	3081	30.8%	3563	33.7%	3367	31.8%	2687	29.5%	3649	35.2%	9.3%	8.4%	18.4%
25 to 34	695	7.0%	960	9.1%	939	8.9%	803	8.8%	759	7.3%	35.1%	-19.2%	9.2%
35 to 44	622	6.2%	622	5.9%	840	7.9%	758	8.3%	506	4.9%	35.0%	-39.8%	-18.6%
45 to 54	578	5.8%	519	4.9%	617	5.8%	766	8.4%	689	6.6%	6.7%	11.7%	19.2%
55 to 64	476	4.8%	467	4.4%	510	4.8%	493	5.4%	660	6.4%	7.1%	29.4%	38.7%
65 to 74	353	3.5%	281	2.7%	388	3.7%	419	4.6%	393	3.8%	9.9%	1.3%	11.3%
75+	222	2.2%	322	3.0%	380	3.6%	428	4.7%	682	6.6%	71.2%	79.5%	207.2%
Consolidated Age Group													
14 and under	1354	13.6%	980	9.3%	958	9.1%	852	9.4%	718	6.9%	-29.2%	-25.1%	-47.0%
15 to 24	5689	57.0%	6427	60.8%	5941	56.2%	4593	50.4%	5955	57.5%	4.4%	0.2%	4.7%
25 to 54	1895	19.0%	2101	19.9%	2396	22.7%	2327	25.5%	1954	18.9%	26.4%	-18.4%	3.1%
55 to 74	829	8.3%	748	7.1%	898	8.5%	912	10.0%	1053	10.2%	8.3%	17.3%	27.0%
75+	222	2.2%	322	3.0%	380	3.6%	428	4.7%	682	6.6%	71.2%	79.5%	207.2%

Sources: U.S. Census; Orono Comprehensive Plan, 1998 as amended in 2001, p. 1-7.

Race: The University brings a slightly greater level of racial diversity to Orono than in the rest of the Greater Bangor area. About 7% of Orono’s population is non-white, compared with less than 4% in the rest of the Bangor metropolitan area. See **Table 1-4**.

Table 1-4. Population by Race, Orono v Rest of Bangor Metro Area		
	Orono	Rest of Bangor Metro Area
White	93.0%	96.1%
Black or African-American	2.6%	0.6%
American Indian	1.5%	0.8%
Asian	2.1%	1.1%
Other races	0.9%	1.5%
Source: U.S. Census, 2005-09 American Community Survey		

B. Household Trends

Total Households: As of 2010, there were 2,831 households in Orono. This was an increase of 140 households, or 5.2%, since 2000. The population living in these households totaled 6,489, an increase of 8.3% since 2000.

Thus, about 63% of the Town’s total population of 10,362 was living in households in 2010 – that is, in dwelling units. The rest, 3,873, were living in “group quarters.” Of these,

- 3,696 were living in dormitories (up from 3,118 in 2000), and
- 177 were living in nursing homes (up from 94 in 2000).

Of the 2,831 households, 1,229 or 43% were “family” households, defined by the U.S. Census as two or more related persons living in the household. A majority, 1,602 households, were living in “non-family” households. These broke down as follows:

- 865 one-person households, including 339 persons 65 years old or older; and
- 737 households with 2 or more unrelated people sharing a dwelling unit¹.

As **Table 1-5** shows, the number of family households dropped by nearly 5% between 2000 and 2010, including a drop of more than 17% in family households with children under 18.

¹ These include unrelated persons who are actually living as a family – i.e., with long-term commitments to each other.

Statewide and countywide, family households are a shrinking share of all households. But the trend in Orono is more severe than in Bangor or either the state or Penobscot County as a whole; and several nearby suburban communities saw significant growth in family households over the decade and also held their own in terms of family households with children. **See Table 1-6** for comparisons.

Meanwhile, the number of non-family households in Orono increased by more than 200, or 14%. The increase in non-family households appears to be due both to a rise in older persons living alone and to an increase in unrelated persons living together. While unmarried couples may account for some of this, a large number are students living off-campus, both in apartment complexes such as Orchard Trails (built in 2005) and in homes previously occupied by families.

Table 1-5. Households by Type and Relationship, 2000 v. 2010			
Household Type	Orono		
	2000	2010	% Change
Total households	2,691	2,831	5.2%
Family households	1,291	1,229	-4.8%
With own children <18 years	583	483	-17.2%
Non-family households	1,400	1,602	14.4%
One-person living alone	848	865	2.0%
Living alone 65+ years old	269	339	26.0%
Other non-family h'holds	552	737	33.5%
Population Living In:			
Households	5,994	6,489	8.3%
Group Quarters	3,118	3,873	24.2%

Source: U.S. Census, 2000 and 2010

Table 1-6. Percent Change in Family Households, Orono vs Selected Other Places, 2000-2010		
	% Ch. In Families	% Ch. In Families with Own Children under 18
Orono	-4.8%	-17.2%
Maine	2.9%	-9.9%
Penobscot County	2.9%	-9.2%
Bangor	0.0%	-8.5%
Bradley	12.9%	15.1%
Glenburn	14.2%	0.0%
Hampden	13.9%	5.4%
Hermon	19.6%	1.0%

Source: U.S. Census, 2000 and 2010

Average household and family size: Average household size in 2010 was 2.29 persons, slightly larger than in 2000, when it was 2.23. Average family size was 2.77, slightly less than in 2000, when it was 2.81.

In general, it appears that average household size has leveled off compared with the precipitous drop – nationally and statewide as well as locally – in previous decades. See **Table 1-7**. It may drop farther still if the number of elderly living alone continues to grow and is not offset by growth in family households.

If average household size has indeed leveled off, this will dampen demand for new housing units in the future. A significant share of the increase in housing during the last few decades can be traced to the falling average household size – which meant that even communities with no population growth still saw increases in number of households and demand for new housing development. If household size has leveled off, the demand for housing must rely more heavily on actual population growth – either of total population or of particular segments in need of specialized housing (students, the elderly, etc.).

Year	Av. Size
1970	3.00
1980	2.57
1990	2.50
2000	2.23
2010	2.29
Source: U.S. Census	

C. Population and Household Projections

Population: Orono’s future population depends largely on changes in University enrollment and programs. After a period of growth, the University’s enrollment has leveled off (and, in the aftermath of the 2009-2010 recession, declined slightly) at about 11,000 students. Given regional and state demographics, including projected declines in the 15-to-24 year old age group, the most likely scenario is a period of relatively level enrollment. If there is growth in enrollment, it likely will be due to (a) more successful retention of students following their freshman and sophomore years and (b) recruitment of international students.

Countywide, Penobscot County’s economy and population have grown very slowly in recent decades. Over the last 20 years (1990-2010), the average annual rate of population growth was about one-quarter percent. Over the last 50 years (1960-2010) it was slightly higher at about 0.4% per year. The most likely scenario is that countywide population growth will continue to be in this range of 0.25% - 0.4% per year. This would yield a 2025 Penobscot County population of about 161,000.

In turn, over the last several decades, Orono has accounted for an average of about 7% of the countywide population, and this has been fairly steady, within a range of 6.3% to 8.0% between 1960 and 2010. In 2010, Orono accounted for 6.7% of the county’s population. If Orono holds its share at between 6.7% and 7.0%, its population in 2025 would be in the range of 10,800 to 11,200. This would represent an increase of between 4% and 8% over the 15-year period.

This, as noted, will vary depending on the ups and downs of enrollment at the University.

Households: Over at least the last 20 years, about 35% to 37% of the Town’s population has lived in group quarters, primarily dormitories but also including nursing homes. If this continues to hold true, then the population living in group quarters in 2025 would be between 3,900 and 4,000, and the population living in households would be between 6,900 and 7,200.

How many households will contain this population of 6,900 to 7,200? This depends on average household size. If average household size is leveling off – with perhaps a slight overall decline still in the future as the economy improves and the elderly population living alone increases – then it is reasonable to project it at 2.25 persons per household in 2025. This would yield between 3050 and 3200 households, an increase of between approximately 220 and 370 households over this period, or 8% - 13%.

Again, the wild card is the student population choosing to live in Orono in dwelling units. In 2012, the developer Campus Crest opened The Grove at Orono, a 188-unit apartment complex for students. In 2014, a 272-unit student apartment complex known as The Avenue was in the process of seeking permits for construction. As long as there is no significant increase in vacancy rates over the long term, these projects would push the number of households to the upper end of the range or higher, above what would be projected based on averages.

See Table 1-8.

Table 1-8. Projected Population and Households, Orono, 2025		
	Projected range, 2025	Change from 2010
Population	10,800 – 11,200	+438 to +838
Households	3,050 – 3,200	+219 to +369
Based on the following assumptions:		
Penobscot County rate of growth	0.3% per year average	
Penobscot County population, 2025	161,000	+7,077
Orono’s share of County population	6.7% - 7.0%	---
Group quarters population, Orono, 2025	36% of population, or 3,900 – 4,000	+27 to +127
Household population, 2025	6,900 – 7,200	+411 to +711
Average household size, 2025	2.25	-0.04
Sources: U.S. Census; Orono Planning Department		

D. Population and Household Characteristics

Educational Attainment: Orono’s adult population (25+ years old) has a high level of formal education compared with the Bangor Metro area and the State as a whole. A majority has 4-year degrees or more, while in the metro area and the State, a majority completed their formal education with a high school degree (or some college, but no degree). See **Table 1-9**.

Table 1-9. Formal Educational Attainment (2005-2009 av.)			
	Orono	Bangor Metro	Maine
Lack high school	7.1%	10.8%	10.6%
High school diploma only	15.9%	56.7%	54.3%
Associate’s degree	3.2%	9.5%	8.9%
4+ year college degree	54.3%	26.1%	23.0%

Source: U.S. Census American Community Survey, 2005-09

Occupation: On average 4,719 residents of Orono were employed during the period 2005-2009. The largest number was in professional and management occupations (42.1%), followed by a variety of service occupations (23.6%). About 10% were in blue collar occupations in production, construction, and farming/fishing/forestry. See **Table 1-10**.

Table 1-10. Occupations of Orono Residents (2005-09 av.)	
Occupation	Percent
Management, professional occupations	42.1%
• Management, business, financial	7.8%
• Professional occupations	34.4%
Service occupations	23.6%
• Healthcare support	3.1%
• Food preparation & serving	10.4%
• Personal care & services	6.2%
• Other services	4.2%
Sales	11.0%
Office and administrative support	13.0%
Farming, fishing, forestry	0.8%
Construction, extraction, repair	4.9%
Production, transportation, materials movement	4.6%

Source: U.S. Census American Community Survey 2005-09

Income and Poverty: Household and family incomes in Orono are very divergent due to the presence of many households composed of students with low incomes (and, to a lesser extent, single elderly households, some of whom also have low incomes).

The estimated median household income (from 2005-2009) was \$34,944. This was less than the median household income of \$42,366 for the Bangor Metropolitan Area. Similarly, per capita income in Orono is only 77% of the per capita income in the metro area and 70% of the per capita income statewide: \$17,594 in Orono vs. \$22,813 in the metro area and \$24,980 statewide.

But when non-family and family households are broken out, a different picture emerges. Families – i.e., households with two or more related people living together – had an estimated median income of \$72,404. This was 37% higher than the estimated Bangor Metro area median family income of \$52,871. Non-family households in Orono had an estimated median income of \$23,965, about the same as the Bangor metro non-family median of \$24,552.

About a quarter of Orono’s household population was living below the poverty level during 2005-2009, but again this is skewed by the number of college-aged students living in households. The 18-24 year old age group accounted for 75% of the number of people living in poverty. For the Bangor Metro area as a whole (including Orono), this age group accounted for 22% of persons living in poverty, and just 12% when Orono’s 18-24 years olds are excluded.

An estimated 91 children under 18 years old were living in poverty, representing about 6% of all persons in Orono living in poverty. About 40 persons 65+ years old were in poverty, less than 3% of the total.

See **Table 1-11**.

Table 1-11. Income and Poverty Profile, Orono v Bangor Metro Area (est. 2005-2009)		
	Orono	Bangor Metro
Median household income	\$34,944	\$42,366
• Median family income	\$72,404	\$52,871
• Median non-family income	\$23,965	\$24,552
Per capita income	\$17,594	\$22,813
No. living in households below poverty line	1,470	20,742
% of pop. in households below poverty line who were:		
• <18 years old	6.2%	25.9%
• 18-24 years old	75.6%	21.7%
• 25-64 years old	15.5%	42.7%
• 65+ years old	2.7%	9.6%
% of all households below poverty line	24.8%	14.7%
Source: U.S. Census American Community Survey, 2005-09		

E. Issues and Opportunities

Loss of Family Households, Family Aged Population, and School-Aged Population

The loss of family households, and especially the loss of households with children under 18, is a defining demographic for Orono during the last decade or more. Orono is caught in a statewide trend of a shrinking share of family households but is experiencing that trend more severely than the state, county, suburbs, or Bangor. It is a defining demographic because of its implications for other aspects of Orono, including schools, availability of a local labor force, home buying, customers for downtown, and the benefits of a diverse population.

The absolute, fairly steep declines in population in the household formation and family rearing years and in population under 18 years old, if taken into the future, will be a demographic hollowing out of Orono that needs to be reversed if possible.

Growth in the Elderly (75+) Population

The elderly population is still a relatively small share of Orono's total, but it is rapidly increasing. This can be expected to lead to continuing demand for retirement housing and assisted living and nursing home units. This age group will not peak in numbers until the baby boom generation reaches it in another decade or so, but already the growth may signal turnover in housing stock (if younger buyers are available to buy it), need for medical and public safety services, and, with the older population remaining healthy longer, a potential for strong contributions to the civic life of Orono.

The Youth of a College Town

The college-aged population, though for the most part transient, is a cornerstone of Orono's population and the source of much of its economic activity, from University employment to multi-family housing and restaurant sales. Yet, the positive youthful energy of a college town is not as present off-campus as it might be. There is a strong in-town population of 18 to 24 year olds, but there is a distinct lack of University presence off campus – in the form of performance and other cultural venues, University facilities serving off-campus students, clothing and book stores, and “third places” that serve as natural, off-campus gathering places for students and faculty – that might be expected to accompany that population. The young adult population attending UMaine still holds untapped opportunities for the Town.

A High-Achieving Population

Orono's population is talented – in education, academic accomplishment, and its contributions to the community. Many in the population are faculty, staff, and retirees from the University; others are lifelong and multi-generational residents. Together they form a civic backbone that contributes time and talents to local government, non-profit organizations, schools,

neighborhoods; and it represents an important, ongoing source of ideas, debate, and innovation for the community.

CHAPTER 2. HOUSING

A. Housing Growth

Growth in housing: According to the U.S. Census, there were a total of **3,089 housing units in Orono in 2010**, an increase of 190 units from 2,899 units in 2000. Orono’s 3,089 units represented about 4.2% of the housing stock in Penobscot County. The County’s housing growth was nearly 11%, compared to about 7% in Orono. See **Table 2-1**.

Table 2-1. Growth in Housing Units, 2000-2010, Orono v. Penobscot County			
	Orono	Penobscot County	Orono as % of Penobscot Co.
2000 Total Housing Units	2,899	66,647	4.3%
2010 Total Housing Units	3,089	73,860	4.2%
Numerical Change	190	7,213	2.6%
% Change	6.6%	10.8%	
Source: U.S. Census, 2010			

From 2000-2010, building permits in Orono were issued for 271 dwelling units. This suggests a growth of more than the 190 units reported by the Census, but some of the permitted units were offset by demolitions or removals (e.g., the fire that destroyed 18 units in the former Katahdin Building). It also is possible that not all dwelling units (e.g., mother-in-law apartments) were reported to the Census. In any case:

- 144 of the permits were for multifamily dwelling units, all at Orchard Trail Apartments; and
- 127 were for single family dwellings, including both single family detached homes and single family attached homes such as at Dirigo Pines or in condominium complexes.

Since the 2010 Census, another large apartment project – The Grove at Orono – with 188 dwelling units targeted to student renters was built and occupied in 2012. From tax assessor’s records and building permits, it can be estimated that the total number of dwelling units in Orono **as of 2012 was about 3,216** (*excluding* dwelling units on the University of Maine campus). Another large student apartment complex with 272 proposed units, known as The Avenue, was in the permitting process in 2014.

Vacancies: As of the 2010 Census, vacancy rates in Orono were low: less than 2% for owner units and 5% for rental units. Given the national recession and depressed housing market since 2008, these vacancy rates suggest a local housing market that is healthier than average. The addition of 188 units at The Grove appears not to have had much effect on the vacancy rate. If the 272 units at The Avenue are built, the effect will need to be watched.

For Penobscot County, the owner vacancy rate in 2010 was 2%, and the rental vacancy rate was just over 7%. See **Table 2-2**.

In addition to vacant units that were for sale or rent, Orono has nearly 100 dwelling units that are used seasonally, primarily camps at Pushaw Lake but also including the homes of “snowbirds.” For the county as a whole, there are more than 6,000 seasonal units.

Table 2-2. Vacancies, 2010, Orono v Bangor Metro		
	Orono	Penobscot Co.
Total Housing Units	3,089	73,860
Total Vacant	258	10,894
For rent	83	1,533
Rental vacancy rate	5.0%	7.1%
For sale	20	898
Owner vacancy rate	1.6%	2.0%
For seasonal or occasional use	96	6,199
All other vacants	59	2,264
Source: U.S. Census, 2010		

B. Housing Types and Condition

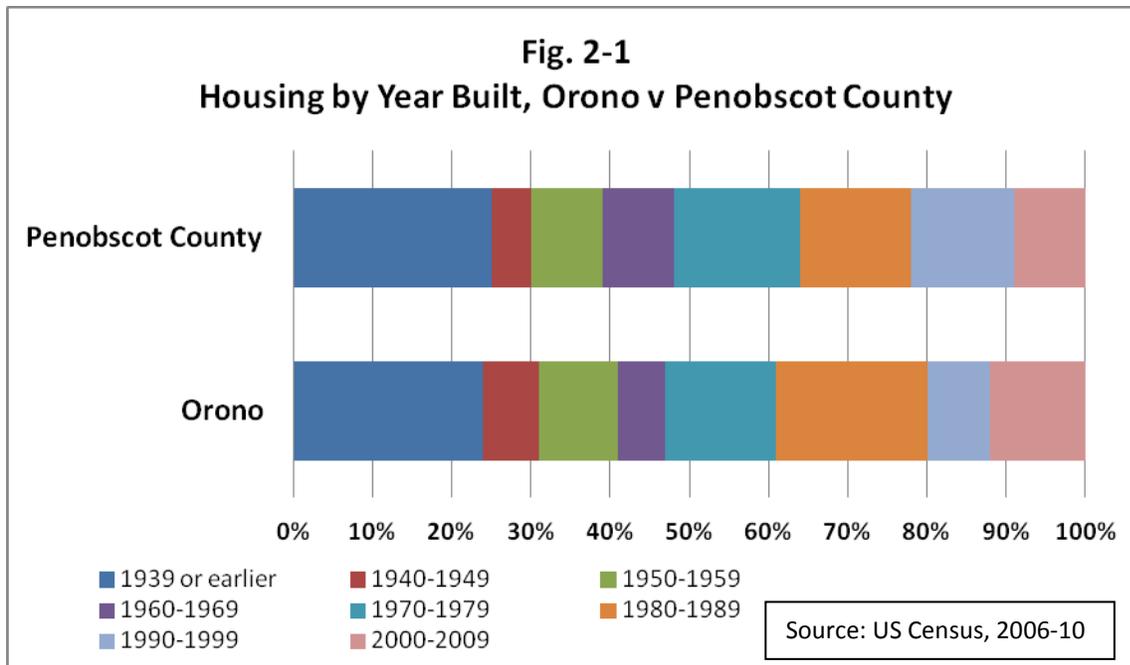
Housing types: The Town’s housing stock is fairly evenly split between single family homes and dwellings in multifamily structures. As of 2012, single family homes – including both detached homes and attached homes – accounted for about 46% of the housing stock. Units in multifamily structures (including The Grove) accounted for about 49%. Another 2% (59 units) were located in commercial structures, such as on second floors above downtown businesses; and nearly 4% were mobile homes in mobile home parks. See **Table 2-3**.

Table 2-3. Distribution of Dwelling Units by Type, Est. 2012 (excluding dwelling units on University of Maine campus)		
Single family (detached & attached)	1,471	46%
2-4 unit apartments (not in large complexes)	449	14%
5-19 unit structures or apartment complexes	177	6%
20+ unit structures or apartment complexes	944	29%
Apartments in commercial buildings	59	2%
Mobile homes in mobile home parks	116	4%
Total	3,216	100%
Note: For apartment complexes with multiple structures, units are added together regardless of type of structure. For example, units at The Grove are primarily in multi-family structures, but some are in townhouse structures. In this table, all of the units are counted as multifamily in a 20+ unit apartment complex .		
Source: Orono Tax Assessor, as of July 2012		

Age of housing: About 40% of Orono’s housing stock – an estimated 1,250 dwelling units -- are more than 50 years old. Dwellings built during the 1970s and 1980s account for another third of the Town’s stock. There was a surge in homebuilding during these two decades, when more than 1,000 units were added. The baby boom generation was entering its household formation years during this period and average household size was falling. Both factors helped trigger a housing boom statewide, regionally, and in Orono. In addition, funds were available for federally assisted housing.

The pace of single-family housing development slowed during the 1990s and first decade of this century. New single family homes were built in several subdivisions, but much of the additional housing in the last decade has been in three major projects: Dirgo Pines, a retirement community (as of 2012, 55 cottages built or under construction, plus an inn with apartments for independent and assisted living, as well as nursing home rooms), and two student apartment projects, Orchard Trails (144 units) and The Grove (188 units).

The age of Orono’s housing is similar to the county as a whole. **Fig. 2-1** compares census data, based on surveys conducted between 2006 and 2010.



Source of Heat: As of 2006-2010 (latest period for which data are available), 7 of 10 occupied homes used fuel oil for heat. Natural gas from Bangor Gas supplied only about 5% of dwelling units, though this share as of 2012 is rising with lines being extended to many streets in town. About 16% relied on electricity for their heat. Solar, wood, and other renewable sources were used by very few homes as direct, primary sources of heat. See **Table 2-4**.

Table 2-4. House Heating Fuel, Orono, 2006-10		
Occupied housing units (average as of 2006-10)	2,661	
Utility gas	131	4.9%
Bottled, tank, or LP gas	155	5.8%
Electricity	419	15.7%
Fuel oil, kerosene, etc.	1,877	70.5%
Coal or coke	0	0.0%
Wood	71	2.7%
Solar energy	0	0.0%
Other fuel	8	0.3%
Source: U.S. Census American Community Survey, 2006-10; surveys are subject to sampling error		

Substandard Housing: One definition of substandard housing – used by the U.S. Census for many years – tracks housing that lacks full plumbing or kitchen facilities and/or that is overcrowded (more than 1 person per room in the dwelling unit). By this definition, between 2% and 3% of Orono’s occupied housing units are substandard (“occupied” housing units presumably do not include seasonal camps). See **Table 2.5**.

Table 2.5. Substandard Occupied Housing Units, Orono, 2006-10		
Occupied housing units (average as of 2006-10)	2,661	
Lack complete plumbing facilities	54	2.0%
Lack complete kitchen facilities	76	2.9%
More than 1 occupant per room in unit	37	1.4%
Source: U.S. Census American Community Survey, 2006-10; surveys are subject to sampling error		

This definition does not address other criteria by which the quality of housing might be evaluated, including fire safety, structural conditions, and energy efficiency, for example. No general survey of such conditions exists for Orono. However, the Town’s fire marshal inspects all multifamily (3 or more unit) buildings on a three-year cycle. This system has moved most multifamily units into compliance with life safety and related codes. This is a challenge especially for multifamily buildings that were built as large, single-family dwellings during the 19th and early 20th centuries and later divided into multiple units before contemporary fire codes were adopted. Nevertheless, the fire marshal believes most multifamily dwellings are in reasonable compliance. Single-family and two-family dwellings, either owned or rented, are not regularly inspected.

C. Student Housing

On-campus housing: Many Orono residents are students who live on campus in housing supplied by the University of Maine. The facilities include:

- 15 residence halls:
 - Six for first-year students,
 - Six for upper-class students, and
 - Three for honors students

The residence halls provide a variety of building and community styles to meet different needs. For example, there are a number of Living Learning Communities that give first-year students to opportunity to live with peers who share interests. Upper-class students have choices of room styles, as well as two apartment facilities listed below.

- Two on-campus apartment facilities for upper-class students:
 - Doris Twitchell Allen Village, with a 200-student capacity; and
 - Patch Hall, with a 196-student capacity
- University Park, an apartment complex for families, with 48 one-bedroom and 46 two-bedroom apartments
- 14 fraternity and sorority houses, located primarily on College Ave., on or adjacent to the campus.

In 2010 4,000 or more students (and in some case their families) lived on campus, including nearly 3,700 in dormitories and several hundred more in campus apartments.

Off-campus housing: A large share of apartments in Orono is rented to students. In 2010, according to the Census, 723 rented dwelling units – 46% of all rented units -- had a “householder” under age 25. Each unit included between one and five residents, with an average of between two and three persons. Not all of these households were students, but it is reasonable to assume that most were.

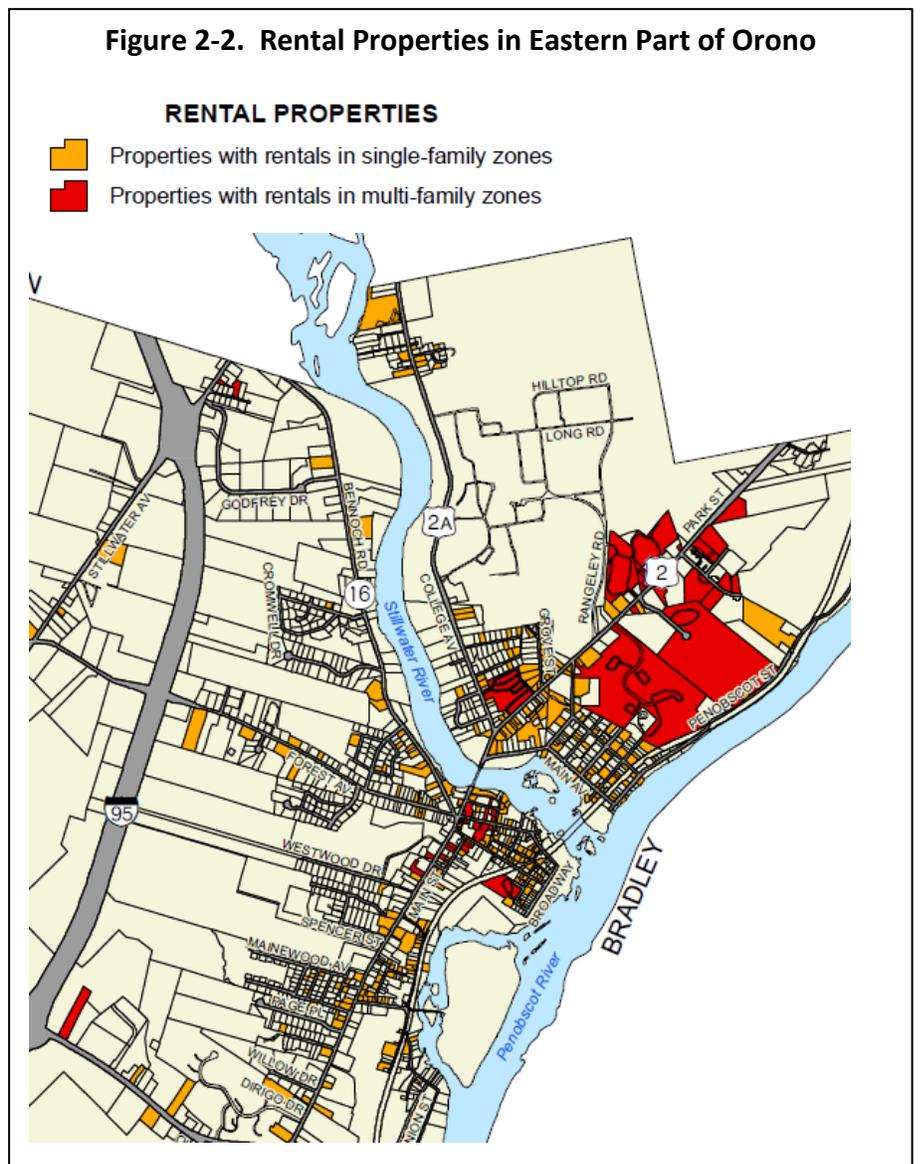
Several large complexes are targeted to or rely heavily on students, including The Grove (188 units), Orchard Trails (144 units), Stillwater Village Apartments (84 units), Dryden Terrace (77 units), Washburn Place (48 units), College Park (32 units), Founders Place (26 units), and Timberview (24 units). However, many students also live in single-family, small multi-family, and mixed use commercial buildings. These are concentrated in Orono village and the Webster neighborhood but extend into other neighborhoods as well. **Fig. 2-2** shows lots in the eastern part of Orono with at least one rental unit on the property (as of 2011). Some of these are rented to households other than students. But students are a significant share of the total, and the distribution of rentals is likely representative of the distribution of student renters, as well.

Integrating student apartments into neighborhoods: Students have long been part of the fabric of Orono, both on and off campus. They and their landlords are cornerstones of the local economy and tax base. During the last decade, the Town took steps to alleviate friction in both

mixed use and single family neighborhoods, with the intent of continuing to accommodate student rentals without undue disturbance to other residents of the neighborhoods. In 2004, the Town adopted a Disorderly Property ordinance (Ch. 20, Article III of the Code of Ordinances). It spells out the steps the Town will take to designate a disorderly property, including a first warning; the steps that will be required to abate the nuisance conditions leading to the designation; and the civil penalties that could be levied on the owners of the properties.

In 2006-07, in the wake of complaints from homeowners concerning the creep of student apartments into traditionally single-family neighborhoods, the Town Council heard a debate between homeowners who wanted to stop or reduce the spread of student rentals and landlords who argued that, with relatively few exceptions, students are well behaved and landlords are responsible, hands-on managers of their properties. In 2007-08, The Town Council took two actions:

1. It amended the definition of “family” in the Land Use Ordinance to limit to three the number of unrelated persons living in a dwelling unit located in single-family zoning districts (elsewhere the limit stayed at five); and
2. It enacted a Rental Registration ordinance (Chapter 8, Article IV of the Code of Ordinances) for the purpose of building a data base that can track trends in rental housing, provide a reference for Town staff and officials, and potentially serve as an information tool for landlords and potential tenants. The data base is included as a layer in the Town’s public web-based mapping service.



In addition to the Town ordinances, several landlords made investments in previously troubled properties that have allowed them to fit more harmoniously in the neighborhoods.

As of 2011, the rental registration data base – which covers all rental units, both those rented to students and those rented to non-student households – included:

- 570 properties, including single-family homes, with at least one rental unit
- 1,470 rental units¹ in these properties, or an average of 2.8 rental units per property
- 3,074 bedrooms in the rental units, or an average of 2.1 bedrooms per rental unit
- 3,104 tenants in the rental units (not all rental units are occupied at any given time)

Table 2-6. Rental Units by Zoning District, Orono, 2011

	Total	Single-family zoning districts				Zoning districts allowing multifamily housing				
		F&A	LDR	MDR/ GMDR	Subtotal	HDR	VC	C-2	Other	Subtotal
Properties with 1 or more rental units	520	38	8	289	335	19	42	122	2	185
Rental units										
Total	1470	46	8	643	697	105	137	529	2	773
Average units per property	2.8	1.2	1	2.2	2.1	5.5	3.3	4.3	1.0	4.2
Bedrooms										
Total	3074	105	24	1345	1474	154	181	1259	6	1600
Average bedrooms per unit	2.1	2.3	3.0	2.1	2.1	1.5	1.3	2.4	3.0	2.1
No. of 4&5 bedroom units	253	3	2	87	92	2	4	155	0	161
Tenants										
Total	3104	70	18	1288	1376	168	228	1325	7	1728
Average tenants per rental unit	2.1	1.5	2.3	2.0	2.0	1.6	1.7	2.5	3.5	2.2

Note: Excludes dwelling units on University of Maine campus.
Source: Orono Rental Registration Database

Nearly half (47%) of the rental units were located within single-family zoning districts, primarily the Medium Density Residential (MDR) District. Many of these were rented single-family homes, but about 45% of the properties (128 properties) with rental units in the MDR District were small multi-family structures that are grandfathered under the zoning ordinance.

About 53% of the rental units were located within districts that allow multi-family dwellings. The most prominent of these is the Commercial-2 (C-2) District, which includes several large multi-family complexes. The Village Commercial (VC) and High Density Residential (HDR) districts also

¹ The 188-unit The Grove complex was not included in the 2011 rental registry.

have large complements of multi-family dwellings or apartments in mixed-use buildings. See **Table 2-6**.

D. Affordability

Home ownership: The Maine State Housing Authority maintains an “affordability index,” which measures the ability of a household with a median income to purchase a median priced home in a community. An index of 1 or more indicates that housing is affordable to a median income household. An index of less than 1 indicates it is not. “Affordable” means not spending more than 28% of gross income on mortgage, insurance, and property taxes (30-year mortgage, 5% down payment).

The most recent index reflects 2008 data. Orono’s affordability index at that time was 0.56 – meaning that the median income household in Orono only had 56% of the income required to purchase a median priced home in Orono (at the time, \$181,500, based on actual sales).

But, as with all matters dealing with income in Orono, low-income student households skew the data. If only households with householders who are 25 years old or older are considered, the index rises to 0.79 – still well below the affordability of housing in Penobscot County as a whole (index = 0.92) but about the same as the state as a whole. See **Table 2-7**. Since 2008, the deep recession pushed down interest rates and housing prices. Statewide and county data show that affordability improved somewhat; it is likely that at present the affordability index for Orono is in the range of 0.8 to 0.85.

	Town of Orono			
Housing - Median Home Price, 2008	All households	Households with householder 25+ yrs old	Penobscot County	Maine
Affordability Index	0.56	0.79	0.92	0.79
Median Income	\$36,534	\$51,250	\$42,152	\$46,321
Income Needed for Median Priced Home	\$65,126	\$65,126	\$45,608	\$58,951
Sources: Maine State Housing Authority; household income for householders 25+: U.S. Census, ACS 2006-2010				

Census data verifies that a significant percentage of Orono homeowners are paying high shares of income to support mortgages. About 59% of owner-occupied homes have mortgages. Of these, the median share of household income needed to support mortgages and property taxes is within a “safe” range of around 21%. But about 30% of these homeowners are paying more than 30% of their household incomes for mortgages and property taxes. (Source: U.S. Census American Community Survey, 2006-10)

About 41% of owner-occupied homes do not have mortgages. Among these households, the median share of household income to support the homes is about 12%.

Another way to think about affordability of homeownership in Orono is to consider what price a salary of an employee at the University of Maine could support. Ideally, the salaries of Orono's largest employer and the price of housing would be in equilibrium. Salaries cover a wide range depending on position, discipline, experience, etc., but according to the university's human resources department, typical salaries for incoming faculty are in the \$38,000 (for instructors) to \$59,000 (full professors) range. These are 9-month contracts, and incomes may be supplemented. The average pay for salaried professionals is in the mid-\$40,000's, but the range is wide, from under \$30,000 to the mid-\$100,000's.

Using the 28% rule and using income of \$50,000 as a benchmark, an "affordable" home would be in the \$175,000 range after accounting for property taxes and insurance. This is not far from the median sales price recently recorded by the Maine State Housing Authority for Orono, though well below the price of most newer homes. It is likely that many incoming university families would require two incomes to afford most single family home ownership in town. Notably, only about 18% of all employees at the University of Maine live in Orono. Home prices and related housing costs probably are a factor in the decision of incoming staff and faculty as to where to live.

There is a ready supply of lots for new single family homes; as of 2012, there were 52 vacant lots in approved subdivisions. But nearly all (46 of the 52) were in large-lot subdivisions west of I-95 where homes most recently have been built for households with above average incomes.

There is no supply of small, in-town subdivision lots that might serve as "workforce" housing – homes affordable to households of average means. In-town zoning for single family homes requires at least half-acre lots (the minimum in the Medium Density Residential District, the primary in-town zoning district), which puts subdivision lot prices beyond the means of workers with moderate-to-median incomes. However, if a subdivision in the MDR District is clustered, the allowable density doubles, which may create opportunity for such households.

An in-town, clustered subdivision, known as Black Bear Heights, was approved in 2005. Its 26 lots were not designed or priced for workforce housing, but the subdivision serves as a useful case study on the challenge of providing for such housing. Analysis shows that prices within range of moderate-to-median household incomes probably are not possible without higher density, reduced infrastructure costs, reduced permitting costs, or a combination of these. Based on a 2011 analysis, the infrastructure costs translated into about \$45,000 per lot, while engineering, permitting and legal costs (incurred in part as a result of neighborhood challenges to the project) added at least \$20,000 per lot. As a result of the combination of these actual and anticipated costs and the deep housing recession at the end of the decade, the developer let his approvals lapse.

In 2010 the Town approved an affordable housing tax increment finance district for the redevelopment of the former Webster Mill property on Shore Drive; this development provides 5 condominium units priced within range of owner households with no more than 120% of the region's median income.

Rental housing: According to the Census, the median monthly rent for all rental units in Orono during the period 2006-2010 was \$774. According to Maine State Housing Authority, the average rent during this period for a two-bedroom unit, including utilities, was about \$910. Two-thirds of renters were paying more than 30% of their incomes for gross rent (includes utilities and heat). This high percentage obviously is related to the high percentage of renters who are students (who typically pay on a per bedroom basis).

A number of families and elderly persons also have low incomes that qualify for federally assisted rental housing. Nine rental facilities in Orono with a total of 344 units serve low income families, elderly, and persons with disabilities. The Housing Foundation, a nonprofit corporation based in Orono that serves the role of a local housing authority, owns three of the facilities with 226 of the units. Additional private apartment complexes accept households with Section 8 low income housing vouchers. The nine facilities are:

- Community Housing of Maine, 8 units, persons with disabilities, homeless, very low incomes
- Crosby Court, 16 units, elderly and persons with disabilities
- Freeman Forest, 18 units, elderly and persons with disabilities
- Glenridge Apartments, 24 units, elderly and persons with disabilities
- Hasbrouck Court (The Housing Foundation), 30 units, elderly and persons with disabilities
- Longfellow Heights (The Housing Foundation), 40 units, elderly and persons with disabilities
- Main View Apartments, 24 units, elderly and persons with disabilities
- Meadowview (Community Health and Counseling Services), 8 units, adults with chronic mental illness
- Talmar Woods, Phases I and II (The Housing Foundation), 156 units, families

Low income rental housing need: Based on Census rental and income data, it is estimated that the potential demand for rental housing affordable to low-income households in Orono was:

- Households with a householder 65+ years old, assuming one-person households and a 2011 HUD income limit of about \$34,650: 201 households
- Households with a householder 25 to 64 years old, assuming three-person households and a 2011 HUD income limit of about \$44,450: 311 households

“Low income” means household income that is 80% or less of the regional median income for a given household size.

As listed above, there are presently six rental complexes with 152 federally assisted apartments primarily for elderly households. There may also be apartments in other complexes in Orono occupied by low income households with Section 8 vouchers. A reasonable estimate of additional need for rentals affordable to low (and very low) income elderly households is 25 to 50 units.

There is presently one rental complex in Orono, with 156 federally assisted apartments, primarily for non-elderly households. Some of these are occupied by students households not included in our calculation of potential demand (our calculation is for households headed by persons 25 to 64 years old). On the other hand, other apartments in Orono likely are occupied by low income households with Section 8 vouchers. A reasonable estimate of additional need for low-income rentals for non-elderly households (excluding the under 25 year old student population) is 100 to 150 units.

E. Issues and Opportunities

Potential for a Stressed Rental Market

Large, new student rental apartment complexes – Orchard Trails (2005), The Grove (2012), and The Avenue (proposed 2014) – may have long-term impacts on the older, traditional stock of units in smaller in-town structures. Orono’s rental market has historically been healthy, with a range of rental opportunities and strong demand. However, there is worry that the market is reaching its limits and that, with little growth in the student population, vacancy rates will rise in the future. It is possible that the market will find a new equilibrium: for example, it may create a “buyer’s market” in which some of the older stock will be purchased for conversion back to single family homes. It is also possible that the situation will lead to deterioration and reduced property values in neighborhoods where the older stock is located.

Gap in Workforce Housing

Several in-town neighborhoods built at different periods from the 1960s into the 1990s offered opportunities for workers at different income levels to own homes in Orono. However, there have been few new opportunities for the last 20 years. The lack of in-town opportunities for contemporary single-family homes at a price that local workers of average means can afford likely is contributing to Orono’s decline in families over the last 20 years (see Chapter 1, Population and Households). It also is noteworthy that more than 80% of faculty and staff working at the University of Maine live outside of Orono. Readily available housing within their price range, close to schools and services, may be a factor. A balance between jobs, wages, and housing is fundamental to a local economy and a diverse community, and there are signs that some of this balance needs to be restored.

The cost of developing subdivisions with affordable lots is in part a function of land, infrastructure, and permitting/regulatory costs, and these, in turn, are partly attributable to zoning and subdivision requirements. Orono's half-acre zoning (with public sewer and water) in the Medium Residential District tends to preclude affordable new building lots. The Town has some tools, such as clustered development and affordable housing tax increment financing, that can be used to advance workforce housing.

Integrating Student Housing into Neighborhoods

Orono has taken several steps to accommodate student rental housing in neighborhoods while reducing the potential for nuisance conditions or conflicts that arise from different lifestyles of some college-aged students and other neighborhood residents. These seem to have helped, but additional measures may be needed to maintain balance in single-family neighborhoods, especially if trends such as parental purchases of single-family homes for student housing continues, as it likely will.

Impacts of Large, Off-Campus Apartment Complexes

The development of large apartment complexes aimed at undergraduate students in a concentrated area along Park Street has raised concerns about traffic, the capacity of municipal public safety services, and impacts on existing nearby residents. Just as there needs to be review and recalibration of the amount of student housing in traditionally single-family neighborhoods, there also needs to be consideration of whether the trend toward large undergraduate apartment complexes off campus should be slowed – perhaps redirecting them campus, where impacts on traffic and public safety services may be less.

Housing for an Aging Population

The 75+ year old population will continue to grow more rapidly than other age groups. This raises issues and opportunities around home safety and home maintenance, home-based services, medical services, and retirement housing. While a significant share of this population is healthy, disabilities and limitations in activities of daily living (walking, bathing, dressing, etc.) increase rapidly with age. Nationally, according to the U.S Department of Health and Human Services, 56% of people over 80 years old have a severe disability and 29% need assistance in at least one activity of daily living. Over the next decade, retirement communities offering a continuum of care, such as Dirigo Pines, may have an opportunity to expand, as will demand for services to enable seniors to continue to live independently in their homes.

CHAPTER 3. ECONOMY

A. Regional Economy

Orono is one of 43 towns and cities plus the Penobscot Indian Reservation that make up the Bangor Metropolitan Area. The metro area extends from central Penobscot County to the edges of Hancock and Waldo Counties (see the area #23 on **Figure 3-1**). Bangor is the central city of the metropolitan area and the retail, financial, and distribution hub of eastern Maine.

Resident Labor force: The Bangor region had a resident civilian labor force in 2011 of a little less than 71,000. This labor force grew slowly from about 66,000 in 2001, an increase of about 5.4% over 10 years. Unemployment rates have tracked state and national trends but have generally been below both the state and national levels. During the recessionary years of 2009 through mid-2011, the Bangor metro’s unemployment rate averaged 7.5% versus 7.9% for Maine and 9.3% for the U.S.

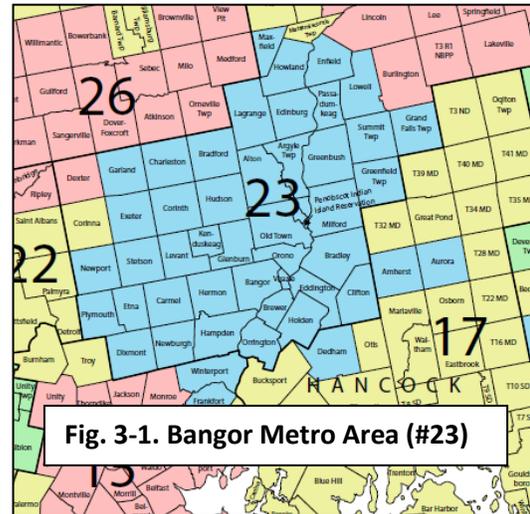
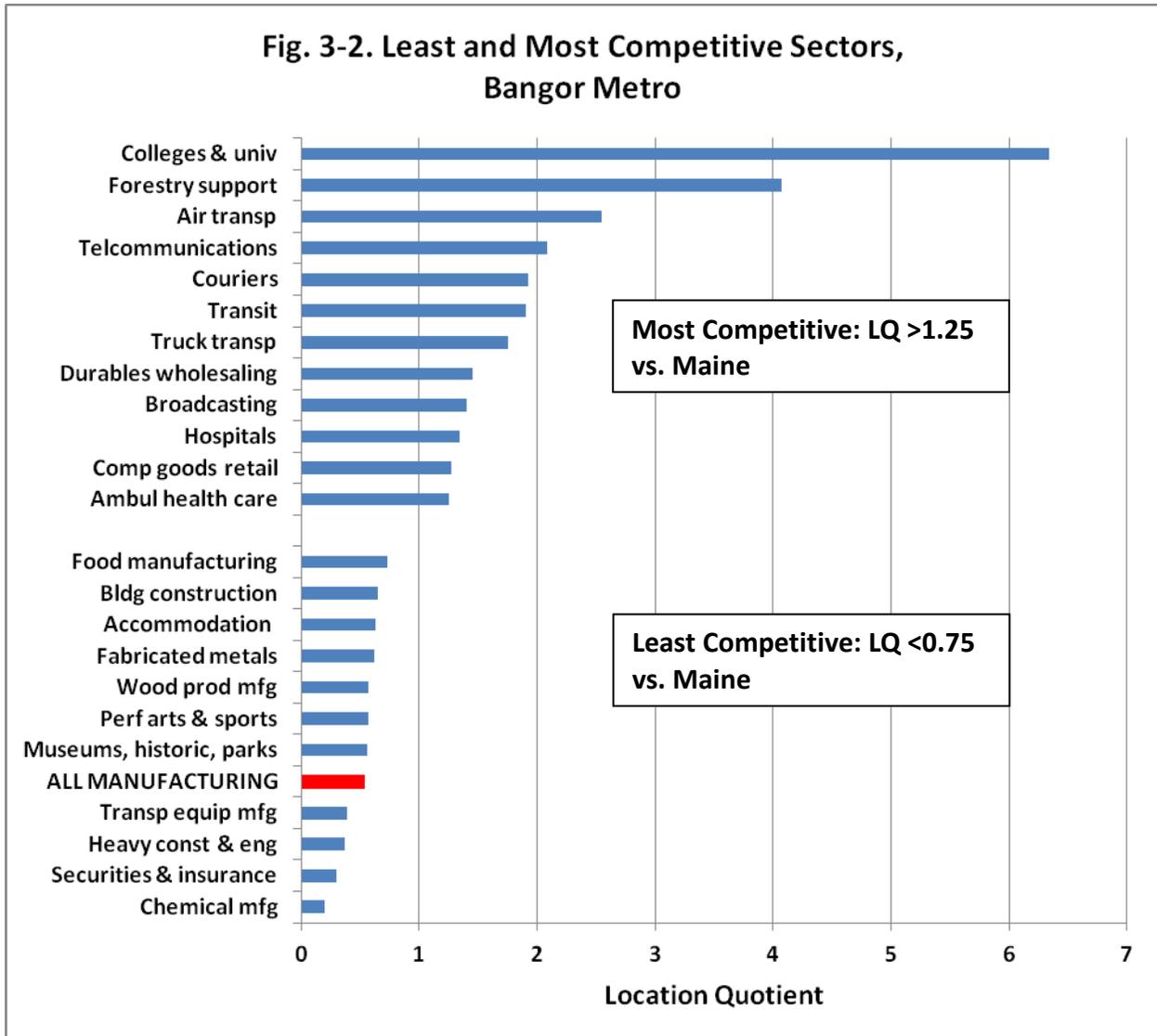


Fig. 3-1. Bangor Metro Area (#23)

What sectors are driving job growth? In 2010, the Bangor metro area hosted about 61,200 nonfarm wage and salary jobs (farming jobs and self-employment are in addition to these). Clues as to the economic sectors that drive job growth in the region can be found in a simple statistic called “*location quotients*.” Location quotients indicate how specialized or dependent a region is on a particular economic sector, as compared with the state or nation. A high location quotient suggests strong specialization and possible competitive advantages versus the state or nation as a whole. A low location quotient does not mean the sector is unimportant, but it does mean that the region likely lacks competitive advantage and probably cannot depend on that sector to drive growth.

See **Figure 3-2**. In this chart, a sector with an LQ (versus the state) of 1.25 or more means that the Bangor region has a dependency on or specialization in the sector that is disproportionately high. The region apparently has a competitive advantage in these sectors versus the state as a whole. An LQ of between 0.75 and 1.24 means the Bangor region performs at around the average for the state. An LQ of under 0.75 indicates probable competitive disadvantage.



Source: Maine Department of Labor Census of Employment and Wages, 2011

In sum, the Bangor region is a **disproportionally strong center** for:

- Higher education
- Wholesale distribution and transportation (trucking, air, passenger and courier services)
- Certain health care sectors (hospitals, ambulatory care, and some residential care)
- Comparison goods retailing (auto, electronics, clothing, department stores, nonstore retailing)
- Certain information sectors (broadcasting, telecommunications)
- Forestry support services

Collectively, these sectors in 2011 accounted for 22,000 jobs, or about 30% of all nonfarm wage and salary jobs in the region.

The Bangor region is a **disproportionally weak center** for:

- Finance, especially in the areas of securities, investment, and insurance
- Most manufacturing sectors, including food processing, metals, computers and electronics, transportation equipment, furniture, medical equipment, textiles, apparel, and paper, among others
- Several tourism sectors, including accommodations, performing arts & spectator sports, and museums, historical sites and similar cultural attractions
- Building construction

Collectively, these sectors account for 4,600 or about 8% of all nonfarm wage and salary jobs in the region.

In most other broad sectors, the Bangor region performs as might be expected, in proportion to its size. In some cases, this actually signals strength – in sectors in which Maine is strong versus the nation (the food services component of tourism, for example). In other cases, it simply means that commerce generated by residents of the region is being captured, as might be expected, by businesses in the region. There likely is not either a significant net export of local dollars out of the region or significant net import of outside dollars into the region as a result of economic activity in these sectors. Examples of these key sectors are:

- Banking
- Professional and business services
- Convenience goods retailing (groceries and other everyday goods and services)
- Amusements and recreation
- Food services
- Specialty trades
- Utilities and energy

It is possible to dig deeper into some of these broad economic sectors and find sub-sectors that either are disproportionately strong or weak. For example, because of Bangor's unique role in the gambling industry, that sub-sector would be an area of strength within the otherwise average amusements and recreation sector. However, the general picture presented here sets the context for a look at Orono's local economy.

B. Orono's Economy

General

Orono's economy is a modest but notable part of the Bangor Metro Area's economy overall. It is a *service center community* – as defined by the State – in its own right. That is, more workers come into Orono to work than leave Orono to work elsewhere (and thus is a job center). It also

provides a variety of retail and other services to the larger region and, for its size, has a disproportionate number of federally assisted housing units (one of the criteria in the definition of a service center community).

Resident Labor Force: About 5,400 workers live in Orono, a little less than 8% of the Bangor metro area’s total labor force. This number grew very slowly over the last decade and has been fairly stable in recent years. Orono’s unemployment rate historically is less than the state’s, and this continues to be true – but it increased through the recession years from 3.8% in 2008 to 6.2% in 2011. See **Table 3-1**.

	Orono		Bangor Metro	
	Civilian Labor Force	Unemployment Rate (%)	Civilian Labor Force	Unemployment Rate (%)
2001	5,103	2.9	67,697	3.7
2003	5,190	3.4	69,192	4.6
2005	5,142	3.6	69,785	4.6
2007	5,281	3.4	71,165	4.8
2009	5,479	5.3	71,616	7.5
2011	5,428	6.2	71,724	7.3
Ch., 2001-11	6.4%		5.9%	
Source: Maine Dept. of Labor, Census of Employment and Wages				

Job Base: There are more jobs in Orono than local residents in the labor force. According to the U.S. Census, there are about 7,000 persons who work in Orono. Of these, Maine Dept. of Labor data show that about 5,600 are wage and salary employees (see **Table 3-2**). There also is a substantial base of self-employed people, such as contractors, professional consultants, small retailers, and other sole proprietors. In 2011, there were 150 private employers in Orono, and they employed just under 2,000 people. There were 15 public employers with about 3,600 employees, most at the University of Maine. The number of wage and salary jobs peaked in 2005 at 5,900 and fell through the 2008-2011 recession.

	Employers		Employees		Total	
	Private	Public	Private	Public	Employers	Employees
2001	126	18	1,860	3,495	144	5,355
2003	126	18	2,087	3,580	144	5,667
2005	134	18	2,252	3,648	152	5,900
2007	146	17	2,214	3,636	163	5,850
2009	154	16	2,121	3,639	170	5,760
2011	150	15	1,972	3,589	165	5,561
Ch, 2001-11	19%	-17%	6%	3%	15%	4%
Source: Maine Dept. of Labor, Census of Employment and Wages						

Job Sectors: About 63% of the approximately 7,000 jobs in Orono are in the educational/health care/social assistance sector, an indication of the dominance of the University of Maine in Orono’s job market. Another 9% are professional, scientific, management and administrative jobs, and nearly as many are in the food and accommodations services sector. About 4% are in retail trade. See **Table 3-3**.

Sector	Share of Jobs (n=7,015)
Ag, forestry, fishing, mining	0%
Construction	2.6%
Manufacturing	2.2%
Wholesale trade	0.5%
Retail trade	3.8%
Transp, warehousing & utilities	0.9%
Information	3.1%
Finance, insurance, real estate, & leasing	2.8%
Prof., scientific, management & administrative	9.1%
Educational services, health care, social assistance	62.9%
Accommodation & food services, arts, recreation	8.9%
Other services	1.6%
Public administration	1.5%
Source: U. S. Census, 2010	

Manufacturing: As can be seen, Orono’s manufacturing base is very small and has been for two decades following the closing of textile (and former paper) mills on Ayers Island and at Webster Mill. Two long-time businesses, Shaw & Tenney and Byer Manufacturing, continue to operate in the village.

Health Care Sector: The region’s health care sector is centered in Bangor, but it has a presence in Orono, as well. In addition to medical offices serving the Town and University, three facilities serve the elderly: the Orono Commons Nursing Home on Bennoch Ave., Dirigo Pines’ Assisted and Special Care Facility off Kelley Road (part of the larger Dirigo Pines retirement community), and Meadowview on Park Street, which is operated by Community Health and Counseling Services

Finance and Real Estate: Orono is not a finance center, but three community banks have branches in town, and the University Credit Union is headquartered in Orono. The University Credit Union’s membership consists of persons with current or past associations with the University of Maine System, but also anyone who lives or works in the Town of Orono. As a result, it considers Orono to be its home base. In 2011 it made the decision to expand its presence in Orono and is building a new headquarters building in Downtown at the intersection of Main St. and Bennoch Rd., for occupancy in 2014. Its current headquarters is located on the University’s campus on Rangeley Rd. and will continue to serve as a major branch in UCU’s system as well as for support operations.

Orono’s real estate rental sector constitutes, cumulatively, one of the largest parts of the Town’s tax base. Several real estate and management companies operate in town, and the business of property management supports different construction trades and other parts of the local economy. More than 500 buildings (some mixed-use) with more than 1,500 rental units serve the student market, low-income elderly and family households, and others. The multi-family structures (2 or more units) alone had an assessed value of more than \$89 million as of 2011.

Where Workers Come from to Work in Orono...and Where Orono Workers Go to Work:

About 37% of the jobs in Orono are filled by people who also live in Orono. These include 434 employees at the University of Maine who, as of 2012, also live in Orono. More than 60% are filled by workers who commute into Orono from other communities. Nearly half of the commuters (about 2,100) work at the University. This is one of the signs that Orono functions as a service center community. The largest shares come from Old Town, who fill 17% of the jobs, and Bangor, who fill 13%. Workers come from a total of 134 communities from around the state. Such is the drawing power of the University of Maine.

A majority of Orono’s resident workers, in turn, work in Orono – about 54%. A large contingency of Orono resident workers, 27%, commute to Bangor. About 3% work in Old Town and another 3% in Brewer.

Retail Sales: Orono’s retail sector is based in Downtown and at Exit 193 off I-95. With the Bangor Mall area just 4 miles south, Orono has no retailers in categories such as department stores, building supply, and auto sales, which typically account for well over half of total retail sales in service center communities (these sectors account for more than 70% of total sales in Bangor, for example). But Orono has a notable presence in the restaurant and lodging sector.

In 2011, Orono businesses generated about \$35.7 million in taxable retail sales. Restaurant and lodging sales, at \$21.4 million, accounted for more than half of the total. See **Table 3-4:**

TABLE 3-4. Taxable Retail Sales, Orono, 2011	
Store Type	Annual Sales (\$000)
Total	35,687.4
Building Supply	0
Food Stores	7,020.4
General Merchandise (Dept) Stores	0
Other (Category-specific such as hardware, drug, specialty)	2,509
Auto Transportation	0
Restaurant and Lodging	21,360.3
Source: Maine Revenue Services	

University of Maine

Employment: Orono’s economy grows when the University of Maine grows and slows when UMaine slows. The University accounts for about 35% of all the jobs in Orono. According to UMaine’s Human Resources Department, as of the end of 2011 the university had:

- 2,522 total employees, including
 - 2,318 regular employees (full time and part time)
 - 204 temporary employees (full time and part time)
- 857 faculty (full time and part time)
- 708 faculty full time equivalents (FTEs)

The number of regular employees declined between 2006-07 and 2011-12 by 3%. The number of temporary employees increased from 42 to 204.

Faculty: The overall number of faculty increased between 2006-07 and 2011-12 from 669 FTEs to 708 FTE, a little less than 6%. However, this growth has occurred outside of the major colleges of the University. The long-term collective trend in these colleges’ faculty has been down, although this varies by college. The total has dropped from a total of 581 FTEs in the 2003-04 academic year to 544 FTEs in 2010-11, or about 6%.

The College of Liberal Arts and Sciences and the College of Education & Human Development have borne the brunt of the decline, losing 15% and 11% of their FTEs, respectively, over this period of time. The College of Engineering, The College of Natural Sciences, Forestry & Agriculture and the Maine Business School (formerly a college with public policy and health) have held steady or grown modestly. See **Table 3-5**.

TABLE 3-5. Faculty FTEs by College, University of Maine		
	2003-04	2010-11
Business, Public Policy, & Health (now Maine Business School)	34.1	36.6
Education & Human Development	59.8	53.5
Engineering	59.4	63.0
Liberal Arts and Sciences	240.3	204.0
Natural Sciences, Forestry & Agriculture	187.4	186.8
TOTAL	581.0	544.1
Note: Table does not include faculty who do not have at least partial appointments in these colleges. These faculty include those in Athletics, Cooperative Extension, Div. of Lifelong Learning, and certain Institutes.		
Source: University of Maine Office of Institutional Studies web site		

Enrollment: Total enrollment at the University grew during the first part of the decade, from 10,898 in 2001 to 11,912 in 2007. It declined to 11,168 in 2011. Of these:

- 8,271 were undergraduate students
- 2,257 were graduate students
- 640 were non-degree students

- 8,693 were full-time students
- 2,475 were part-time students

Note: As of the 2013-14 academic year, enrollment had returned to modest growth.

Research & Development: The University of Maine has grown into an important research university over the last 15 years. In FY 2011, faculty and staff garnered 410 awards from external sources, mostly the Federal government, for a total of \$62.8 million, leading to total university research expenditures of \$74.0 million. The strongest year for awards was in FY 2010, when they totaled nearly \$90 million, leading to total university research expenditures of \$ 110.3 million. The Carnegie Foundation classifies the University of Maine as one of 99 “high research activity” universities in the U.S.

Because R&D at the University has implications for both direct employment and spin-off enterprise in Orono and surrounding towns, it is interesting to see which research sectors are among the most active on campus. In 2011, among the strongest units in awards were:

- | | |
|---|----------------|
| • Civil and Environmental Engineering | \$ 7.2 million |
| • Physics and Astronomy | 4.2 million |
| • School of Marine Science | 12.5 million |
| • Advance Engineered Wood Composites Center | 10.7 million |
| • Center for Research in STEM Education | 4.6 million |
| • Cooperative Extension | 6.4 million |
| • School of Biological and Ecological Sciences | 3.2 million |
| • Maine Agriculture and Forestry Experiment Station | 3.2 million |

(Source: *Annual Report of Extramural Activity, July 1, 2010- June 30, 2011*, U Maine)

A growing amount of R&D is being deployed off campus in the form of pilots and start-up enterprises. Much of this is located in University-supported facilities in Old Town and Orono. In Old Town, the Forest Bioproducts Research Institute is establishing a Technology Research Center at Old Town Fuel and Fiber. In Orono, within the Maine Technology Park, the University of Maine sponsors an incubator program for a variety of start-up businesses at the Target Technology Center.

As of 2014, there were six businesses in the incubator program at Target Technology Center. By design, the incubator tenants several years from now will be different than the ones there today. But to get a flavor of the breadth of start-ups that are spinning out of the University, with potential for growth in Orono, a current listing is useful. See **Table 3-6**.

Business Name	Product
Advanced Infrastructure Technologies	“Bridge-in-a-backpack” using advanced engineered wood composites
Double Blue Sports Analytics	Advanced video and software analytics for sports teams
Environetix	Sensors for harsh and extreme environments
Cerahelix	Filtration products created with nanotechnology
Zeomatrix	Zeolite-based composites for environmental remediation (e.g., control of landfill odors)
High Touch Group	Marketing and fundraising assistance for high tech companies

Outlook: The recent declines in enrollment, regular (as opposed to temporary) faculty and staff, and faculty FTEs are the results of several factors, including the national economic recession, a demographic trend that is reducing the number of traditional college-aged students, and strong competition from other institutions of higher learning, including community colleges in Maine and other land grant universities in New England.

The University has mapped out steps to reverse the trends, with several ambitious targets for 2017, including (according to its 2012-17 strategic plan, *The Blue Sky Project*):

- Increase total student enrollment to 15,000 (+34% compared with 2011-12)
- Improve annual student retention rates by 5% (in a typical year, about 78% - 80% of students return after their first year); and increase graduation rates by 10%
- Increase University research expenditures to \$125 million (+97% compared with FY 2011)

If these targets were met, Orono and other surrounding towns would see growth in housing (rented and owned), school enrollment, sales in local stores, traffic, and other economic indicators. Even if the targets are more aspirational than real – which likely is the case – getting just part way to them would stimulate the local and area economy. For purposes of this Comprehensive Plan, a realistically conservative assumption is to plan for stabilization and returning to levels of five years ago (approaching 12,000 total students), as the economy recovers and initiatives (e.g., international student recruitment and growth in “magnet” areas such as engineering and new media) gain traction.

Downtown Orono

Downtown is the multi-purpose center of Town. It supports a business core of retailers, restaurants, financial institutions, and small offices; is the center of local government and public services such as the Library and Post Office; and includes a built-in residential base. It is one of

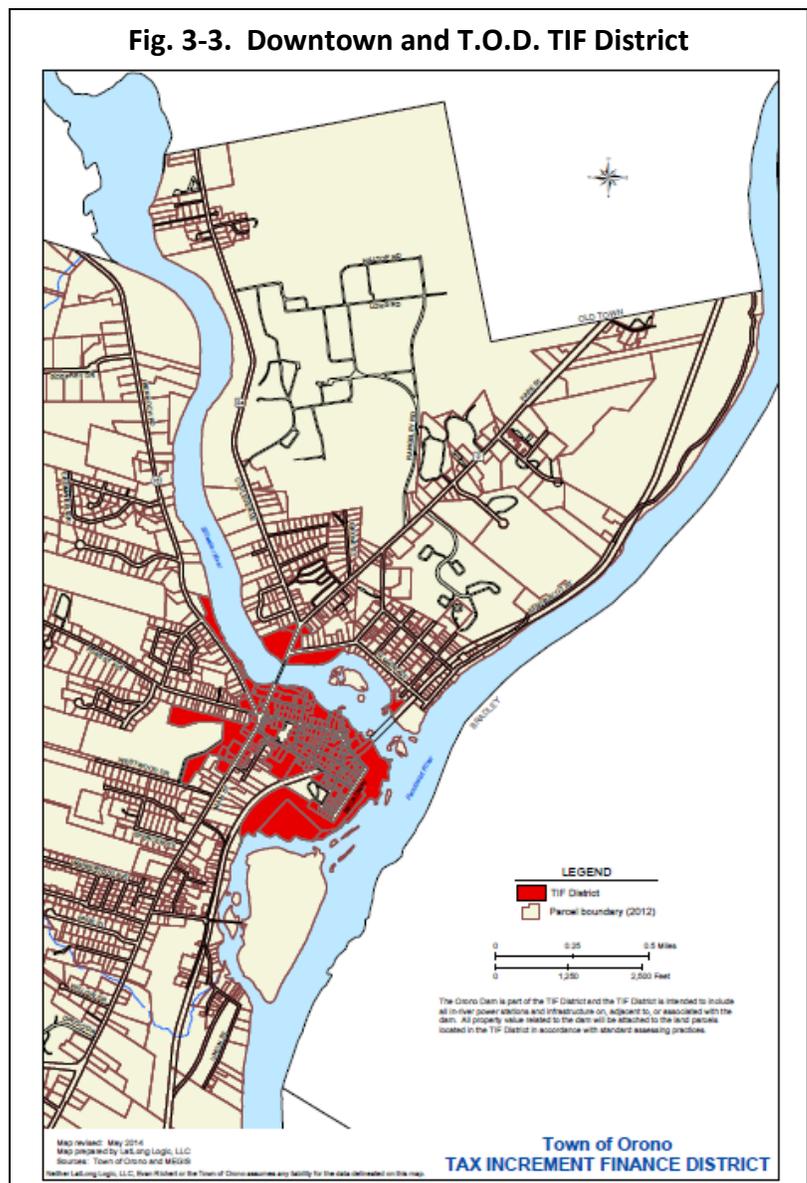
the two gateways through Orono (along with Stillwater Ave.) to the University of Maine and, therefore, helps many visitors and newcomers form their first impression of the Town.

Special Districts for Downtown: Orono has supported Downtown planning for many years. Following a comprehensive review of Downtown infrastructure and market in the 1990s, the Town implemented a number of improvements, including sidewalk reconstruction. In 2000, in cooperation with local businesses and others, it established Downtown as a **special development district** to raise funds for ongoing services. Property owners in the district pay a small surcharge in property taxes (this has annually been set at 50 cents per \$1000 of assessed value) to pay for promotions, beautification, sidewalk plowing, and similar services. These services are sponsored by the Orono Village Association, a non-profit corporation also established in 2000 for this purpose, as well as to provide the district with a unified voice in local government.

In 2010, the Town established a second district, covering a larger area of the village, as a mechanism to fund a shuttle bus between Downtown and the University of Maine and a variety of capital improvements in Downtown. This is the **Downtown and Transit-Oriented Development Tax Increment Finance District** (a type of district enabled by the State to help fund transit in places like Downtown Orono). See **Figure 3-3**.

Under the terms of this district, the Town captures taxes from the growth of assessed values in the district and returns those dollars to the district to implement an approved development program. Downtown Orono's development program allows funds to be spent on:

- The reconstruction of streets, sidewalks, sewers and similar infrastructure
- The operating cost of the shuttle bus (this cost is shared



with the University) and capital costs related to transit

- Parking improvements
- Streetscape projects, including façade improvements
- Business assistance, including financing of development projects, assistance to OVA, and expansion of wireless telecommunications

As of FY 12 and 13, the TOD TIF District was generating about \$160,000 per year, and the funds had been used to support the shuttle bus, street and sidewalk reconstruction, and the redevelopment of the former Katahdin Building site.

Other Economic Districts

Exit 193 - Maine Technology Park and Stillwater Ave: The Maine Technology Park¹ contains 20 lots on about 70 acres off Stillwater Ave. It was developed cooperatively, in phases starting in the 1970s, by the Town and a private developer with financial assistance from the Federal government. Of the 20 lots, as of 2014:

- 8 lots were fully or significantly developed
- 8 lots are vacant but severely restricted by wetlands and may be unbuildable
- 4 lots were vacant or mostly vacant and appear to be buildable

Major businesses in the tech park included the Black Bear Inn, NexxLinx (call center), the Target Technology Center (with both incubator and market tenants), the U.S. Postal Service (distribution facility), and several governmental tenants in two of the park's buildings.

In 2012-2013 the Orono Economic Development Corp. prepared a conceptual plan for build-out of the park, including both vacant and underused properties. See **Figure 3-4** at the end of this chapter. The plan recognized the limits of wetlands in the park and also that an outstanding wetland violation dating to the 1970s still needs to be resolved.

In addition to the Tech Park, Stillwater Ave. hosts the University Mall, the Town's largest retail facility. Active tenants include an IGA supermarket, a movie theater, restaurants, and other services. A department store anchor left the facility in the early 2000s, and the 38,000 sq. ft. space has been vacant since.

Another 125+ acres on the west side of the Stillwater Ave. interchange also are zoned for commercial use. A few businesses are located there, but the area lacks public sewer and water, which limits its potential. Most of the area is vacant.

¹ The Maine Technology Park actually is the combination of the 13 -lot Stillwater Avenue Interchange Park and the 7 - lot Maine Tech Industrial Park. It is now commonly referred to simply as the Maine Technology Park.

Exit 191 – Kelley Road: An area of Kelley Road either side of I-95 at Exit 191 is zoned for economic development (principally professional office park development). As of 2014, three facilities – a nonprofit office headquarters (Katahdin Council of the Boy Scouts), a medical office, and a self-storage facility – were located there. The Town’s Public Works Department also was in the process of planning a move to a new facility in this area.

Recognizing the wetland limitation at the Maine Tech Park, the Town, in cooperation with the Katahdin Council and other nearby property owners, launched planning and permitting for an 8-lot business park on 30 acres behind the Katahdin Council’s offices. Keeping faith with the intent of the Economic Development Zone, the park has been designed as a cluster that avoids most wetlands, includes landscaping and open space, and incorporates trails that connect to the adjacent Sklar Park.

The park received its subdivision and state permits in 2012. However, development will depend on demand and funding for an access road and sewer, water, and other utilities.

Hydropower: As part of the historic Penobscot River Settlement Agreement, the owners of hydropower facilities on the Penobscot River from Bangor to Howland and on the Stillwater Branch in Orono and Old Town, agreed with the Penobscot River Restoration Trust to sell three dams on the Penobscot’s mainstem to the Trust. The Trust will remove or bypass the three in order to restore the native anadromous fishery to the river. At the same time, in order to maintain or achieve a net increase in hydropower production, the dam owner – Black Bear Hydro – expanded production elsewhere, including on the Stillwater. The result was a refurbishing of the Orono Dam and the addition of a second powerhouse in 2013. The facility has a total capacity of 6.52 MW.

The increment in taxes from this expansion is helping to fund the Downtown and Transit-Oriented Development TIF District in the village.

Home occupations: Self-employment is an important part of Orono’s economy, and many self-employed are in home-based businesses. Orono’s register of home occupations includes 26 businesses, but the number undoubtedly is larger than that. It is likely that young “laptop entrepreneurs” in particular may be an invisible but important presence in the Town, working from their homes to develop and test ideas. The ability to work from home is expanding vastly with Internet and wireless technologies. It represents a low-cost way to experiment with entrepreneurial ideas and to start up a technology or other business.

C. Economic Development Organizations

Part of the capacity for economic development in the Greater Bangor region and in Orono lies in several organizations focused on different aspects of development. In Orono, two non-profit corporations were established in 2000 with the encouragement of the Town:

Orono Economic Development Corporation: OEDC was established as part of a plan to promote development townwide but especially at the two I-95 interchanges. It is a non-profit, 501(c)(3) corporation with independent authority to acquire, own, develop, and manage property for development and to recruit new and expanded businesses. Its first project, undertaken jointly with the Town, unfortunately stymied the organization for a decade. OEDC took on the ownership and development of a 54,000 sq. ft. facility for a high tech call center, EnvisioNet, which went bankrupt during the “dot-com” bust in 2001. While the facility was subsequently able to be leased to another call center, Microdyne (which in 2011 was acquired by NexxLinx), the Town was saddled with nearly \$8 million of bonded indebtedness that it had guaranteed. Until recently, all lease and property tax revenues have been devoted to repayment of the debt, leaving no resources for OEDC. The debt will not be paid off until 2020, but retirement of a portion of the debt and a favorable refinancing of the remaining debt has provided some breathing space.

In 2010 OEDC began planning for a post-EnvisioNet era. Its Board of Directors and leadership, which includes Town Council and University of Maine representatives as well as volunteers with business and other experience, is strong. One of its first endeavors was concept planning for the build-out of the Maine Technology Park. It also began to focus on support for start-up businesses through networking events and closer ties to the University’s Foster Student Innovation Center and the Target Technology Center.

Orono Village Association: As mentioned earlier, OVA recommends to the Town Council for the use of special tax district funds to promote and maintain Downtown and gives businesses and residents within the district a venue to plan for Downtown and communicate with town government, the University, and others. Its Board of Directors includes business and resident representatives, a member of the Town Council, and a representative of the University.

In addition to OEDC and OVA, the Town is represented in two regional organizations:

Bangor Target Area Development Corporation: This Corporation cooperated with the University to develop the Target Technology Center in the Maine Tech Park, which it owns and manages. Its mission has evolved from traditional industrial park development to one that focuses on start-up enterprises:

“BTADC supports the building blocks of new business incubation, including mentorship, access to capital and business development work space which will directly support or enhance economic development. BTADC will focus on creative industries, scalable innovation and potential intellectual property.”

This mission is consistent with a direction that the Orono Economic Development Corp. also supports, and there is potential for a local-regional partnership between the two organizations.

Bangor Region Development Alliance: This organization's mission is to recruit business into the Bangor region. Its Board of Directors includes economic development professionals from the region's municipalities and representatives of educational institutions and industry. It is a point of contact for site locators and others who are looking at the Bangor area as a possible location and a source of leads for communities trying to attract business from outside the region.

D. Issues and Opportunities

Leveraging University of Maine for Competitive Advantage

Orono has enjoyed many economic benefits as host to the University of Maine –relatively strong and stable family incomes, comparatively low unemployment rate, a successful incubator for science-and-technology businesses, a strong rental housing market, and support for restaurants and local shops at a level unusual for a town Orono's size.

But the Town has not fully used its competitive advantage as a university town. For example:

- The location of spin-off business in Orono from the university's R&D enterprise is in its earliest stages, has expanded only very slowly over the last decade, and will likely not advance without focused attention to the opportunities this R&D presence offers; and
- Downtown Orono appears to be invisible to many of the thousands of visitors to the university each year and is capturing a relatively small fraction of their buying power – for food, recreation, gifts and other goods and services sought by visitors.

Incomplete Economic Infrastructure

This era's frontier for economic infrastructure includes competitive sources of energy (both natural gas and renewables) and high speed Internet capacity, as well as the longstanding requirements for public sewerage, water supply, three-phase power, and transportation systems (highway, air, and sea). The utility systems' coverage of Orono's priority economic development areas is significant but incomplete. The Town's readiness to serve new and expanding enterprise will depend on extending infrastructure for full coverage, as needed, of:

- The Exit 193 area, including both sides of I-95
- The Exit 191 area, particularly the in-town quadrant east of I-95 and north of Kelley Road
- Downtown
- Park Street in the vicinity of the Rangeley Road entrance to the University

Building an Entrepreneurial Environment

The work style and environment of the creative industries² – and of the knowledge workers that are their engine – differ from the requirements of the suburban industrial model of the last half of the 20th Century. These include access to digital networks, location in lively, 24-hour centers, affordable space and districts where interaction with like-minded entrepreneurs is easy and natural, and quality of life factors such as ready access to outdoor recreation. To take advantage of its position as home to a R&D university – the primary launch pad for creative industry in our region -- the Town will need to make sure there is an environment in which these workers and entrepreneurs want to take root.

Branding and Marketing of Downtown

Downtown's trade area for everyday goods and services is small. But its relatively strong cluster of eating places and its exposure to a large base of University employees present the opportunity to draw from a much wider geographic area. Taking full advantage of this depends on the success of the Orono Village Association and individual merchants in branding and marketing Downtown and filling gaps in what downtown has to offer (e.g., around food, entertainment, and cultural venues). The decision of the University Credit Union to establish a headquarters office building in Downtown is a rare opportunity to build a stronger employment base in Downtown and to create an identity for Downtown as a destination and a gateway to the University.

Downtown itself is physically constrained. Nevertheless, the corridors parallel to Mill Street – Pine Street on the south and Oak Street/Stillwater River on the north – may offer opportunities for planned, incremental growth.

Building Local Economic Development Capacity

OEDC and OVA: OEDC and OVA still are young organizations with limited resources, staffing, and track records. But both have good leadership and the potential to leverage their grass roots expertise to promote the economic growth of Orono. It will be important for both to secure some visible economic development victories in order to sustain the commitments of volunteers and others to the organizations.

² Creative industries: Those industries that have their origin in individual creativity, skill and talent, and that have a potential for wealth and job creation through the generation and exploitation of intellectual property. This is a broad term that covers sectors from advertising to architecture, software technology to mechanical engineering, biotechnology to the arts. But it involves the creation of intellectual property, and the resulting businesses are potentially scalable – i.e., can grow based on intellectual property created or acquired.

Special districts: For the last 15 years Orono has used special districts for specific situations to good advantage. These districts – including the downtown development district and different versions of tax increment finance districts – are among the few tools enabled by State government by which municipalities can finance economic development activities with reduced impacts on local property taxes. As such, they can be expected to be part of the Town’s tool kit in coming years.

Perceptions of the Business Environment

The Comprehensive Plan Committee has heard from a number of voices that Orono is perceived as unfriendly to business – that rules are at times excessive (e.g., for home occupations), that developers fear the threat of litigation from neighbors, and that the Town is not as welcoming as some other communities in the region. At the same time, over the last decade the Planning Board has gained a reputation for fairness, with decisions based on ordinance standards; and the Town has supported significant new development and businesses, including through private-public partnerships. Being aware of the varying perceptions can help the Town adopt land use and economic development policies based on costs and benefits, fairness, and needs of citizens and taxpayers.

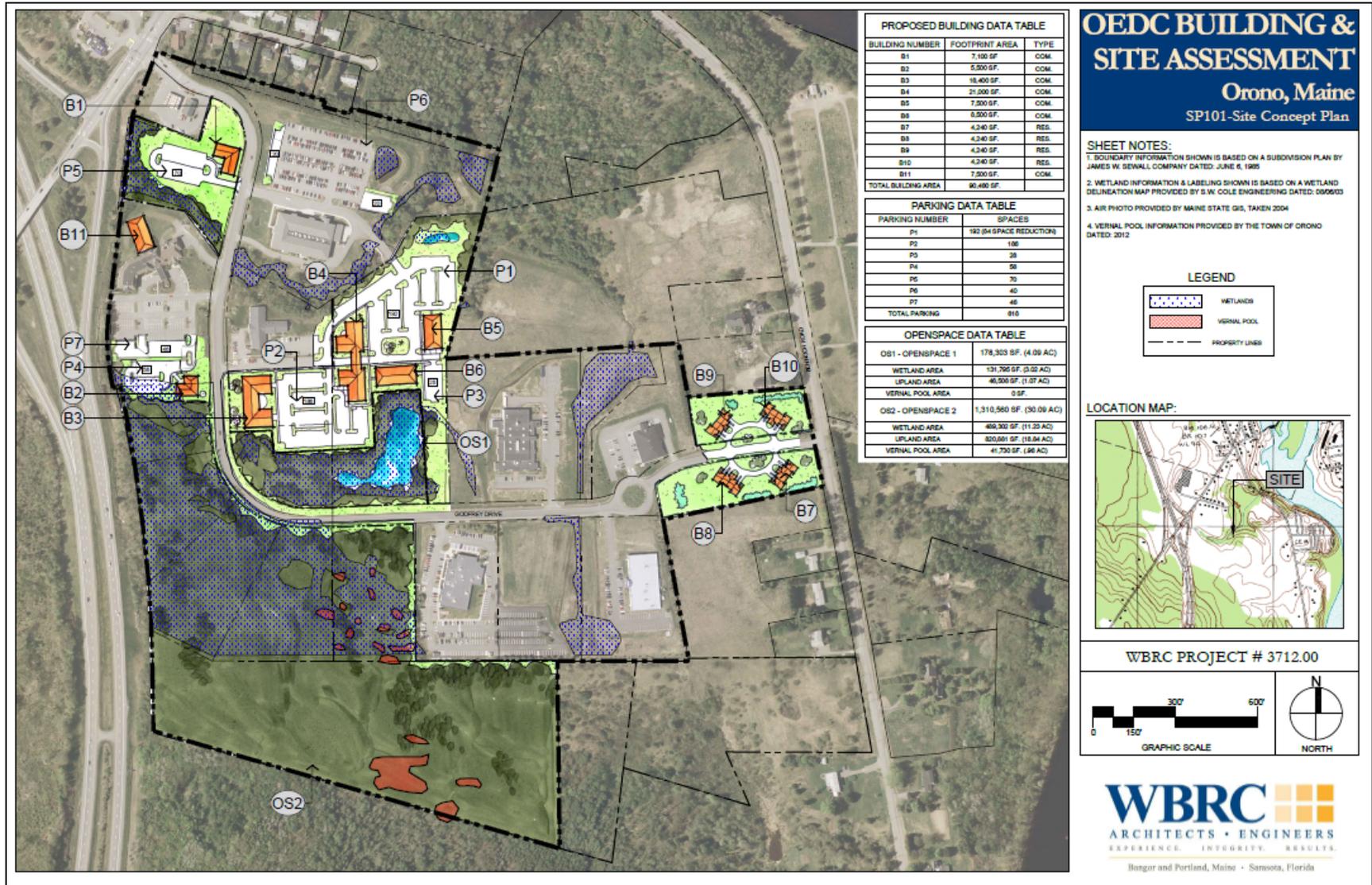
Fostering Regional Cooperation for Economic Development

As regional economic development organizations coalesce under the banner of Mobilize Eastern Maine, Orono has opportunities to:

- Potentially work with the Bangor Target Area Development Corporation as it refocuses its mission on start-up businesses that are built on or that can exploit intellectual property, with potential to scale up to job-creating enterprises; and
- More aggressively contribute to the marketing of Orono and the region as a whole through the Bangor Region Development Association.

Interlocal cooperation in economic development has proved difficult in Maine. There are political and economic barriers (e.g., local reliance on property taxes) to such cooperation. However, there may be natural opportunities to co-market with the neighboring cities of Old Town (with which Orono shares the University of Maine) and Bangor (the region’s central city) to achieve common goals.

Figure 3-4. Conceptual Build-Out Plan, Maine Technology Park (prepared for OEDC, 2012-13)



CHAPTER 4. THE SHAPE OF THE LAND: GEOLOGY, SOILS, TOPOGRAPHY, AND WATER BODIES

A. Geology

Bedrock Geology: As described in the 1998 Comprehensive Plan, Orono lies within a wide band of sandstone and impure limestone that extends from the Saco River in the southwest to Howland and Pocumcus Lake in the northeast. This rock was laid down between 400 and 440 million years ago, when the first air-breathing animals appeared on earth. A thin layer of limestone runs through some of the rock strata but is not subject to caverning as are larger limestone formations. Because of the lime content in the bedrock, wells drilled into the bedrock may produce hard water.

Among areas of Orono where bedrock is at or near the ground surface are Kelley Hill, Newman Hill, Bangor Hill, and the ridge along Kelley Road.

Surficial Geology: Orono's land forms are the result of glaciers that melted and receded ten to twelve thousand years ago. The glaciers left behind two major types of deposits: an esker and glacial till. A third type of material – swampy peat, silt, clay and sand – was formed after the glacier receded. Each of these types of material has different implications for land use planning. The discussion of these implications in the 1998 Comprehensive Plan remains relevant today:

- *Esker* - The esker that parallels the Stillwater Branch and Penobscot River on the west bank is a predominant feature of Orono's surficial geology. An esker is a ridge of stratified sand, gravel and rocks that was formed when the glacier began to melt. Streams of water tunneled their way through and under the glacier and, as they flowed to the sea, picked up soil and rocky materials that had been frozen in the ice. The sand and gravel settled out in layers along the stream bed. When the glacier receded, the ancient stream beds remained.

The ridge of sediments along the river banks in Orono is part of an esker that runs in broken segments from Bangor north to Lake View Plantation. Research has indicated that the esker rests on bedrock and probably is overlapped on its sides by clay. The result is that the esker is encased on three sides by relatively impermeable material. The esker itself, however, is highly permeable, passing rainwater through it easily. The rainwater is trapped by the clay and bedrock, essentially making the esker a storage basin for ground water. The esker is the source of Orono's public water supply. **See Figure 4-1** at the end of this chapter for the location of the sand and gravel aquifer in Orono associated with the esker.

Because of its capacity to store so much water, the esker probably acts as a mechanism for flood control and bedrock groundwater recharge. It is able to accept and store vast

amounts of rainwater, then release it to the bedrock aquifer and rivers at a steady rate, thus modulating the effects of prolonged heavy rainfalls. On the other hand, the permeability of the esker means that even small amounts of pollution will travel through the esker and contaminate groundwater. For this reason, the Town has adopted an Aquifer Protection Overlay District as part of its zoning regulations. These regulations prohibit land uses that discharge or carry a heightened risk of discharging chemicals, petroleum products, hazardous materials and similar substances to groundwater.

Eskers, by their nature, are good sources of sand and gravel, and portions of the esker in Orono have been mined in the past. This resource was the basis for the operation of Lane Construction off Main Street for a number of years.

- *Glacial Till* – “Till” consists of unsorted sediments, including clay, sand, gravel, and boulders, laid down by a glacier. The area of Orono west of the esker includes large areas of glacial till overlaying the bedrock in varying depths. Till is not a good source of groundwater, and wells drilled in till typically need to drill through to the underlying bedrock.
- *Swampy Materials* – Also to the west is a large swath of organic materials and sediments that accumulated and settled into low lying areas over thousands of years. This is the area known as Caribou Bog. Because the surficial materials here are so impermeable, the bog acts as a flood control mechanism and water storage area. In the bog, the water is stored at or near the surface, rather than in the ground. Because it is so wet, the area is not suited to any type of development but is valuable as wildlife habitat. The Caribou Bog and its designation as a unique natural area are discussed in Chapter 5.

B. Soils

Soils are the uppermost layer of earth in which plants grow. Soils are formed over time from parent materials, such as the surficial materials described above and more recent flood deposits, and by the actions of climate, topography, and vegetation over time. Soils command the attention of land use planning for their capacity to produce food and fiber; their capacity to hold water; and – in the large areas that are not served by public sewer systems – their capacity to accept wastewater. Maine’s code governing the location and design of septic systems is based on this last characteristic. Erodible soils also can carry pollutants with them en route to streams, rivers, and lakes.

In the late 1990s, the Maine Agricultural and Forest Experiment Station developed a broad classification of soils based on the parent materials from which they were derived. Under this system, Orono’s soils fall into four classifications:

- *Loamy and clayey soils in till and sediments that were deposited by glacial meltwater in lakes and marine waters.* Soils from this parent material are prevalent in the eastern part of Orono, including along the rivers, and the far western part of the Town.
- *Loamy soils in till derived mainly from several types of common rock (granite, schist, phyllite, gneiss).* In some of these soils, the downward movement of water is restricted by a basal layer (the till lying on top of the bedrock) of relatively impermeable material. The soils from this type of parent material extend either side of I-95 west to Kelley, Newman, and Bangor hills.
- *Very poorly drained soils in organic matter or lake or ocean deposits.* Soils from this type of parent material cover the mid-section of Orono and are associated with the Caribou Bog.
- *Loamy soils formed in loose tills.* The soils from this type of parent material cover the western part of Orono south of Pushaw Lake.

See Figure 4-2 at the end of this chapter.

The distribution of these soils affects locations that are best suited to forest and crop production, locations suitable for roads, utilities, and structural development, and, in the absence of public sewer lines, the designs of septic systems needed to support development.

Farmland soils: The USDA Natural Resource Conservation Service has rated certain soils as highly productive (i.e., as either “prime” farmland soils or farmland soils “of statewide significance”) for crops. Analysis of NRCS soils maps shows that about 22% of Orono’s land area – 2,599 acres out of a total of 11,654 acres – is covered by highly productive farmland soils. However, most of these soils are in the immediate Penobscot and Stillwater Branch river valleys, which is where Orono village grew and where the University of Maine settled. As a result of this historic growth, combined with the gradual spread of development into rural sections of Town, it is estimated that fewer than 800 acres of highly productive farmland soils are on vacant parcels of at least 5 acres or on 20+ acre parcels that have a single-family homes but due to their size may have farming potential. Of these, about 300 acres are in the Forestry & Agriculture zoning district, about 300 acres are in districts zoned for development, and the remainder are in shoreland or low density residential zones. **See Figures 4-3 and 4-4** at the end of this chapter.

Woodland soils: Except for the Caribou Bog, most of Orono is covered with soils that have high potential for forest production. Within this extensive area are small patches of exceptional woodland soils with very high potential. These are principally south of Kelley Road and along Essex Street in the far western part of Town. **See Figure 4-5** at the end of this chapter.

Soil Suitability for Subsurface Wastewater Disposal: Subsurface wastewater disposal is regulated by State rules through the local plumbing inspector. The rules designate the sizes and designs of septic system leach fields based on soil profiles, taking into account depth to bedrock and depth to groundwater. Certain soils, such as those comprising the Caribou Bog and other hydric soils (indicative of wetlands), cannot be used for subsurface wastewater disposal.

The section of Orono served by public sewer is not affected by the rule. However, most of the geography of the town – the entire area west of I-95, in the Kelley Road corridor, and south of Kelley Road – relies on septic systems. Significant portions of soils south of Kelley Road and in the mid-section of town between I-95, Taylor Road, and the bog are suitable for septic systems. The Caribou Bog and much of the land around Pushaw Lake and outer Forest Ave. are either prohibitive or more constrained for septic system use. **See Figure 4-6** at the end of this chapter.

C. Topography

Overview: The topography of the Town dictates drainage patterns and influences the location of roads, the ability to collect wastewater by gravity for transport to the wastewater treatment facility, and many other day-to-day aspects of Orono life.

Orono lies in the Lower Penobscot River Valley, with slopes that rise up from the river. The rise is quite steep at first, with nearby ridges such as at Piney Knoll on Marsh Island, and with scenic vistas across the river valley, such as from the Penobscot Valley Country Club and other spots along the southern end of Route 1. The land then slopes more gradually between Main Street and Interstate 95 and on the University of Maine Campus before rising to hills west of I-95 that mark the high spots in Orono: Kelley Hill, Bangor Hill, and Newman Hill.

West and south of these hills is the large, flat complex of the Caribou Bog, extending to and around Pushaw Lake. The land rises to higher and dryer elevations in the southwest corner of the town, near the Bangor city line. **See Figure 4-7** at the end of this chapter.

Watersheds: The topography divides into watersheds, along ridges or high points that determine the flow of rainwater as it hits the ground. A watershed is the area within which rainwater hitting the ground flows to a common point. Watersheds can be thought of at a large scale – for example, the Town of Orono is entirely within the huge watershed of the Penobscot River. But for local land use planning, it is useful to subdivide watersheds into smaller areas, each associated with a notable water body or segment of a water body.

Orono can be divided into five principal watersheds. From west to east, they are:

- The far western corner of the Town that drains to Kenduskeag Stream;

- The large central portion that drains to Pushaw Lake;
- The northeast portion that drains to the Stillwater Branch;
- The eastern-central portion that drains to Johnny Mack Brook en route to the Penobscot River; and
- The eastern half of Marsh Island and the area south of Kelley Road, both of which also drain to the Penobscot River, either directly or via smaller streams (each with their own small watersheds).

See **Figure 4-8** at the end of this chapter.

If there are water quality impacts from stormwater runoff, failing septic systems, or other nonpoint discharges, or localized flooding impacts from development, the impacts will turn up in the waterbodies within the watershed in which the source of pollution or land use activity is located.

D. Water Bodies

Rivers: Orono owes its existence to the fact that the Penobscot River and its Stillwater Branch re-converge here. The Town was founded on the food, water, and power resources that the rivers provided.

Penobscot River: Orono has 5.2 miles of shoreline on the main stem of the Penobscot River. The river is statutorily classified Class B, meaning that the State considers the waters clean enough for drinking water supply after treatment, for recreation in and on the river, and as habitat for fish and other aquatic life.

The Penobscot River watershed, including the main stem and its tributaries, has hosted dozens of dams for many years – 113 as of 2011, including 20 that produce power and many that control water flows. While these dams are important to the production of renewable energy and historically to the forest industry, they also blocked 11 species of sea-run fish, including Atlantic salmon, from their breeding grounds. In 2004, in a far-reaching multi-party agreement among dam owners, federal and state regulators, Penobscot Indian Nation, and environmental organizations, a river restoration program was approved. The agreement called for removal of the Veazie Dam just south of Orono and of the Great Works Dam in Old Town just north of Orono and the bypassing of the Howland Dam. The agreement also permitted expansion of hydropower elsewhere, including on the Stillwater Branch, so that there would not be a net loss of hydropower production.

In 2010, as part of the agreement, the Penobscot River Restoration Trust acquired the three dams from Black Bear Hydro (formerly PPL Corporation, which, in turn, had acquired the dams from Bangor Hydro Electric Corp.) and has been responsible for their removal or bypass. The Great Works Dam was removed in 2012 and the Veazie Dam in 2013. Orono's frontage along

the Penobscot is not greatly affected by the removals, though above the Veazie Dam a new width of land is now exposed during normal flows and may offer a new recreational opportunity.

As indicated in Chapter 10 (Parks and Recreational Facilities), the Penobscot River Restoration Trust assumed ownership of a boat launch off Union Street as part of its acquisition of the dams, and it will deed it to the Town.

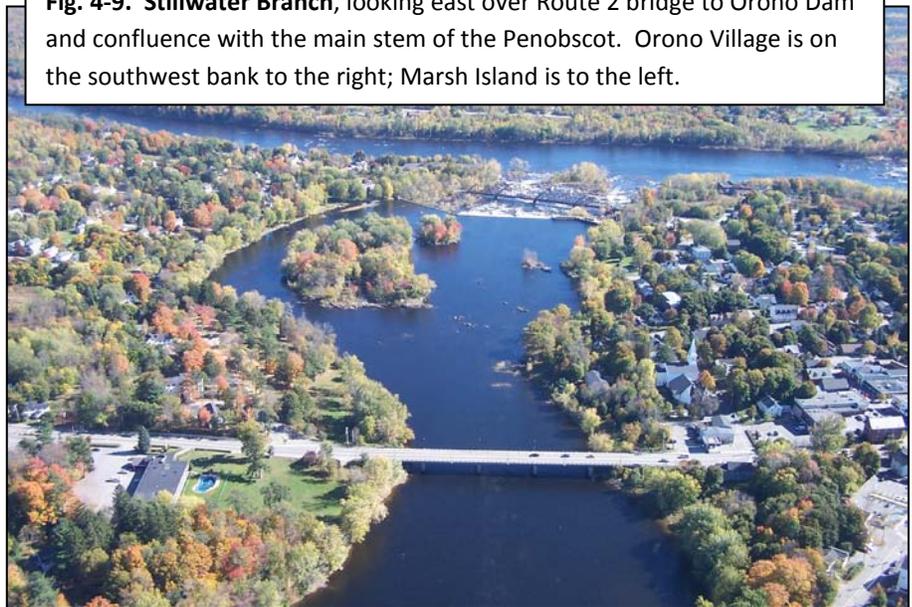
The Penobscot River also is important as the receiving waters of the Orono Wastewater Pollution Control Facility, which is discussed in Chapter 8 (Municipal Services and Infrastructure).

Stillwater Branch: The Stillwater Branch parts from the main stem of the Penobscot north of Orson Island, sets Marsh Island apart from the mainland of Orono, and rejoins the main stem at the southern tip of Marsh Island, just below Orono downtown and village. Orono has 4.3 miles of frontage along both banks of the Stillwater. It is also a Class B river and is noted for its flat water recreation (in summer; flows are swift in spring) and as a small mouth bass fishery. Orono has three public parks (Brownie's, Webster, and Summer Street) along the Stillwater, and a popular river trail runs along its western bank from Main Street to Old Town.

As part of the Lower Penobscot River Settlement Agreement, Black Bear Hydro in 2009 refurbished the Orono Dam, which had been mothballed since the 1990s, and put it back into production; and in 2013 the company completed a second powerhouse adjacent to the dam. The installed capacity of the older powerhouse is 2,780 kW and of the newer one, 3,738 kW, for a total installed capacity of 6,518 kW.

Black Bear Hydro also operates and is similarly expanding the production capacity of the Stillwater Dam in Old Town, just north of Orono's town line (total installed capacity of 4,179 kW).

Fig. 4-9. Stillwater Branch, looking east over Route 2 bridge to Orono Dam and confluence with the main stem of the Penobscot. Orono Village is on the southwest bank to the right; Marsh Island is to the left.



Named Streams:

Johnny Mack Brook - Johnny Mack Brook begins west of I-95 near the intersection of Forest Ave. and Stillwater Ave. It travels southeasterly beneath I-95, across mostly vacant lands behind the Town school property and the Sailor and Page Place developments, under Route 2, and through the Lane Construction lands en route to the Penobscot River, exiting in the Basin neighborhood. The brook supports a native brook trout population at least above Route 2, which, according to the Department of Inland Fisheries and Wildlife, is somewhat unusual in this area of the State. It is bounded by a shoreland Resource Protection zone. Proposed crossings of the stream must demonstrate to the Planning board that there is not a reasonable alternative and, if there is not, must use culvert designs that allow for fish passage.

Great Brook – The southwest corner of Orono, in the vicinity of Essex Street, drains to Kenduskeag Stream via Great Brook. Great Brook begins in the western most part of Orono and joins Kenduskeag Stream at Six Mile Falls in Bangor. As noted in Chapter 6 (Significant Rural Resources), its headwaters include important wildlife habitat.

Pushaw Lake: Pushaw Lake extends from the Town of Hudson in the north to Orono in the south, with most of its shoreline in the intervening City of Old Town and Town of Glenburn. **See Figure 4-10** at the end of this chapter. Its watershed includes Caribou Bog. The lake has a surface area of 5,056 acres, and it flushes – *i.e.*, replaces its water – 1.96 times per year on average. It is a shallow lake, with a maximum depth of 28 feet and a mean depth of 11 feet.

The Maine Department of Environmental Protection and volunteers in the Volunteer Lake Monitoring Program have been testing water samples from Pushaw Lake since 1974. When the dissolved oxygen levels near the bottom of a lake get very low, phosphorus that is normally chemically bound in the sediments of the bottom are released into the water. Phosphorus is typically the “limiting factor” for the production of algae – that is, the other requirements for algae are naturally present in the environment, and when phosphorus is added to the mix, it acts as a fertilizer for algal production. Sources of excess phosphorus can come from human activities on the land: in storm water runoff that carries sediments and other phosphorus bearing materials to streams feeding the lake and in septic system seepage, for example.

When algae bloom, the blooms use up dissolved oxygen in the water and can suffocate fish and other organisms. Once the water quality degenerates to the point where algae bloom, it is difficult and costly to restore the health of the lake. Algal blooms also have serious effects on lakeside property values.

According to DEP, the potential for nuisance algal blooms on Pushaw is low to moderate. The lake’s resistance to blooms seems to be aided by the fact that it is naturally colored – and therefore light-limited – likely as the result of dissolved organic matter draining from Caribou Bog or other natural sources. This is important, because total phosphorus levels (ranging in the water column from 10 to 22 parts per billion, with an average of 14 ppb) are high enough to

support algal growth, but sunlight apparently cannot penetrate to the bottom levels where phosphorus is highest in the sediment.

Other indicators have been fairly steady and favorable, but, as noted by the Pushaw Lake Association in its analysis of the data in 2010, certain indicators have trended in a long-term, negative direction. Mean secchi disk readings – a measure of water clarity – were consistently at or above 4 meters for much of the 1990s; they have been in the 3.0 – 3.5 meter range for the last decade. On the other hand, dissolved oxygen levels are at healthy levels, in the range of 8 to 10 parts per million during late summer at the surface and 7 to 9 ppm near the bottom. DEP reported in 2011 that “recent dissolved oxygen profiles show no DO depletion in deep areas of the lake.”

Although only the southern end of the lake is in Orono, it is an important recreational and seasonal home resource, and the many seasonal (and year-round) residences there are a significant part of the Town’s tax base. The properties in Orono on the lake’s shores and on the roads leading down to the lake had a total assessed value in the range of \$20 million as of 2011.

E. Nonpoint Source Pollution Control

Since the 1970s, the Federal Clean Water Act has regulated the discharge of pollutants to water bodies through pipes – so-called point source discharges – including from sewage collection and treatment systems, industrial facilities, and other well defined sources. The Act also defines and regulates so-called non-point source pollution – pollution that reaches water bodies from diffuse sources, primarily storm water runoff.

The Environmental Protection Agency, directly and through state environmental agencies, accelerated its regulation of nonpoint source pollution under the Act in the 1990s, with particular attention given first to urbanized areas in large metropolitan regions, and then, in the early 2000s, urbanized areas in small metropolitan regions, including the Bangor Metro Area.

The area of Orono generally east of I-95 is part of Bangor Metro’s urbanized area and is, therefore, a so-called Small MS4 community – meaning a municipality with a regulated Municipal Separate Stormwater Sewer System. “Separate” refers to the storm water system that is separate from the sewage collection and treatment system. It includes all of the streets, gutters, ditches, catch basins, and other channels owned by the Town that collect and convey stormwater to streams, rivers, and other state waters.

Orono, like most MS4 communities, is licensed to allow stormwater to be discharged to water bodies. The license is in the form of a General Permit issued by the Maine DEP every five years. To be in compliance with the General Permit, the Town must undertake a variety of Best Management Practices – including operating procedures (such as street sweeping and catch

basin cleaning), collection and treatment, regulation of development, education and outreach, and other practices aimed at reducing and treating the flow of stormwater to water bodies.

Orono does so through the Public Works Department's operating practices; the adoption and enforcement of ordinances that limit new stormwater discharges from development and that prohibit the discharge of hazardous substances to the stormwater system; and education and outreach. The Town is a member of the Bangor Area Stormwater Management Group, through which the Bangor Metro MS4 communities cooperate on education, outreach, and planning needed to help comply with the General Permit's requirements. In 2008, the Town updated sections of the Land Use Ordinance dealing with storm water management and erosion control to be consistent with State law and the General Permit. The storm water management and erosion control standards apply townwide, not just in the urbanized area.

The University of Maine is its own "MS4" entity and, like the Town, is required to employ Best Management Practices to manage stormwater. Because the University's and the Town's stormwater systems interconnect in a number of places – such as along College Ave. – they have a Memorandum of Understanding to cooperate on managing discharges to their respective systems.

F. Flood Plains

The rivers and streams of Maine have always overflowed their banks at times, but the damage of the flooding has increased over the decades as development intensified close to their shores. In the 1970s, as part of a Flood Insurance Program, the Federal Emergency Management Agency began mapping the Base Flood – also known as the 100-year flood. The 100-year flood is a statistical concept that considers both the severity of a flood and the likelihood of it occurring. The 100-year flood is defined as a flood that has a one percent probability of occurring in any given year.

As a town that has joined the National Flood Insurance Program, Orono has been provided with Flood Insurance Rate Maps that map the 100-year (and 500-year) flood boundaries. These maps are used by communities in their regulation of shoreland areas, by financial institutions considering mortgage applications, by engineers designing roads, utilities and bridges, and by others for multiple purposes. The maps are periodically updated as better topographic and other information becomes available. The official maps for Orono date back to 1978. **Figure 4-11** at the end of this chapter. This map superimposes the 100-year floodplain on topography and also shows the floodplains in relation to mapped wetlands.

Orono has two general areas that are subject to flooding: the Pushaw Lake-Caribou Bog area and the Stillwater and Penobscot River banks. During 100-year floods, Pushaw Lake and the bog essentially become one continuous water body. The flooding along the Penobscot River

and Stillwater Branch is less extensive but affects developed areas of town. Significant areas that are within the rivers' 100-year floodplain include:

- An area between Union St. and the railroad tracks
- The north end of Ayers Island and opposite river bank up to the railroad bed
- A floodplain wetland along the Penobscot River on Marsh Island, near the Orono Land Trust's Marsh Island Preserve; and
- Along various stretches of the Stillwater River

Floods have occurred periodically in both the Pushaw-Caribou Bog area and along the Penobscot and Stillwater. A 1923 flood was calculated as a 120-year flood, and a 1936 flood, while not as high, was particularly destructive because of huge ice jams, causing extensive damage to bridges, streets, structures, and property. Flooding has occurred periodically in most decades since. Flood stage on the Penobscot at Eddington (which is across the river from Orono) is at approximately 18 feet. The river crested at 23.6 feet in April 1987, according to the National Weather Service, when there was serious flooding statewide, and at 19.6 feet in May 2008.

The floodplain should serve as a protective buffer between the river's waters and development. That buffer is lost or diminished when development intrudes upon it. When buildings in a floodplain are destroyed by flooding, the question arises as to whether public policy should assist in re-building in a more flood proof way (by, for example, elevating the structure), or whether the better strategy is to relocate the buildings. In any case, the best management practice is to limit new floodplain development to the greatest extent practical, and to zone these shoreland areas accordingly.

G. Issues and Opportunities

Stormwater Management: The primary surface water quality challenge in many municipalities, including Orono, is minimizing nonpoint source pollution by managing stormwater runoff. The need arises both in the urbanized area of Orono, where a higher percentage of the land is covered by impervious areas (roofs and pavement), and in the Pushaw Lake watershed. Further, the demands on stormwater management may increase with climate change.

Preventing impairment of urban streams: In other communities, the impairment of urban streams as a result of excessive nonpoint source pollution is proving difficult and expensive to remedy. Orono has no "urban impaired streams" but needs to be vigilant to prevent such future impairment, especially of Johnny Mack Brook, which drains a portion of the in-town area.

Maintaining the water quality of Pushaw Lake: The towns that host Pushaw Lake and the homeowners near its shoreline are fortunate that natural conditions appear to give

the lake added protection from algal blooms. However, the lake is not invulnerable, and rising phosphorus levels may one day push the lake to its capacity. Preventive and remedial measures are warranted in each of the host municipalities, including Orono.

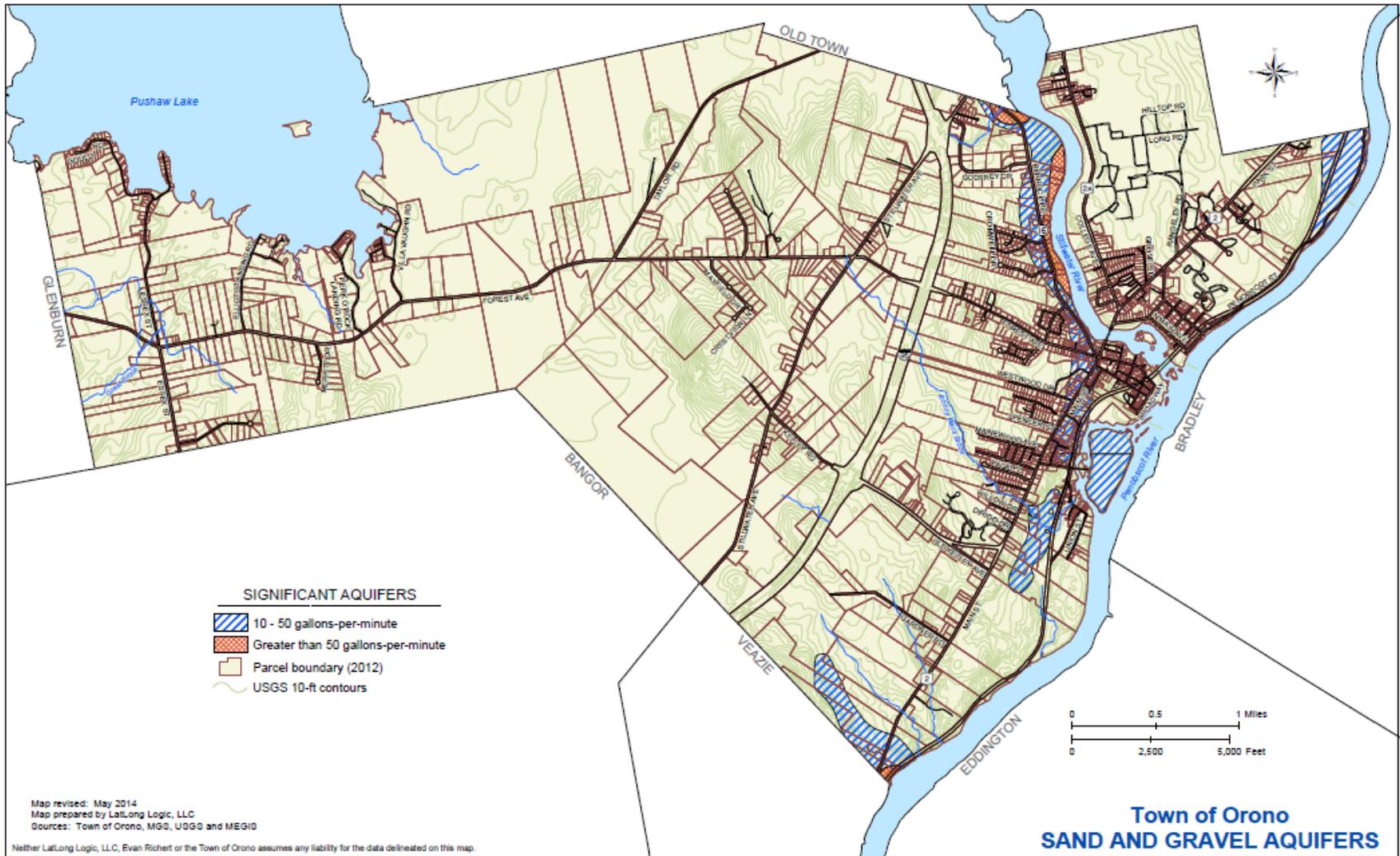
Impacts of Climate Change: Climate change may change precipitation patterns, stormwater flows, and stream flows. The Town will need to adapt to protect its transportation, drainage, recreational, and other infrastructure.

Rivers and Lake as Destinations: As a university town, thousands of visitors come to or through Orono annually. The Stillwater Branch, the Penobscot's main stem, and Pushaw Lake all are noteworthy for their beauty, history, accessibility, and potential for multiple use. They could become stronger visitor attractions that would benefit individual businesses, Downtown, and the community as a whole.

Aquifer Protection: The sand and gravel aquifer in the Stillwater river valley is Orono's and Veazie's source of public water and needs ongoing protection.

Recommended to Council June 2014

Figure 4-1. Sand and Gravel Aquifers



Recommended to Council June 2014

Figure 4-2. Major Soils Classifications in Orono

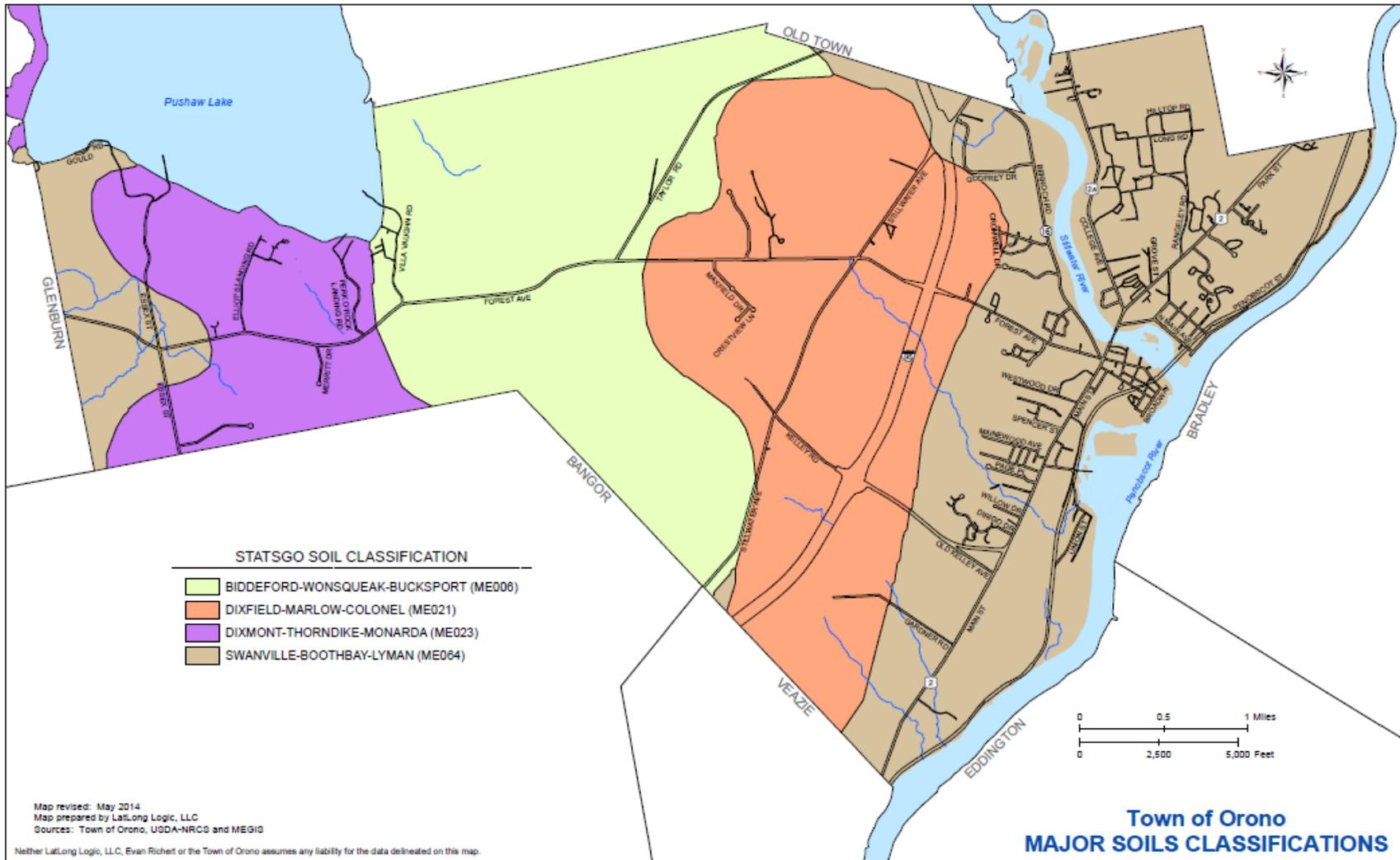


Figure 4-3. High Productivity Farm Soils and Potential Availability for Farming

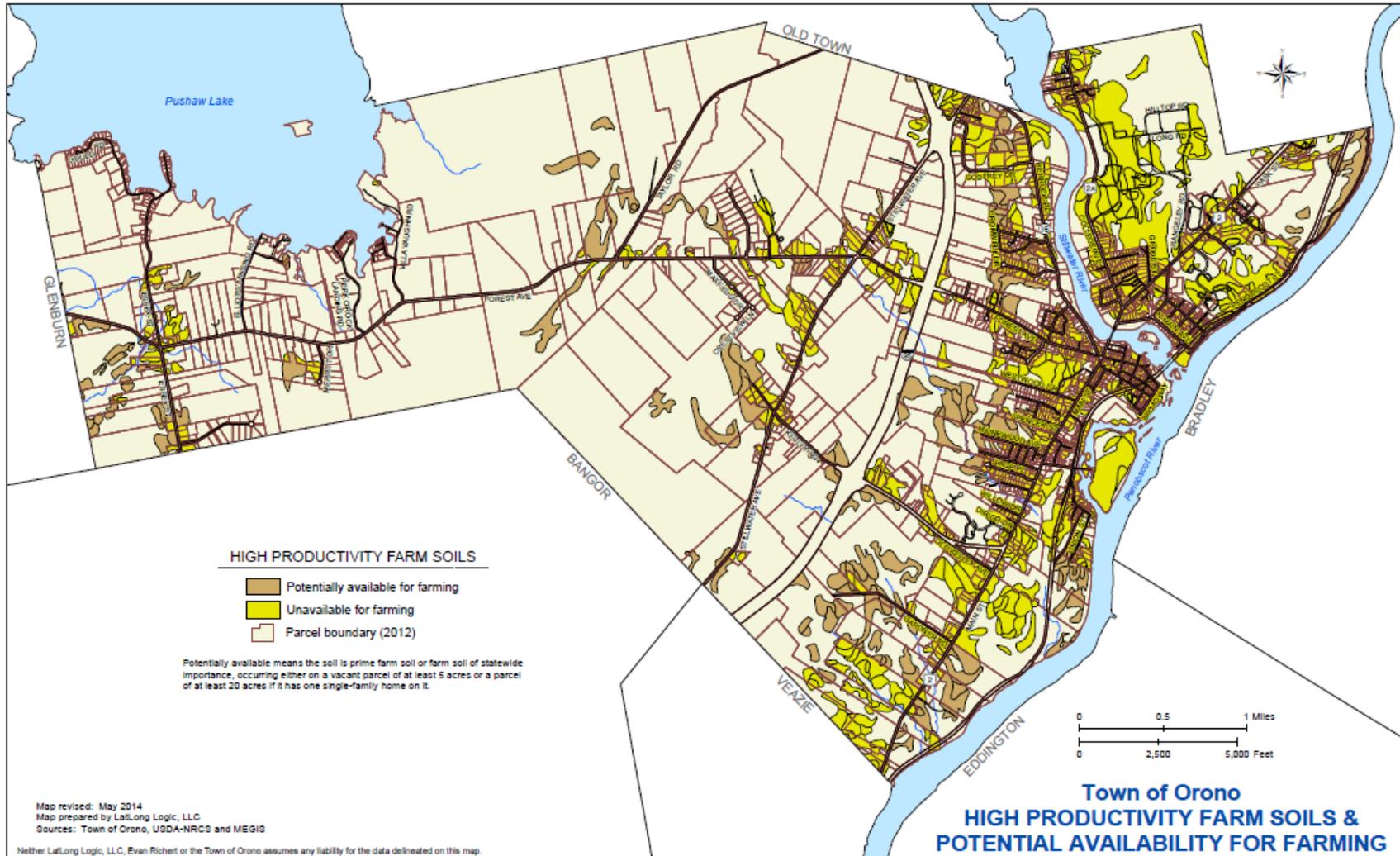


Figure 4-4. Potentially Available High Productivity Farm Soils by Zoning District

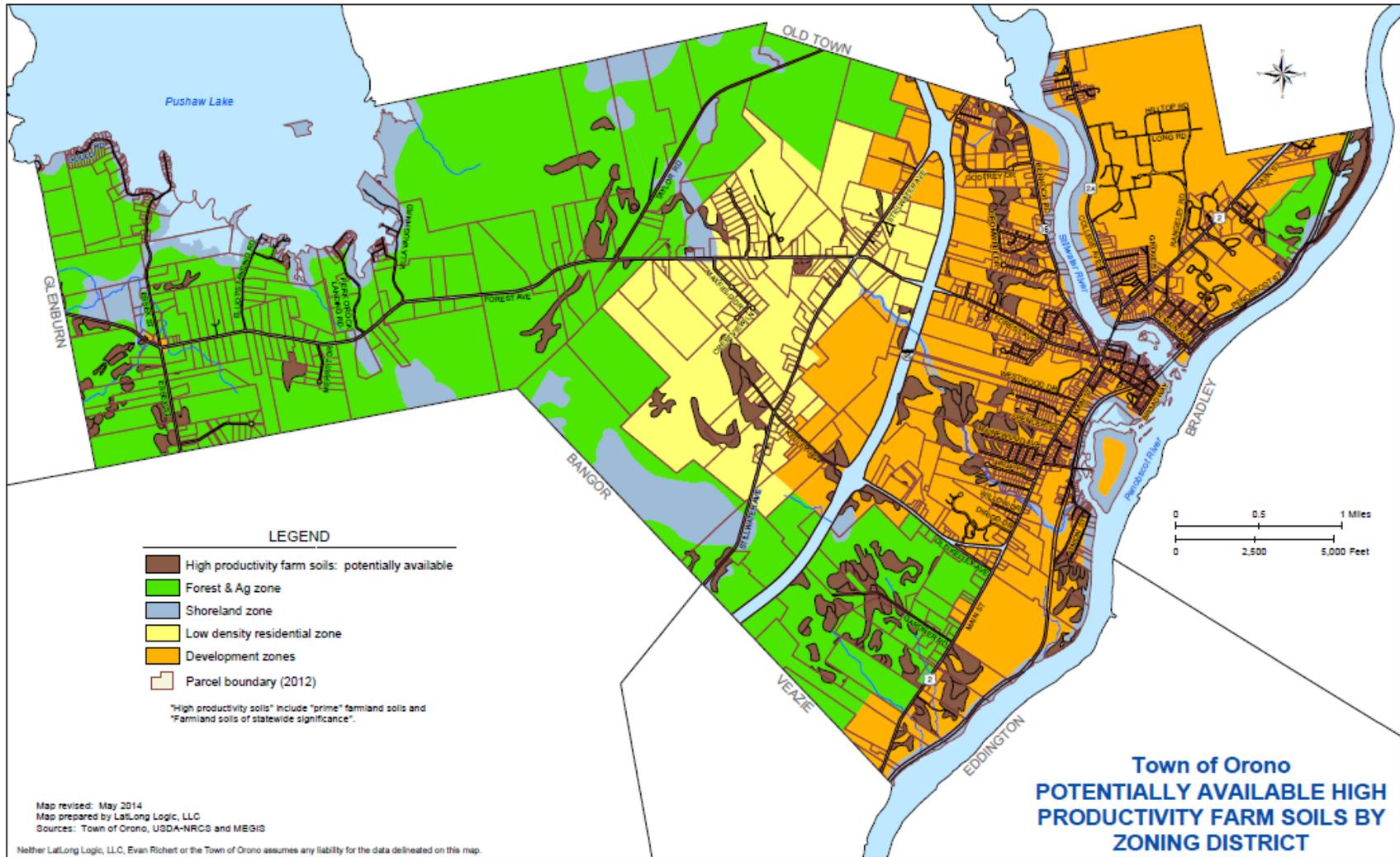


Figure 4-5. Woodland Productivity Soils

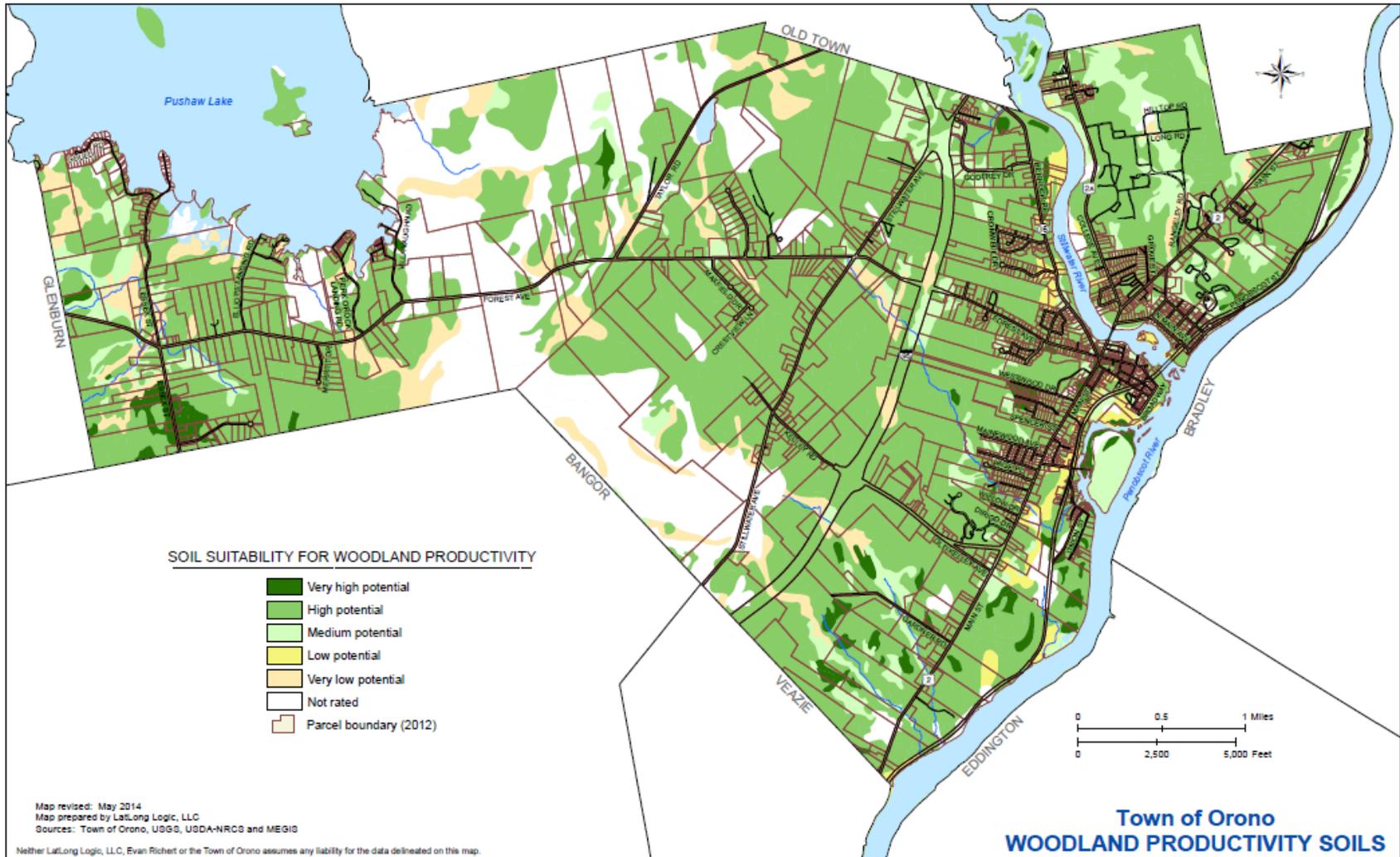


Figure 4-6. Soil Suitability for Development

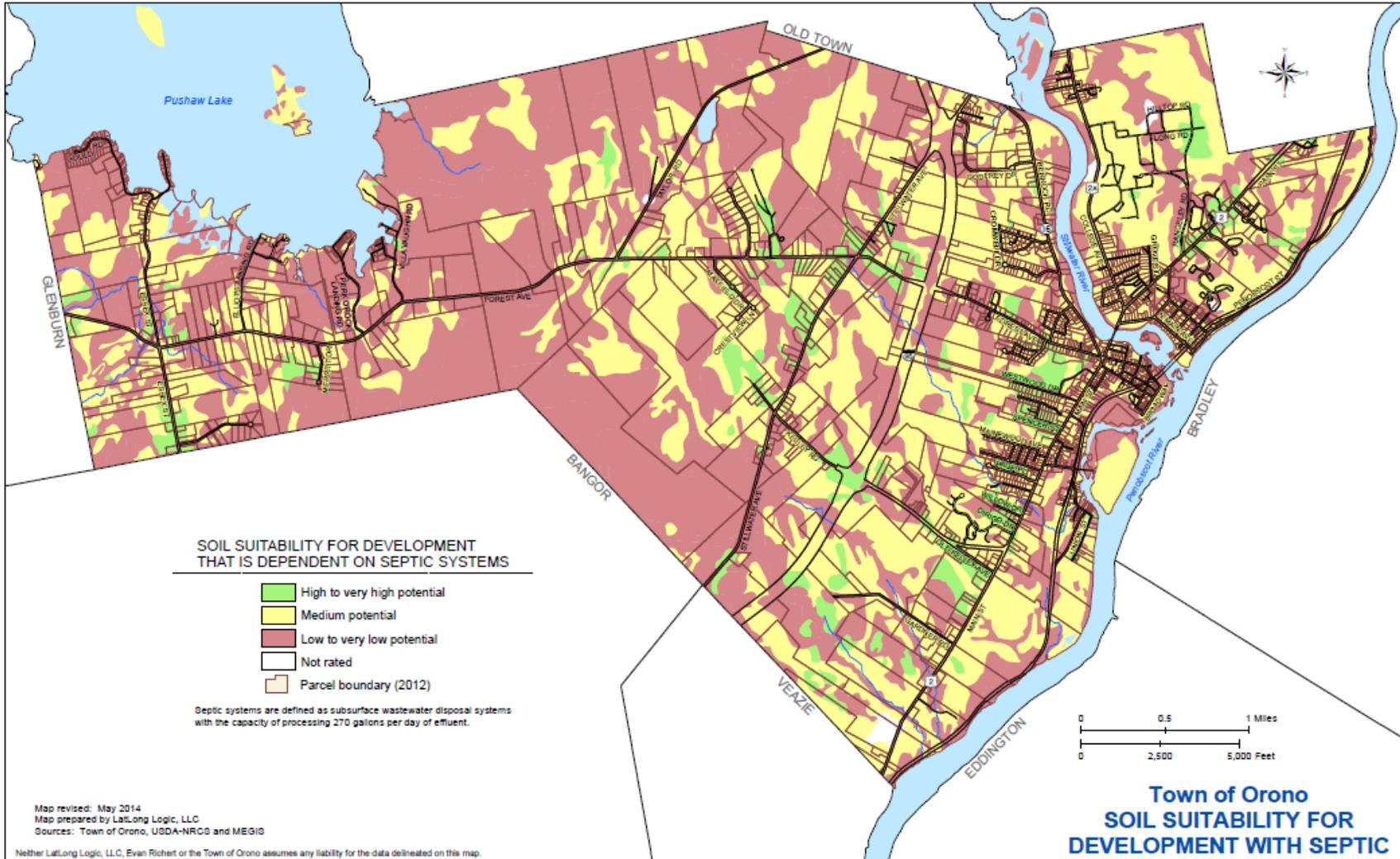


Figure 4-7. Topography

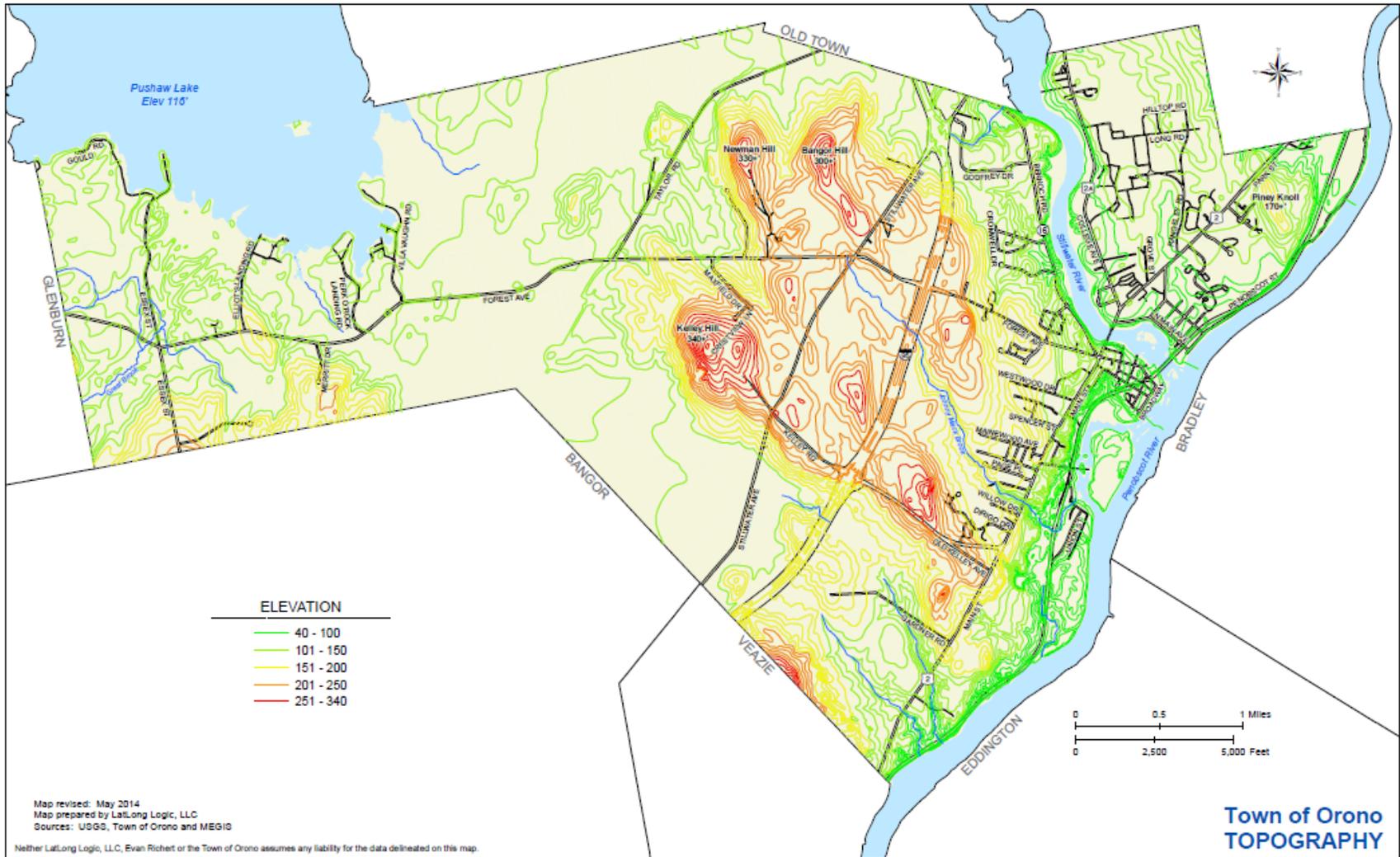


Figure 4-8. Watershed Boundaries

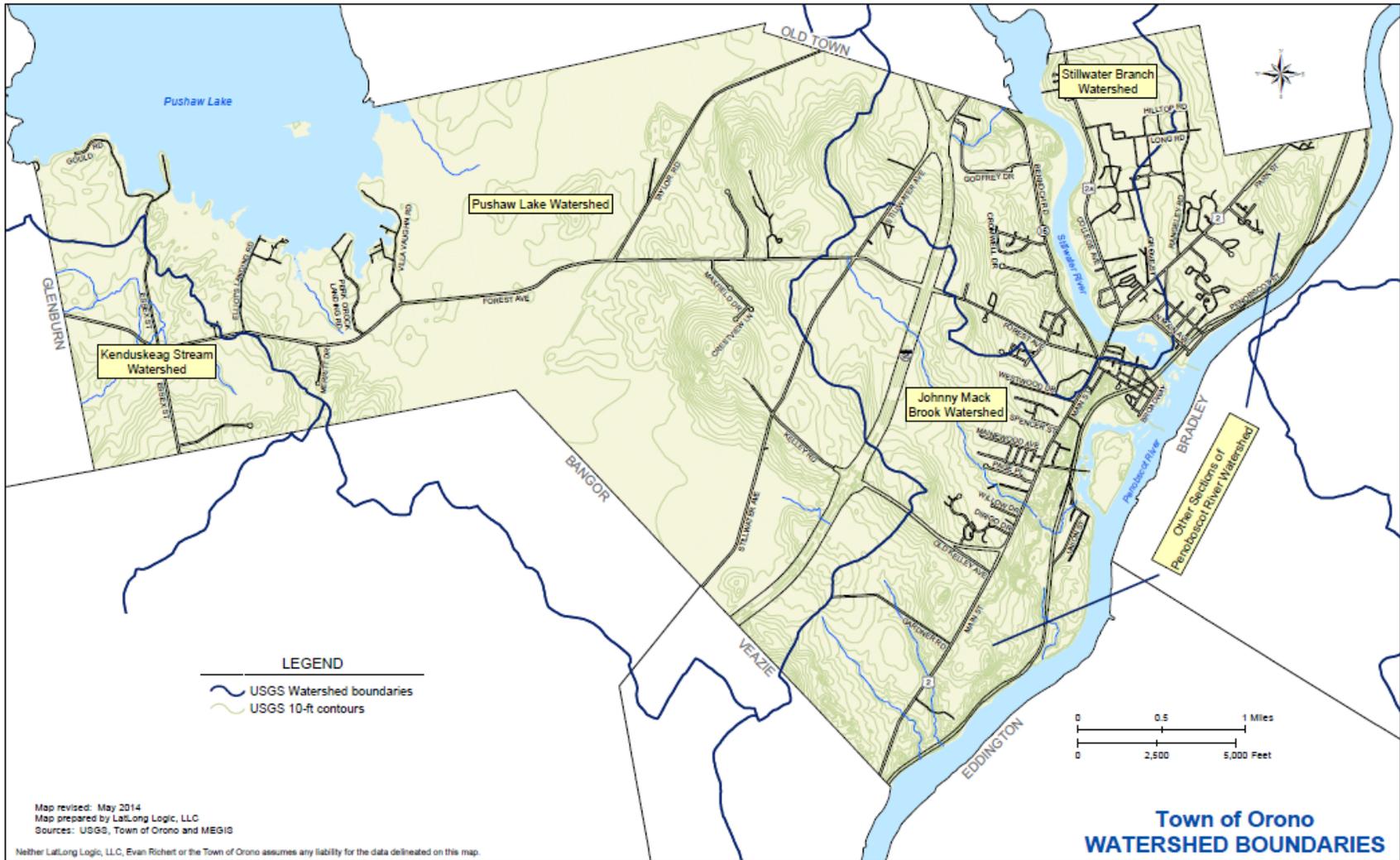
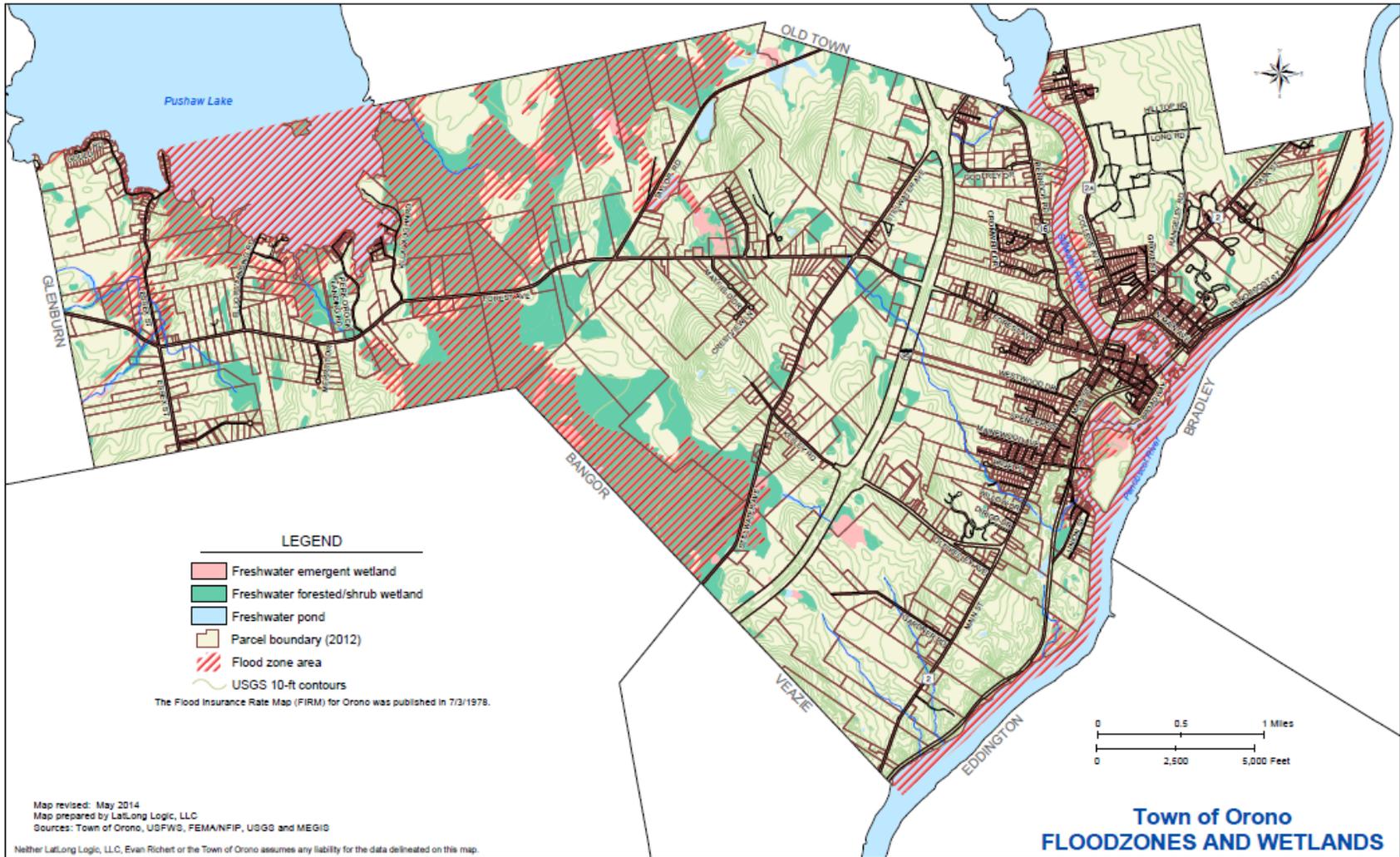


Figure 4-10. Pushaw Lake and Its Watershed



Recommended to Council June 2014

Figure 4-11. Flood Zones and Wetlands



CHAPTER 5. SIGNIFICANT RURAL RESOURCES: FARM, FOREST, WETLAND, AND WILDLIFE HABITAT

A. Farm and Forest

Local farming and forestry do not play significant, direct roles in Orono's economy in terms of jobs and income, but they touch town life in several ways.

Farming: In the previous chapter, we saw that prime farmland soils are concentrated in the Penobscot River and Stillwater Branch river valleys. These valleys also are where the village, in-town neighborhoods, and the University of Maine campus developed over time. As a result, relatively small acreages remain available for commercial farming (although farming does not entirely depend on such soils). A look at land cover in Orono similarly shows little land in field, crops, or pasture. See **Figure 5-1** at the end of this chapter. Most of what exists is concentrated in the Route 2 corridor south of Kelley Road, where pasture is maintained for horses and hay.

Local Farming: Nevertheless, the production of local food for local consumption is part of Orono's lifestyle and economy. The most evident sign is Orono Farmers' Market, a local institution with a summer market (May to November) held at the University of Maine's steam plant parking lot; and a winter market (December to April) held in the Town's Pine Street parking lot in downtown. Between 25 and 30 farms participate in the Farmers' Market. They come from 26 different communities, including Orono, and from as far as 80 miles.

Orono also provides land for community gardens, including one started and maintained by John Jemison, a soil and water quality specialist with the University of Maine Cooperative Extension Service, located next to the Orono (Birch Street School) Senior Center. The produce is provided to senior citizens.

The University of Maine is a center for agricultural sciences and education. The College of Natural Sciences, Forestry, and Agriculture maintains research and teaching facilities at two nearby farms in Old Town: the Witter Farm on College Ave. adjacent to the main campus, with a focus on dairy and equine science, and Rogers Farm on Bennoch Rd., with a focus on sustainable agriculture research and education. University of Maine students also have run the Black Bear Food Guild since 1994. The Food Guild is a community supported agricultural endeavor that grows certified organic vegetables on two acres of land at Rogers Farm for delivery to guild shareholders.

Regulation: Agriculture is permitted in Orono by right, subject to the performance standards of Sec. 18-124 of the Land Use Ordinance, throughout the Forestry and Agriculture, Low Density Residential, and University zoning districts. It also is allowed with Planning Board review in

other districts, except High Density Residential and Village Commercial. Agricultural roadside stands and farmers' markets are allowed throughout the Town.

The keeping of barnyard animals is treated as a separate use and is also permitted in the F&A, LDR, and University zoning districts. In the Medium Density Residential district, one animal per acre of land is allowed with Planning Board review, provided the lot contains at least five acres, is appropriately buffered and fenced, and manure is properly stored away from water bodies and dwellings. Up to two small barnyard animals as pets are exempt from these standards.

In 2010, the Town amended the performance standards to allow the keeping of up to six domesticated chickens in the Medium Density Residential district for personal use, subject to the standards of Sec. 18-149 of the ordinance.

Land in the Farmland Tax Program: To encourage preservation of farmland, State law allows certain parcels to be taxed according to their current farming use rather than their potential fair market value for development. Qualifying farmland tracts contain at least five contiguous acres, are used for farming or horticultural activities (but can also have woodlands on the parcel), and contribute to a gross income of at least \$2,000 from sales of agricultural products. Land enrolled in the program can be withdrawn, subject to a penalty of back taxes.

Few parcels in Orono have ever enrolled in the Farmland Tax program. In 2012, parts or all of six parcels, containing 191 acres, were enrolled. This is the same number of acres identified in Orono's 1998 Comprehensive Plan. All of the acres are located south of Kelley Road, between Route 2 and I-95. See **Figure 5-2** at the end of this chapter. Some of the acreage is pasturage, some is a tree farm, and much of the remaining acreage actually is in woodland rather than farmland. Notably, this general area also has a concentration of the remaining, undeveloped prime farmland soils in Orono.

Forestry: In the previous chapter, we saw that much of Orono is covered by highly productive woodland soils. A look at the land cover map in **Figure 5-1** shows the large percentage of the Town that is wooded, including most of the undeveloped, in-town parcels and most of the area west of I-95 outside of the Caribou Bog (which itself is forested with species native to its environment).

Commercial Forestry: The woodlands of Orono are not part of the North Woods industrial forest, and their commercial use tends to supplement other uses on their parcels, such as homes and recreation. Individual parcels are logged from time to time for commercial sale but, for the most part, wooded parcels are managed for personal, small business, recreational, or educational use. One business parcel off Stillwater Ave. near Exit 193 is used as a staging and storage area for harvested materials, loam and gravel.

As with farmland, the State has a longstanding Tree Growth Tax Program (36 M.R.S.A. §§571 - 584-A) that allows qualifying parcels of forestland to be taxed according to their current,

forestland value rather than their potential market value for development. To qualify, a parcel must contain at least 10 acres of forest land, and the land must be used primarily for the growth of trees to be harvested for commercial use. Owners must manage the land according to accepted forestry practices designed to produce trees having commercial value. The parcel must have a forest management and harvest plan prepared by a licensed professional forester and certified as consistent with sound silvicultural practices. Parcels enrolled in the program can be withdrawn, subject to a penalty of back taxes. As of 2012, there were 35 parcels in Orono containing 1,556 acres enrolled in the program. See **Figure 5-2** at the end of this chapter. This total is up from 1,325 acres identified in Orono's 1998 Comprehensive Plan. Four of the parcels are in Orono's designated "growth" area, including property designed as a future business park at Exit 191 off Kelley Road. Most of the 35 parcels are large lots in the Forestry & Agriculture and Low Density Residential districts, south of Kelley Road and west of I-95.

The parcels within the Tree Growth Tax program are dominated by softwoods (41% of the total) and mixed wood acreage (43%). Hardwood acreage accounts for just 16% of the total. Assessed values of these parcels in 2012 ranged from \$106 to \$118 per acre, depending on species type.

Forested Tracts of Note: Past comprehensive plans, including the 1981 and 1998 plans, noted three forested areas of importance in the section of Town east of I-95, which historically has been the primary area of growth in Orono:

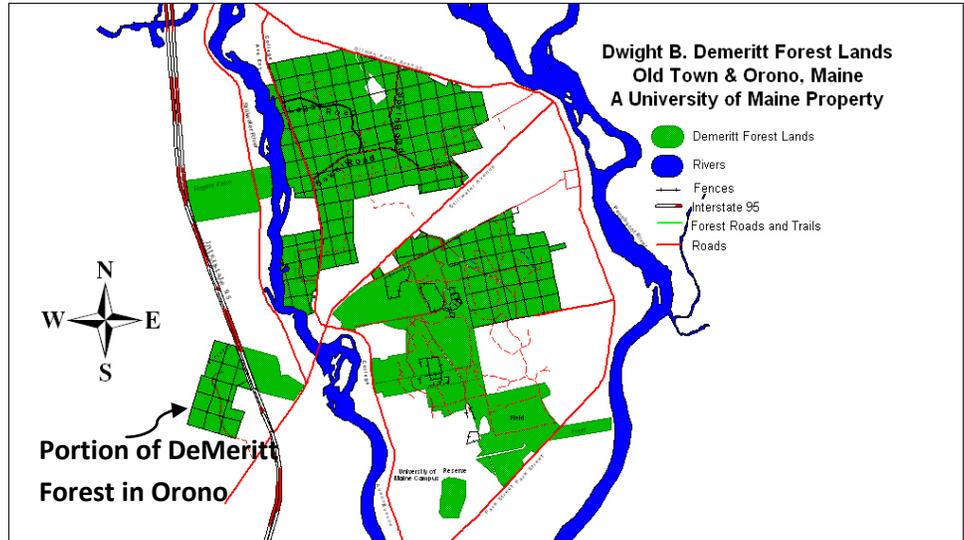
- The softwood stands that line portions of Route 2 from the south, approaching Kelley Road, considered an aesthetic element of this gateway into Orono;
- The wooded buffers around Johnny Mack Brook and other streams in the developed, eastern part of Orono, considered essential to the ecological health of these streams; and
- A stand located on the south side of Kelley Road, east of I-95, noted for its "mature hardwoods mixed in among a diversity of softwoods," serving multiple purposes, including preventing erosion in a fairly steeply sloped area (1999 Plan, p. 7-9).

However, these are only a few of the valued stands located in the eastern section of Orono. Others include, by way of example, Orono Land Trust's preserve on Marsh Island, including the so-called Piney Knoll property, which is now conserved land; and the woodlands on Town-owned preserves, including Sklar Park and the Jeremiah Colburn Natural Area.

Also of note are the **University of Maine's forested lands**, managed for research, education, recreation, wildlife, and storm water management. Most of these lands are in neighboring Old Town, surrounding the built-up campus in Orono. However, sections are in Orono, and the whole of the lands help to define the character of both Orono and Old Town. Included are:

- The DeMerritt Forest, acquired by lease in 1939 and by deed in 1955, contains about 2,000 acres and, in addition to forestry activities, offers more than 15 miles of trails. The majority of the forest is located between Stillwater Ave. and Gilman Falls Road in Old Town, but a large section extends south of Stillwater Ave. to Penny Road adjacent to the main part of the campus. Within Orono is an 89-acre block of the DeMerritt Forest off Stillwater Ave., near Exit 193, that is an

Fig. 5-3. Demeritt Forest Lands



important research venue for the University. See **Figure 5-3**, borrowed from the University of Maine website, in which the cross-hatched area is the DeMerritt Forest.

- Other forest preserves on the Orono campus have been fragmented over the years as the campus expanded. The University's 2008-09 Campus Master Plan calls for reconnecting sections of this forest by shrinking and re-foresting some of the campus' surface parking.
- The Fay Hyland Botanical Plantation is a 10-acre arboretum and botanical garden along the Stillwater River in Orono. It was established in 1934 and contains living examples of woody plants from Maine and throughout the world.
- The Lyle E. Littlefield Ornamentals Trial Garden is a 7-acre facility in Orono dedicated to research, teaching and demonstration. It houses a collection of more than 2,500 woody and herbaceous plants. A portion of the garden is open to the public.

Urban forestry: The National Arbor Day Foundation has recognized Orono as a Tree City USA. The Tree City USA program, sponsored by the foundation in cooperation with the USDA Forest Service and the National Association of State Foresters, provides recognition for urban and community forestry programs in towns and cities.

Article 38 of Orono's Code of Ordinances establishes both a Tree Board and a Tree Warden to regulate the planting, maintenance, and removal of trees along public streets and in public parks and other municipal-owned property. The Tree Board includes members trained in arboriculture. The Tree Warden is presently the Director of Public Works and is directed to act in consultation with the chair of the Tree Board. Any planting, pruning, removal or other disturbance of a public tree requires a permit from the Tree Warden.

B. Wetlands

National Wetlands Inventory: Significant sections of Orono are covered by wetlands. These serve ecological, wildlife habitat, and aesthetic functions. They naturally regulate the flows of storm water and streams. They reduce flood crests and help to recharge the water table. And they play a critical role as natural water treatment systems. For all of these reasons, the alteration of wetlands is regulated by State and Federal environmental agencies. Wetlands associated with great ponds and rivers that are rated "moderate" or "high" value waterfowl and wading bird habitat by the Maine Department of Inland Fisheries and Wildlife and officially mapped by the State are zoned as Resource Protection districts in the Town's shoreland zoning ordinance. For the most part these wetlands are connected to the Caribou Bog.

The best general picture of wetlands in Orono comes from the National Wetlands Inventory of the U.S. Fish and Wildlife Service. See **Figure 5-4** at the end of this chapter. The inventoried wetlands in Orono can be categorized as falling into three major categories:

- The Caribou Bog, a unique natural community that covers the central section of Orono and is discussed in more detail in the next section of this chapter, under Wildlife Habitat;
- The wetlands associated with several streams that drain to the Penobscot River, the Stillwater Branch, Kenduskeag Stream, and Pushaw Lake (some of which extend within contours considerable distances from the streams themselves – see, for example, the wetlands in Sklar Park that are part of the Johnny Mack Brook drainage); and
- The wetlands associated with the floodplains of the Penobscot River and Stillwater Branch.

The NWI is a high level inventory. The boundaries of the wetlands shown should be considered approximate; and many wetlands are not captured by the inventory. Any new development requires high intensity, on-site surveys to determine the presence and exact boundaries of wetlands.

Vernal Pools: One type of wetland that is not picked up in the NWI is vernal pools. Vernal pools are ephemeral, usually small wetlands in shallow depressions that appear during the spring and

dry up during the rest of the year. Because of their hydrological cycle, they serve as critical breeding habitat for salamanders, wood frogs, and a crustacean species known as fairy shrimp. By breeding in these ephemeral pools, these species' eggs are safe from fish predators that inhabit year-round surface waters. However, they do provide sustenance for other wildlife, including waterfowl, hawks, snakes, and other predators. In 2007, "significant" vernal pools that meet certain criteria were officially recognized in Maine's Natural Resources Protection Act as significant wildlife habitat. The criteria relate to the numbers of egg masses of salamanders and wood frogs observed during the spring breeding season or to the presence of fairy shrimp. Development within 250 feet of a "significant" vernal pool requires a permit under the Act.

Vernal pools can be in many locations in a community and region but the only way to identify and evaluate them is through surveys during the Spring. This represents an unpredictable, time consuming, and potentially costly constraint to development. The best way to overcome this problem is to identify the pools and their significance in advance.

From 2008 – 2010, the Town partnered with Dr. Aram Calhoun, professor of wetlands ecology at the University of Maine and a national expert on vernal pools, to formally identify the location of possible vernal pools in Orono. With the help of citizens trained by Dr. Calhoun and her graduate assistant, Dawn Morgan, the team conducted field checks to verify that pools were, in fact, vernal pools and to gather the data required for the Department of Inland Fisheries & Wildlife to determine whether they met the criteria for "significant" vernal pools.

The project began with aerial photography and interpretation. The university team then organized two spring seasons of field visits (Spring 2009 and 2010), which were conducted only with the written permission of willing property owners. As a result of these efforts:

- 141 possible vernal pools were identified through interpretation of infrared aerial photography or during subsequent field visits. (It should be noted that experience has shown that approximately 70% of all possible vernal pools typically are identified by photo interpretation; vernal pools in some locations, such as conifer forests, frequently are missed). These possible vernal pools were located throughout the Town.
- Of the 141 possible pools, permission was given to go onto lands that contained 78 pools for field verification and data collection. Permission was not received to enter lands containing 63 of the possible pools.
- Of these 78:
 - 24 were deemed to be significant vernal pools under the terms of the Natural Resources Protection Act;
 - 39 were verified as vernal pools and most had salamander and/or wood frog egg masses, but not in the numbers that would qualify them as "significant";

- 15 were determined not to be vernal pools.
- The status of the 63 pools that were not field checked is unknown. These potential pools have been mapped and, if development or disturbance is proposed in the future, their status will need to be professionally determined at that time.

See **Figure 5-5** for the location of all of the initially identified, potential vernal pools and those that have been deemed by the Department of Inland Fisheries and Wildlife to be significant based on field data.

The Town has since continued its cooperation with the UMaine team and a companion community, the Town of Topsham, which also went through the vernal pool identification process. The UMaine team, the towns, and State and Federal regulators are researching an innovative, voluntary approach to vernal pool regulation that would relieve some of the constraints on development in designated, in-town “growth areas” as identified under Maine’s Growth Management Act, while providing larger scale and more certain protection to vernal pools and surrounding landscapes in outlying areas. Regulators consider this a potentially desirable approach for three reasons:

- Vernal pool species spend most of the year not in vernal pools but rather in surrounding uplands that may extend a considerable distance from the pools. These uplands, for the most part (*i.e.*, beyond 250 feet), are not regulated by the State and may not be regulated by the Federal agencies. The regulators are therefore interested in approaches that would extend protections to that larger landscape.
- In any given year, a vernal pool may not have the requisite egg counts to be deemed “significant.” This may vary from year to year, and in any case a pool with small numbers of egg masses may be important to the local ecology. But, under the NRPA, once a pool is deemed to be not “significant,” it is no longer protected under state law. The voluntary approach being researched would protect all vernal pools in rural areas of a town.
- At the same time, growth would not be as impeded in areas most suitable for it, near town services, schools and downtowns. Removing impediments to growth in designated “growth” areas may relieve growth pressures in outlying areas of a community and provide other environmental benefits.

C. Other Significant Wildlife Habitat

Unfragmented blocks of land: Wildlife is infinitely varied in its requirements for habitat, from ant hills and small vernal pools to thousands of acres for species such as black bear and Canada lynx. But if there is one common denominator, it is that the larger the blocks of intact land –

unfragmented by homes, roads, or similar intrusions – the greater the diversity of wildlife that is present. Many species of wildlife indigenous to Maine depend on “interior” lands – lands that are 500 feet or more away from any human edge, such as a road, house, lawn, or utility corridor. And this requires large areas of land: after accounting for a 500-foot deep edge effect, 10 acres of interior land requires an intact block of 63 acres.

Maine’s Beginning with Habitat program has mapped unfragmented blocks of land by community, based on land cover and other data. As shown in **Figure 5-6**, much of the Town west of I-95 has intact blocks of land, with most development arrayed along Forest Avenue itself (the mapping data are several years old and do not take into account a few more recent subdivisions at Crestview Drive, Grant Road and Great Brook). East of I-95, lands south of Kelley Road are largely intact, and narrower intact blocks of land lie between neighborhoods off Main St./Bennoch Road and I-95. These narrower blocks have less “interior” acreage than the larger blocks south and west.

Figure 5-6 also shows three large blocks of intact, interior forest land. These blocks extend from Orono into Bangor and into Old Town. The largest, with nearly 2,600 acres of interior forestland, encompasses the Bangor Woods, the Orono Bog and part of the Caribou Bog. The next largest, with more than 2,300 acres, is part of the wetland and woodlands complex associated with Pushaw Lake, from Orono through Old Town. The third, with 862 acres, includes Orono Land Trust property and easements and part of the DeMeritt Forest.

Caribou Bog: Caribou Bog (including the southern portion sometimes referred to as Orono Bog) dominates the geographic mid-section of Orono. It connects to Penjajawoc Marsh in Bangor to the south and extends through Orono along the east side of Pushaw Lake, and through Old Town and into Alton to the north. It is part of a wetland complex that forms an expansive peatland ecosystem that covers nearly 6,000 acres.

According to Maine’s Natural Areas Program, the Caribou Bog wetland complex contains one of the state’s best examples of a “domed bog ecosystem,” and partly for this reason is categorized as an “exemplary natural system.” Within the complex are black spruce woodland bogs, red maple woodland swamps, and dwarf shrub bogs. The peatlands harbor two rare plants (sparse-flowered sedge and swamp birch), and the complex as a whole provides specialized habitat for a number of species of birds and dragonflies, among other animals.

Large parts of the Caribou Bog wetland complex are owned by the University of Maine, State and local governments, or land trusts and are managed for conservation, education and recreation. These areas include portions of Penjajawoc Marsh in Bangor, the Orono Bog and Bog Boardwalk in Orono, lands on the southeast side of Pushaw Lake, and the 2,400-acre Hirundo Wildlife Refuge in Old Town.

The location of Caribou Bog is shown on **Figures 5-7 and 5-8** in combination with other wildlife resources, demonstrating its central role to wildlife habitat in Orono and beyond.

Deer Yards, Brook Trout Streams, and Inland Wading Bird and Wildfowl Habitat: These three types of habitats are among those deemed “significant wildlife habitat” under Maine’s Natural Resources Protection Act (as are “significant” vernal pools).

Deer yards: Deer yards are mapped, dense, mature or maturing conifer stands that provide relief to white-tailed deer during periods of deep snow cover. They allow deer to conserve energy during these winter conditions. If maintained, the yards can provide habitat for generations of deer populations. They also provide habitat and food supplies for other over-wintering species, such as fox, bobcats, fishers, and cross-bills. Two deer yards have been mapped in Orono by the Department of Inland Fisheries & Wildlife: one along the northern edge of Town adjacent to the Caribou Bog, and one in the southwestern corner, overlapping into Bangor. See **Figure 5-7**.

Wild Brook Trout Streams: Three streams in Orono have been identified by DIF&W as supporting wild brook trout. Two are unnamed streams tributary to Pushaw Lake: one enters the lake near Elliot Landing and the other on the east side of the lake opposite Moose Island. Both come out of wetlands associated with Caribou Bog. The third is Johnny Mack Brook, which, as mentioned in Chapter 4, rises near the intersection of Stillwater Ave. and Forest Ave. and runs through the built-up part of Town en route to the Penobscot River. A fourth mapped stream is a fragment that is connected to the wetland near Exit 191 of I-95. See **Figure 5-7**.

Inland Waterfowl & Wading Bird Habitat (IWWH): Waterfowl include wild ducks and geese. Wading birds include herons, glossy ibis, bitterns, and rails, for example. Wetlands rated by DIF&W as moderate or high value – based on size and type – are considered significant wildlife habitat. Eight such wetlands have been mapped in Orono. Two are along the shores of Pushaw Lake; two are within the Caribou Bog complex and two more are close by along Taylor Road (including one of the Taylor Bait ponds); one is at the headwaters of Johnny Mack Brook; and one is part of the wetlands adjacent to Exit 191 of I-95. See **Figure 5-7**.

Rare or Endangered Species; Species of Special Concern: DIF&W has identified six animal and plant species that are considered rare, endangered, or of special concern:

Name	Status	General Location
Arrowhead Spiketail (dragon fly)	Special Concern	Caribou Bog in vicinity of Forest Ave. and Taylor Rd.
Bald Eagle	Special Concern	Along the Penobscot River: one is in Old Town but its buffer area overlaps Orono; the other is on the shore just south of Ayers Island
Nantucket Shadbush	Threatened	Caribou Bog
Orono Sedge	Threatened	Several locations, including along Bennoch Rd north of Main Street intersection; near intersection of Forest Ave and Stillwater Ave; along Gardiner Rd.;

		near Old Kelley Rd and Main St; and several locations in or near Caribou Bog
Unspecified animal	Rare	Vicinity of Bennoch Rd and Forest Ave west of downtown
Sedge Wren	Endangered	Field between University Mall and Rogers Farm, primarily in Old Town
Water Stargrass	Special Concern	Wetland on southern shore of Pushaw Lake

Figure 5-7 shows the general locations of the Bald Eagles’ nests and the general location of the Orono Sedge along Bennoch Road, as well as the Caribou Bog.

Composite map: Because wildlife habitats frequently overlap – and derive their richness from such associations – it is useful to present a composite of some of the habitats discussed in this section. See **Figure 5-8**. One can see, for example, how multiple habitats converge in the Caribou Bog, yielding a biodiversity that is unique in the region.

D. Issues and Opportunities

Promoting/supporting food systems: With its location along I-95 and near the Bangor International Airport, proximity to farmlands in rural areas north and west, expertise at the University of Maine, and other competitive advantages, Orono may be in a position to help advance local and regional food systems. This may be through support of local agriculture, continued support and expansion of the Orono Farmers’ Market, and/or through support of a food hub for aggregating, distributing, and producing food products.

Conserving blocks of rural resources and wildlife habitat: One of the goals of the revisions to the Forestry and Agriculture District in the 2009 amendment to the Comprehensive Plan was to increase the chances that blocks of woodland, fields, and wildlife habitat would remain intact. The strategies suggested in the amendment have been implemented.

Balancing habitat protection and in-town growth: Site-specific techniques will be needed (using zoning, acquisition, and other tools) to balance desired protections and desired growth within the Town’s designated growth area.

Vernal pool regulation: In cooperation with State and Federal regulators, experts from the University, and other municipalities, there is an opportunity to flexible approaches to regulating certain types of resources, such as vernal pools, that will simultaneously better sustain the resources while enabling more efficient growth close to services and downtown.

Recommended to Council June 2014

Figure 5-1. Land Cover, Orono, as of 2001-2004

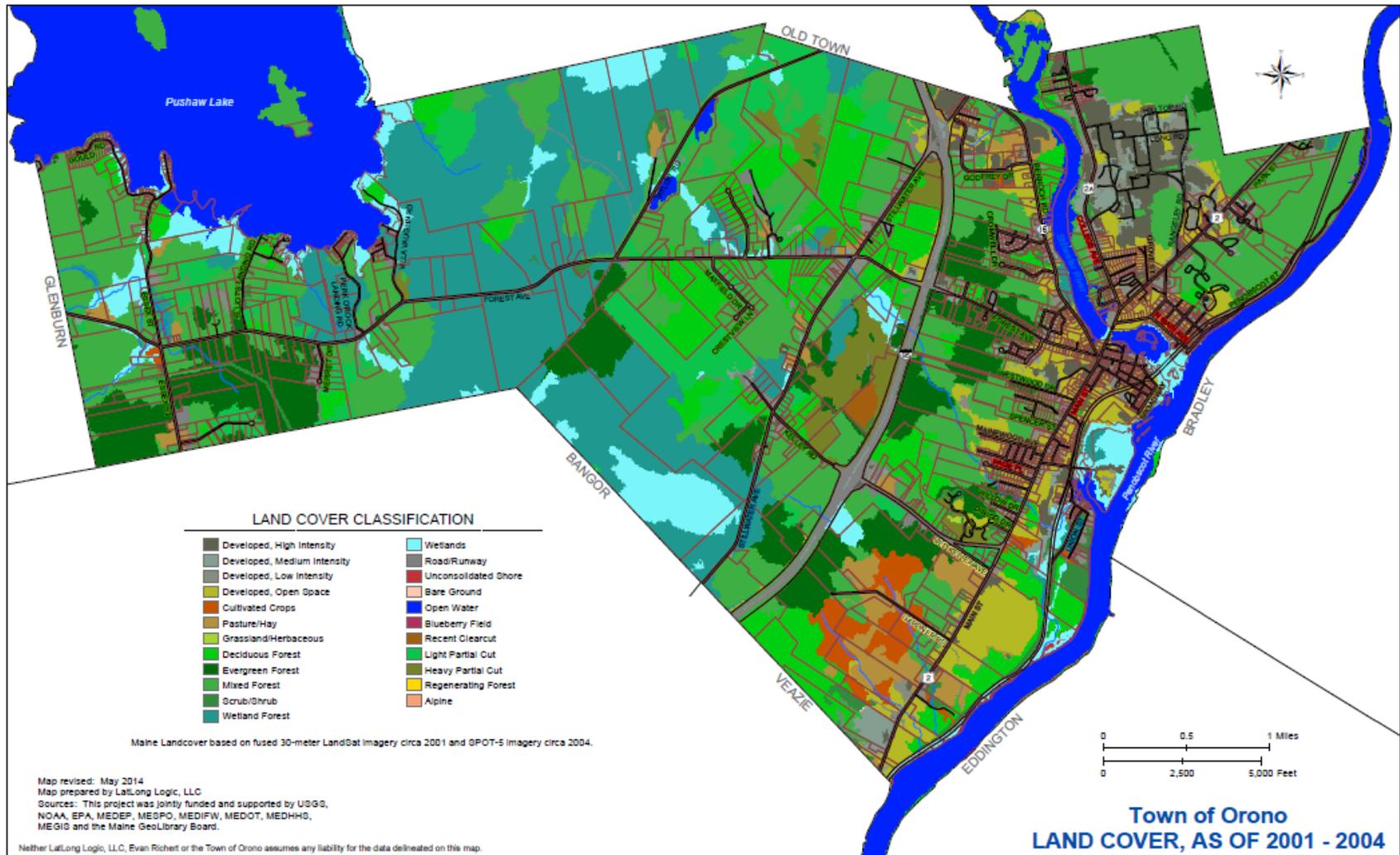


Figure 5-2. Parcels Enrolled in Tree Growth, Farmland, and Open Space Tax Programs, 2012

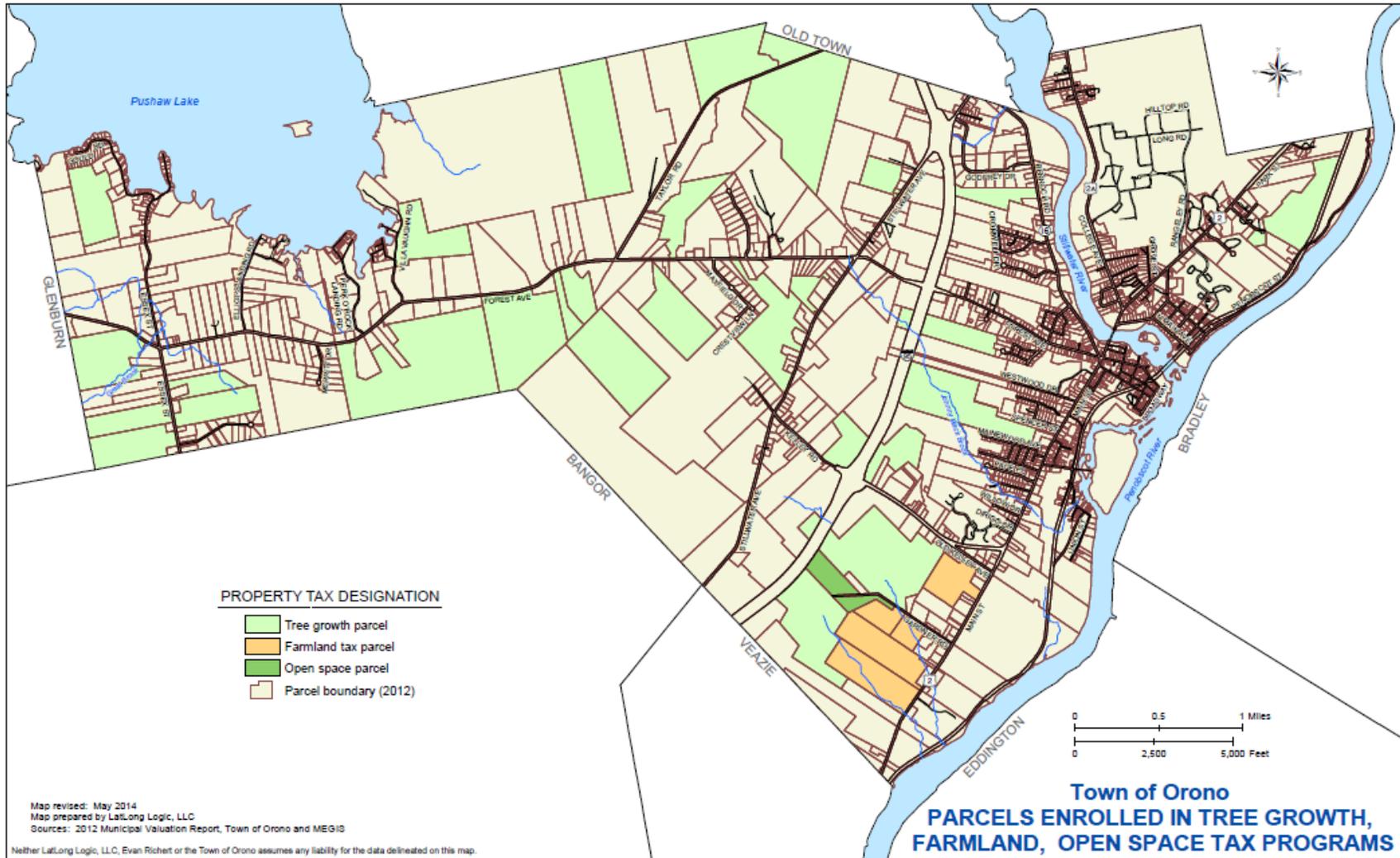


Figure 5-4. Wetlands Included in National Wetland Inventory

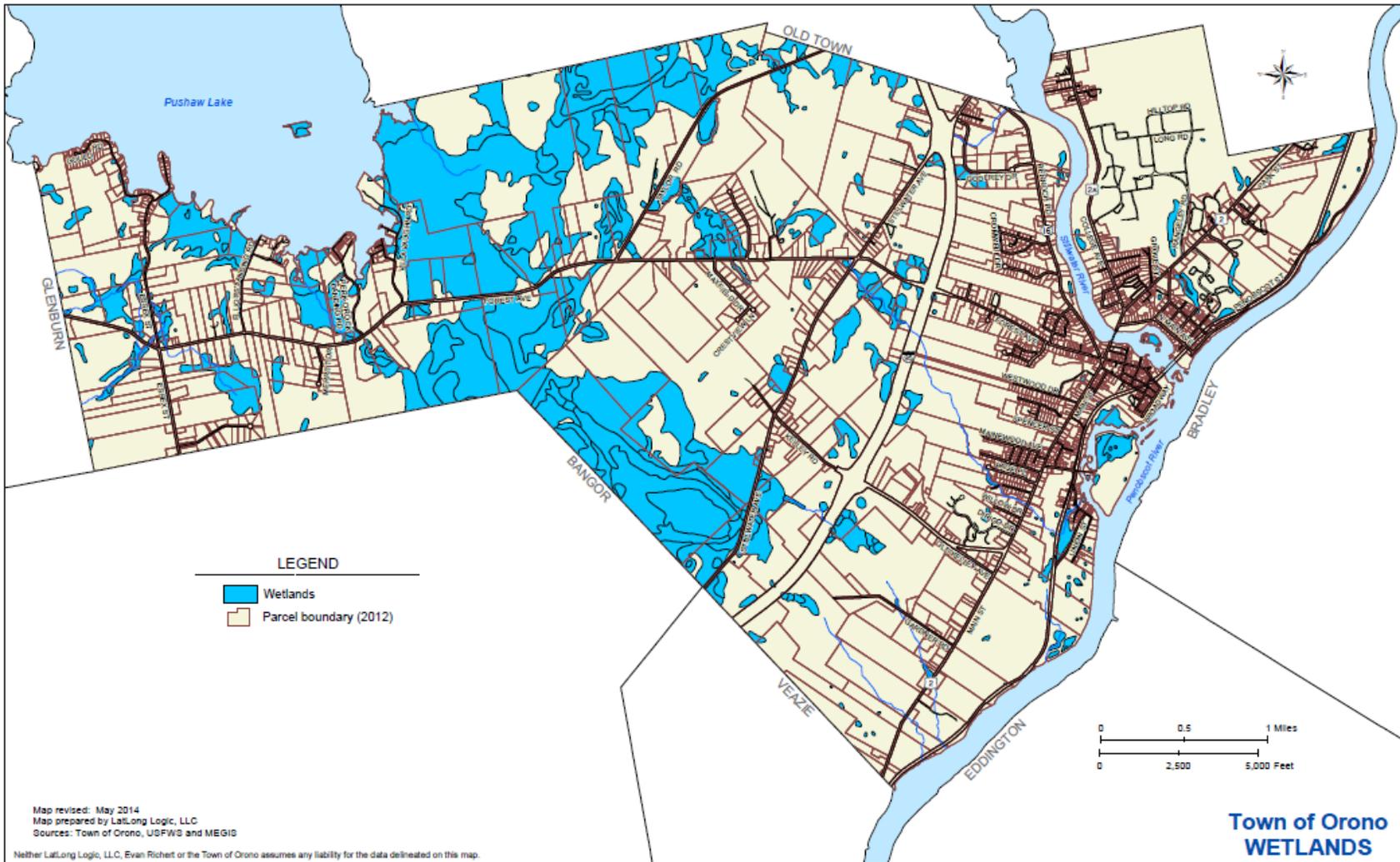
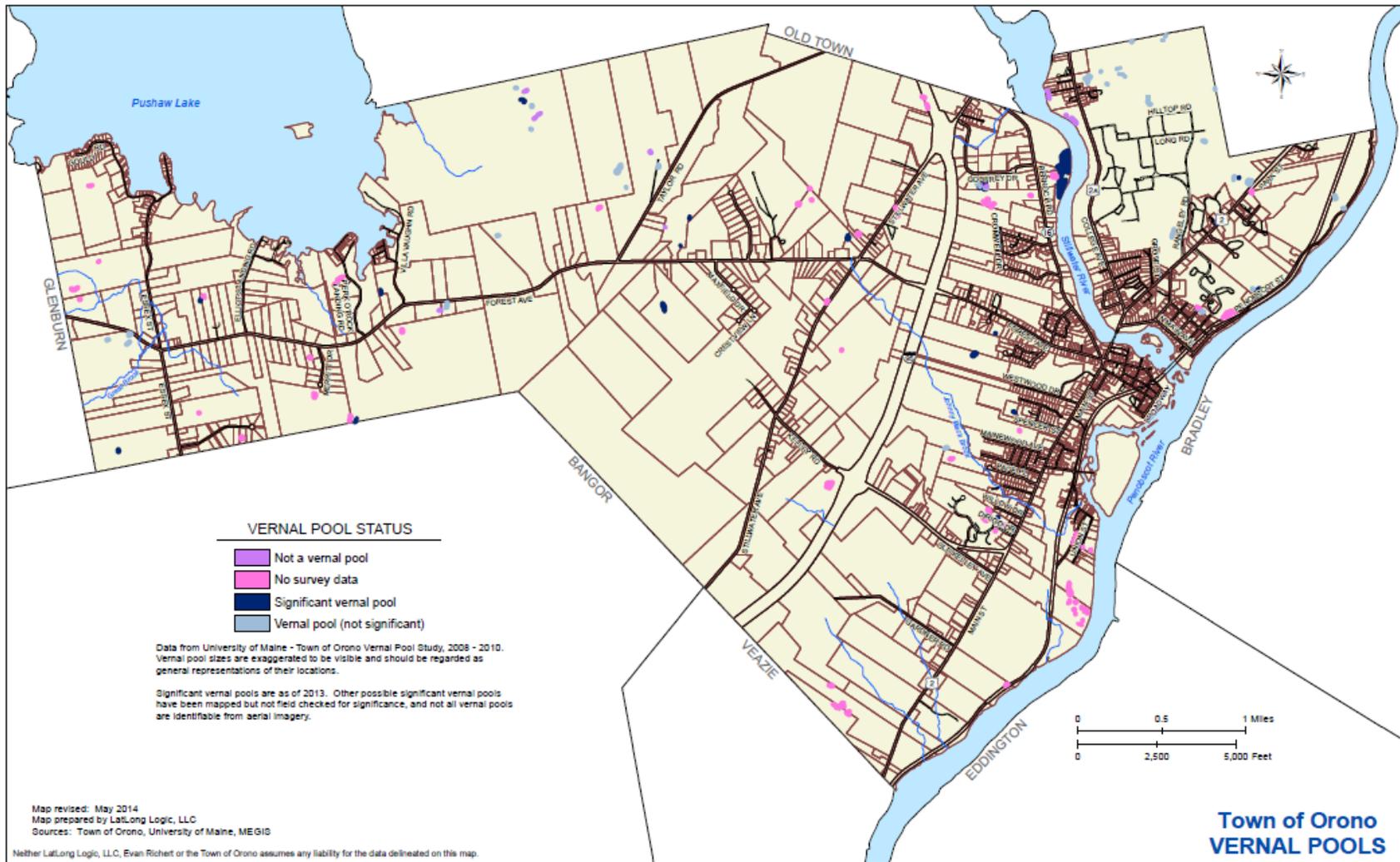


Figure 5-5. Status of Vernal Pools in Orono, 2012



Recommended to Council June 2014

Figure 5-6. Unfragmented Blocks of Habitat

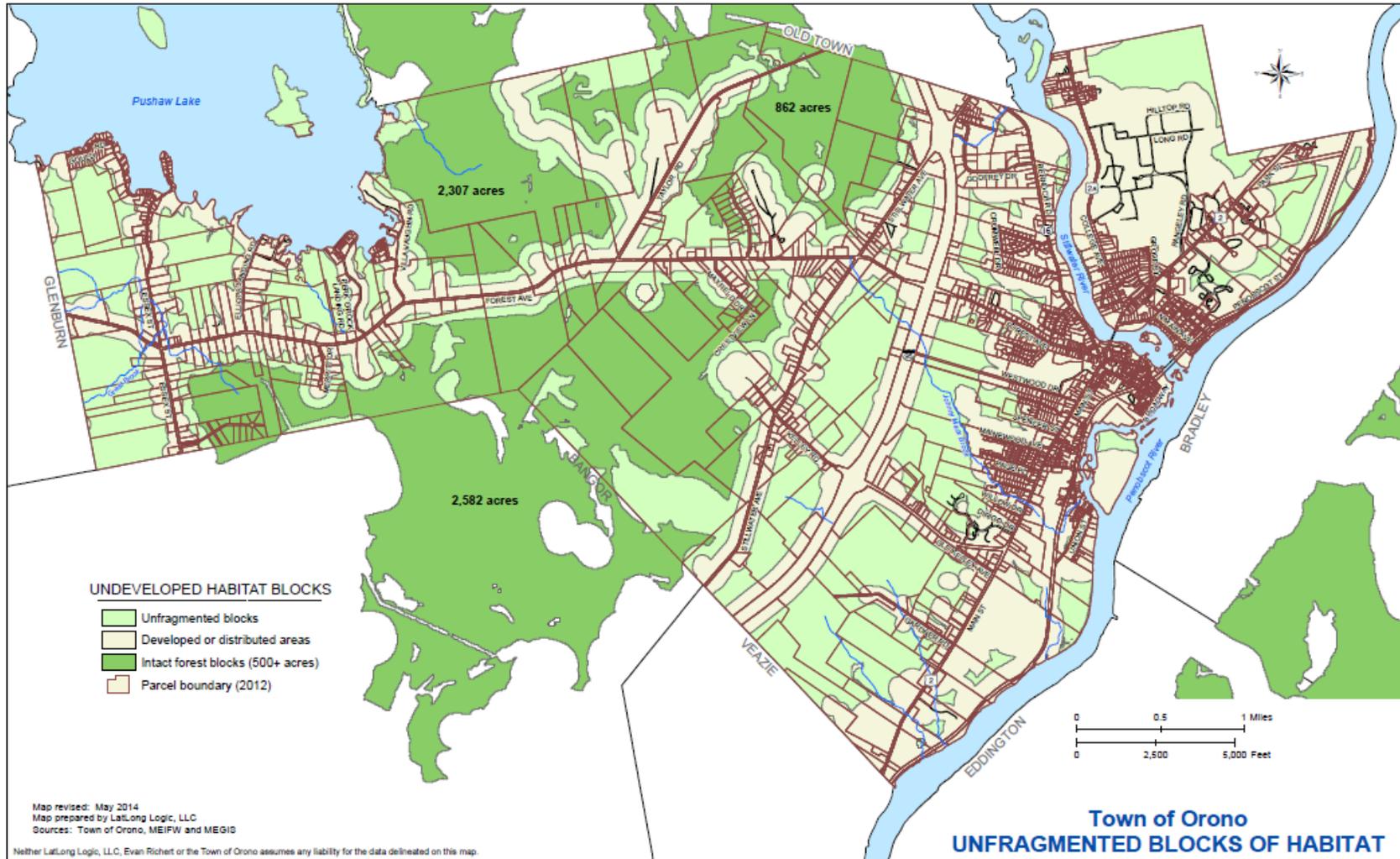


Figure 5-7. Significant Wildlife Habitat, Orono and Adjacent Areas

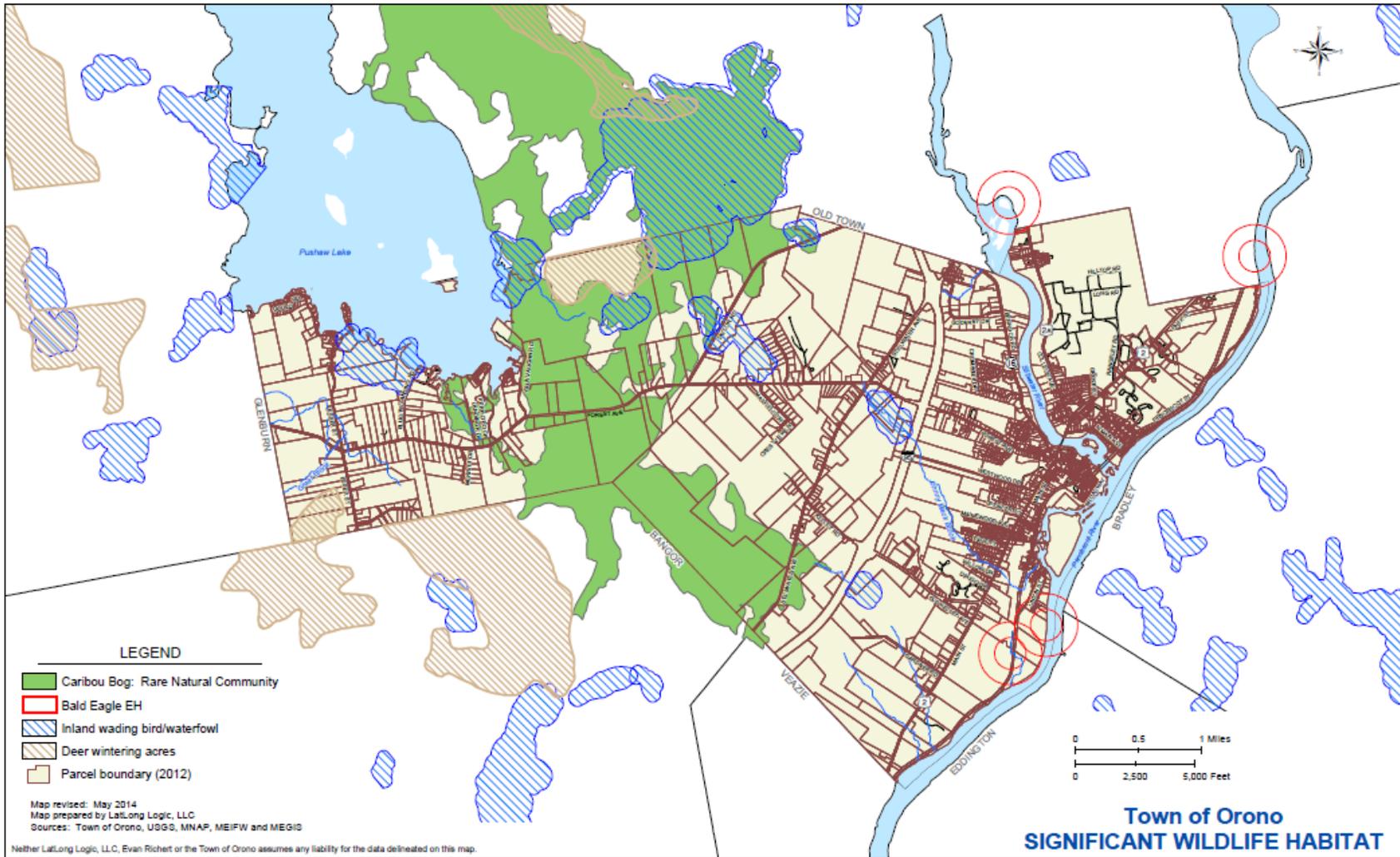
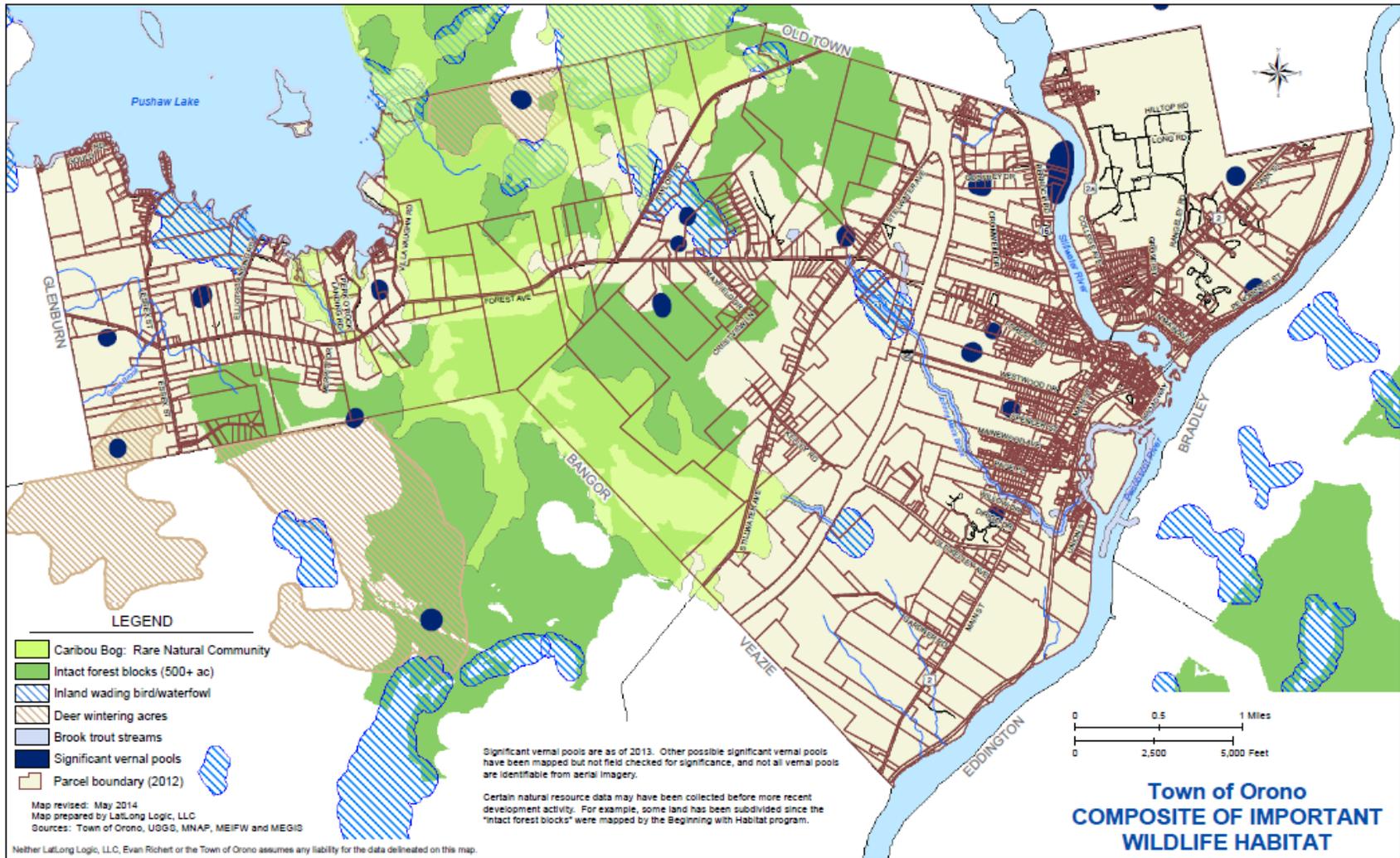


Figure 5-8. Composite of Important Wildlife Habitat



CHAPTER 6. HISTORIC AND SCENIC RESOURCES

A. Historic Resources

Two historic districts in Orono are on the National Register of Historic Places: Main Street Historic District (1977) and University of Maine Historic District (1978, expanded 2010). Six individual properties also are on the Register: two (Nathaniel Treat House and Gov. Israel Washburn House) within the Main Street Historic District; one (Page Farm Barn) on the University campus; plus the US Post Office, Old Fire Engine House, and William Colburn House on Bennoch Rd. In addition, in December 2012 the Phi Gamma Delta House at 79 College Ave. was accepted by the Maine Historic Preservation Commission for nomination to the Register.

Main Street Historic District: The Main Street Historic District, from Maplewood Avenue to Pine Street, was listed on the National Register of Historic Places in 1977. The District comprises a collection of 19th century to turn-of-the-20th century buildings, displaying major styles of the 100-year period, according to the original application. The District is a handsome gateway into Downtown Orono.

The Main Street District was found to be significant because it reflected Orono's emergence as a prosperous community in the first half of the 19th century, with the homes mirroring "the achievement of dignity and permanence by what had been little more than a hard scrabble frontier village two decades before the great years of the log drivers."

The style of architecture seen in this group of buildings is wide-ranging, including Federal, transitional Federal-Greek Revival, Greek Revival-Transitional, Greek Revival, Greek Revival-Italianate, Italianate, Gothic Revival, Queen Anne and Colonial Revival. The buildings exhibit an array of roof types including various sizes of gable roofs and hip roofs.

The buildings are an assortment of brick construction, frame construction and stone construction structures. Of the frame construction, claddings include clapboarded, shingled, combination of clapboarded and shingled, aluminum siding, stucco, and match boarded façade with clapboards.

The structures consist of residential, commercial, educational and religious buildings. Most of the buildings are in good to fair condition; a few appear to be in a deteriorating state. One building, the former Charles Nichols house at the corner of Main Street and Pine Street, was removed and replaced with a branch bank building. Another building, a former school house at 88 Main Street, was lost to fire. The others in the original listing remain in place.

Table 6-1 is an update of the structures in the District, prepared by Orono resident, architect and volunteer Merylene Thomas. The descriptions of the buildings come from the 1977 nomination.

Table 6-1. Main Street Historic District: Status of Buildings, 2012

Key	Main	Original NRHP description	Use	Condition	Image
1	Nomin as 66, now 56	Charles Nichols house, 1905 <i>Architect:</i> Charles Parker Crowell of Bangor <i>Style:</i> Queen Anne, 2-1/2 stories, gable roof, frame with clapboarded, shingled and stucco exterior.	Now is site of branch bank building	Removed	
2	66	Jeremiah and William Colburn house, 1840 <i>Style:</i> Greek revival, 2-1/2 stories, gable roof, frame with clapboarded exterior.	Residence	Good	
3	68	Thomas Whitney house, 1851 <i>Style:</i> Greek Revival with Gothic Revival trim, 2-1/2 stories, gable roof, frame with match boarded facade, remainder clapboarded	Griffin & Jordan Law Office	Good	
4	72	Henry Rolfe House, c. 1840 <i>Style:</i> Greek revival, 2-1/2 stories, gable roof, frame with aluminum siding, c.1900 first story porch	Brookings-Smith Funeral Home	Good	
5	82	House, c.1840 <i>Style:</i> Greek revival, 2-1/2 stories, gable roof, frame with clapboarded exterior	Connected to Church of Universal Fellowship	Fair	
6	84	Universalist Church, 1843-44 Greek revival, 1-story with tower, gable roof, frame with match boarded façade and tower, remainder clapboarded.	Church of Universal Fellowship	Good	

RECOMMENDED TO COUNCIL June 2014

Main Street Historic District, cont'd					
7	88	School house #2, 1828, moved to present site from Bennoch street in 1857 <i>Style:</i> Federal and Greek revival, 1-1/2 stories, gable roof, frame with clapboarded & wooden sided exterior, extensive mid-20 th century remodeling.	No longer exists - fire		
8	89	St. Mary's Catholic church, 1905 <i>Architect:</i> Victor Hodgkin's of Bangor, Gothic revival, One story with 2 façade towers, gable roof, and stone with wood and metal trim.	Church has been vacated; new owners wish to use as event center	Good; recently restored by new owners	
9	92	Alexander Rogers House, c. 1854 <i>Style:</i> Greek revival, 2-1/2 stories, gable roof, frame with clapboarded exterior, enclosed Italianate portico and open Italianate side porch.	Alpenglow Adventure Sports Shop	Fair	
10	93	Ludo Thayer House, 1835 Greek revival, 2-1/2 stories, brick with wood and stone trim, queen Anne first storey front porch.	Former St. Mary Church convent; under renovation for residences	Deteriorated but under renovation	
11	95	St. Mary's school, 1914 Victor Hodgkins of Bangor <i>Style:</i> Colonial revival, 2 stories, flat roof, stone with wood trim	Apartment	Good	
12	100	F.A.Fuller House, 1837 Greek revival, 2-1/2 stories, gable roof, frame with clapboarded exterior, Italianate first story porch and over hanging roof with brackets.	Residence	Good	

RECOMMENDED TO COUNCIL June 2014

Main Street Historic District, cont'd					
13	105	Dr. John Ricker House, 1834-45 <i>Style:</i> Greek revival, 2-1/2 stories, gable roof, frame with clapboarded exterior, colonial revival first story front porch.	Residence	Fair	
14	109	Daniel McRuer House, 1830 <i>Style:</i> Federal, 2 stories, hipped roof, frame with clapboarded exterior	Residence	Good	
15	114	Nathaniel Treat House, 1837 (also on NR 9/20/73) <i>Style:</i> Transitional Federal, Greek revival, 2-1/2 stories, gable roof, brick with wood and stone trim.	Residence	Good	
16	115	John Read house, 1834 <i>Style:</i> Greek revival, 2-1/2 stories, gable roof, frame with clapboarded exterior, period first story front porch.	Residence	Good	
17	120	Gov. Israel Washburn, Jr. house, 1840 (also on NR 1/12/73) <i>Style:</i> Greek revival, 2-1/2 stories, gable roof, frame with match boarded façade, remainder clapboarded, and period first story porch.	Residence	Good	
18	121/ 127 (orig 123)	Asa Babcock house, 1829 <i>Style:</i> Federal, 1-1/2 stories, gable roof, frame with clapboarded exterior, Italianate portico and side bay window, three 20 th century façade dormers.	Residence	Good	
19	124	Horace m. Estabrook house, c.1891 <i>Style:</i> Queen Anne, 2-1/2 stories, gable roof with large corner tower, frame with clapboarded and shingled exterior	Residence	Fair	

RECOMMENDED TO COUNCIL June 2014

Main Street Historic District, cont'd					
20	133	Cony Foster house, 1830 <i>Style:</i> Federal, 1-1/2 stories, gable roof frame with clapboarded exterior, Italianate portico, side bay window and window trim, later central façade gable flanked on either side by a dormer.	Residence	Good	
21	139	Charles Wood house, c.1900 Queen Anne, 2-1/2 stories, hipped roof with two major projecting gables, frame with clapboarded and shingled exterior.	Residence	deteriorating	
22	143	Elijah Parsons house, 1830 <i>Style:</i> 1-1/2 stories, gable roof, frame with clapboarded exterior, Italianate window and cornice trim c.1900 first story front porch and façade dormer	Residence	deteriorating	
23		Dr. Elihu Baxter house, 1831 <i>Style:</i> Federal 2-1/2 stories, gable roof, frame with clapboarded exterior, enclosed Italianate portico and first story stick style porch.	Residence and Office	Good	
24	149	Charles Gould house, 1869 <i>Style:</i> Italianate 2-1/2 stories, gable roof, frame with clapboarded exterior.	Residence	deteriorating	
25	158	Gideon Mayo house, 1854, transitional Greek revival-Italianate, 2-1/2 stories, gable roof, frame with clap boarded exterior.	Residence	Good	
26	169	James S Steven house, c.1899 <i>Style:</i> Queen Anne 2-1/2 stories, hipped roof with 3 major projecting gables, frame with clapboarded and shingled exterior, iron roof cresting.	Residence	Good	

Main Street Historic District, cont'd					
27	175	Hamlin house, c.1899, <i>Style:</i> Queen Anne 2-1/2 storied, hipped roof with three major projecting gables, frames with clapboarded and shingled exterior, Iron roof cresting.	Residence	Good	
28	193	George read house, 1829 <i>Style:</i> Federal, 2-1/2 stories, gable roof, frame with clapboarded exterior, two story colonial revival porticos added to the façade in 1914.	Residence	Good	
29	205	Thomas Gilbert house, c.1866 <i>Style:</i> Italianate 2-1/2 stories, gable roof, frame with wooden siding.	Residence	Good	
Sources: National Register of Historic Places Inventory – Nomination Form, Jan. 7, 1977; walking inventory and photographs by Merylene Thomas, 2012					

University of Maine Historic District: In 1978 the University of Maine Historic District was listed in the National Register of Historic Places. That district, centered along Munson Road, focused on the oldest of the university buildings (1868 - 1909) and was located in the western section of the 600 acre campus. Ten buildings contributed to the Historic District. See **Figure 6 -1** at the end of this section.

Later the University and Maine Historic Preservation Commission proposed to expand the District to include an additional 56.77 acres hosting 17 contributing structures and 4 landscape elements. The nomination was approved by the Maine Historic Preservation Commission on January 22, 2010, and the expanded area included on the National Register of Historic Places on April 27, 2010. The expanded district now contains 27 contributing buildings, four contributing sites, and six non-contributing buildings. See **Figure 6-1**. It consists of buildings and landscape elements built between 1891 and 1942.

The University of Maine campus was founded in 1865 with funding from the federal Morrill Land Grant College Act. Landscape architect Frederick Law Olmsted produced a plan for the campus along the Stillwater River and the ten buildings of the original National Register District comprised this late-19th century campus core. The buildings vary from vernacular domestic structures to substantial Romanesque, Italianate and Neoclassical academic buildings. In 1932, Olmsted's successor firm, Olmsted Brothers, developed a plan centered on a new, park-like campus mall, from which the campus continued to grow into the 1950s. Much of this area is included in the expanded District.

Maine Experiment Station Barn (Page Farm Barn): This structure was placed on the National Register in 1990. The restored barn, built in 1833, is the last original agriculture building on the UMaine campus. It is now part of the Page Farm & Home Museum, whose mission is to document, preserve, and provide Maine history relating to farms and farming communities between 1865 and 1940.

A second individual property on the UMaine campus also is on the National Register - the Edith Marion Patch House (2001), located in Old Town.

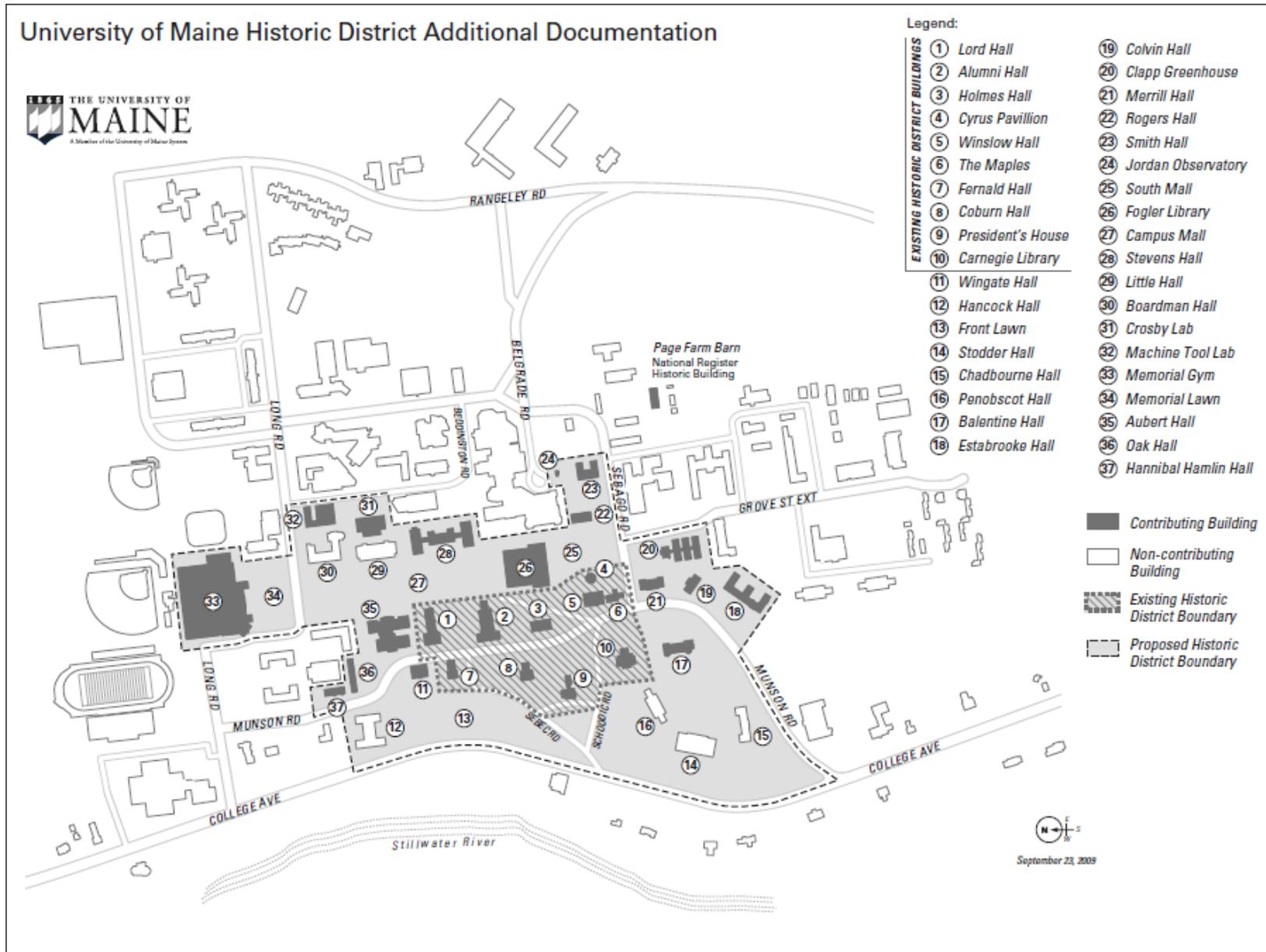
Old Fire Engine House, North Maine Avenue: The Old Fire Engine House located on North Main Avenue along the Stillwater Branch was listed on the National Register of Historic Places in 1985. The structure is owned by the Town and used by the Boy Scouts.

US Post Office: The Post Office was placed on the National Register in 1986. It continues to function as the Town's Post Office, an architectural presence at the center of Downtown.

William Colburn House: This Colonial style house at 91 Bennoch Road was designed by William Colburn and built in 1780, and today remains an active single family residence. It was placed on the National Register in 1973.

Webster Mill: The former Webster Mill at the junction of the Penobscot River and Stillwater Branch at the end of Penobscot Street was determined to be eligible for the National Register of Historic places in 2008. The structure was considered one of the last remaining, intact examples of a 19th Century pulp and paper mill in Maine, with its design virtually unchanged from its earliest days. The building was badly deteriorated, and it was hoped that determination of eligibility would open up access to tax credits that could be used for renovation and re-use. However, structural and other analyses showed that it could not be saved, and it was removed for residential re-use of the site. Before it was removed, a photographic record was prepared for the Maine Historic Preservation Commission.

Figure 6-1. University of Maine Historic District



B. Archaeological Resources

Archaeological sites are of two kinds:

- Pre-historic sites, which are Native American sites from before Europeans arrived. These include campsites or village locations, rock quarries and workshops for making stone tools, and petroglyphs or rock carvings. These sites are most commonly located within 50 meters of canoe-navigable water, on relatively well-drained, level land.
- Historic sites, which are mostly European-American established after written historic records or about 1600. These sites may include cellar holes from houses, foundations for farm buildings, mills, wharves and boat yards, and near-shore shipwrecks. Settlement often focused on transportation corridors – first rivers, then roads as they were built.

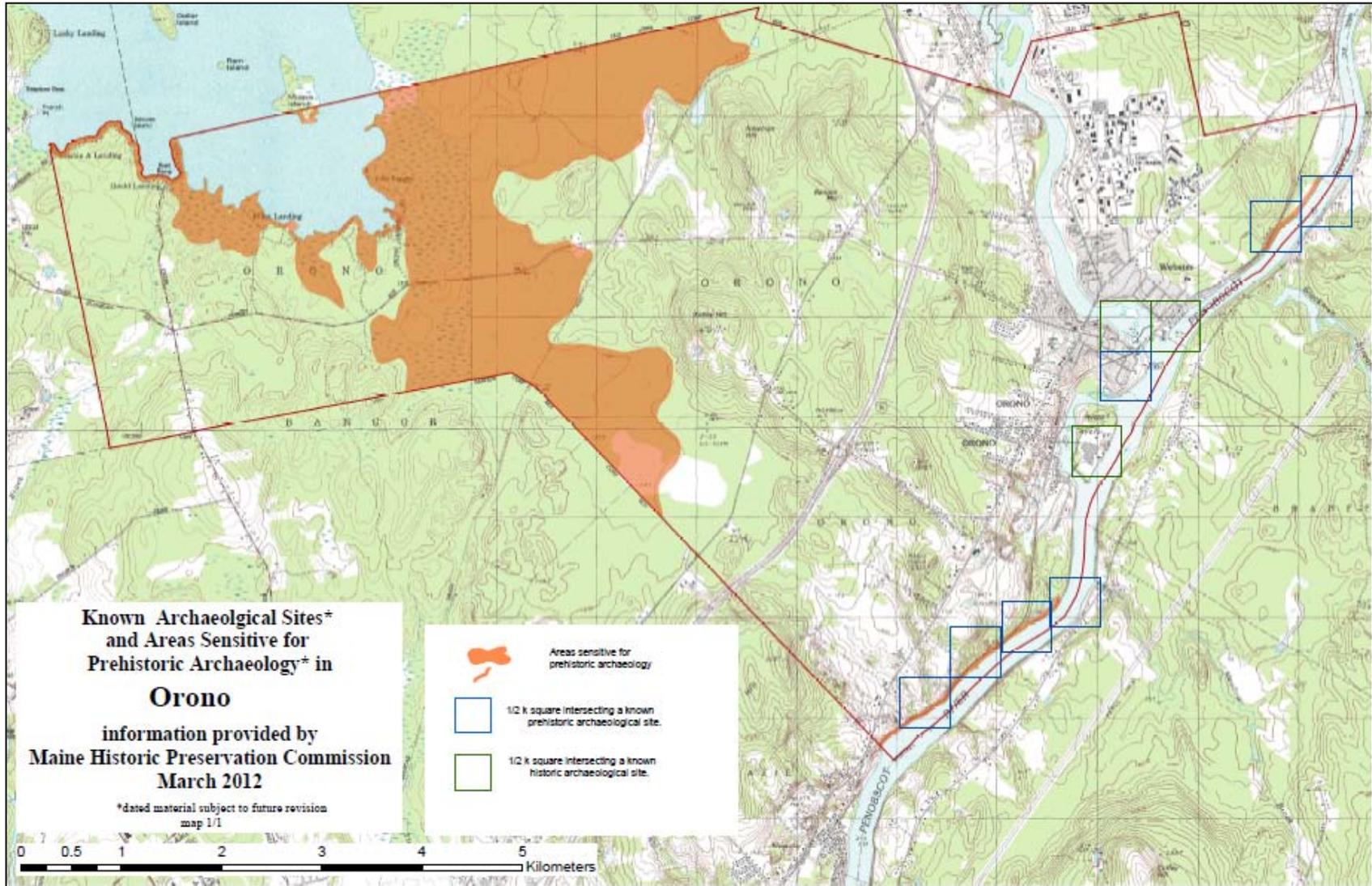
The Maine Historic Preservation Commission has mapped the general locations of seven known pre-historic sites to date, all along the Penobscot River. **Figure 6-2** locates these sites within ½-km squares. Four are located along the southern stretch of the Penobscot River in Orono, one between Ayers Island and the Stillwater River, and two along the northern shore most stretch of the river. In addition, the entire Caribou Bog area and the shoreline of Pushaw Lake are considered sensitive to pre-historic archaeological sites.

To date, there are three known historical archaeological sites in Town: one at Ayers Island, and two at the junction of the Penobscot River and the Stillwater Branch. See **Figure 6-2** and the following **Table 6-2**.

SiteName	SiteNum	SiteType	Periods of Significance
Websters Pulp Mill	ME 327-001	mill, pulp	c.1900
Basin Mills	ME 327-002	mill, sawmill	1850-?
Orono Dam Graffiti	ME 327-003	petroglyph	c.1852 to 1930s
Source: Maine Historic Preservation Commission.			

The MHPC recommends that towns incorporate mechanisms into subdivision, site plan, and shoreland zoning ordinances to require surveys for archaeological sites within sensitive areas so that if they exist they can be found before they are disturbed or destroyed. Orono’s Land Use Ordinance includes standards that would trigger documentation and protection of archaeological sites in areas mapped by MHPC.

Figure 6-2. Archaeological Sites, Orono



C. Scenic Resources

Orono's location in the Penobscot River Valley at the junction of the Penobscot's main stem and its Stillwater Branch brings with it scenic views that enhance the Town's recreational resources, the value of residential properties, and the appeal of the University of Maine campus.

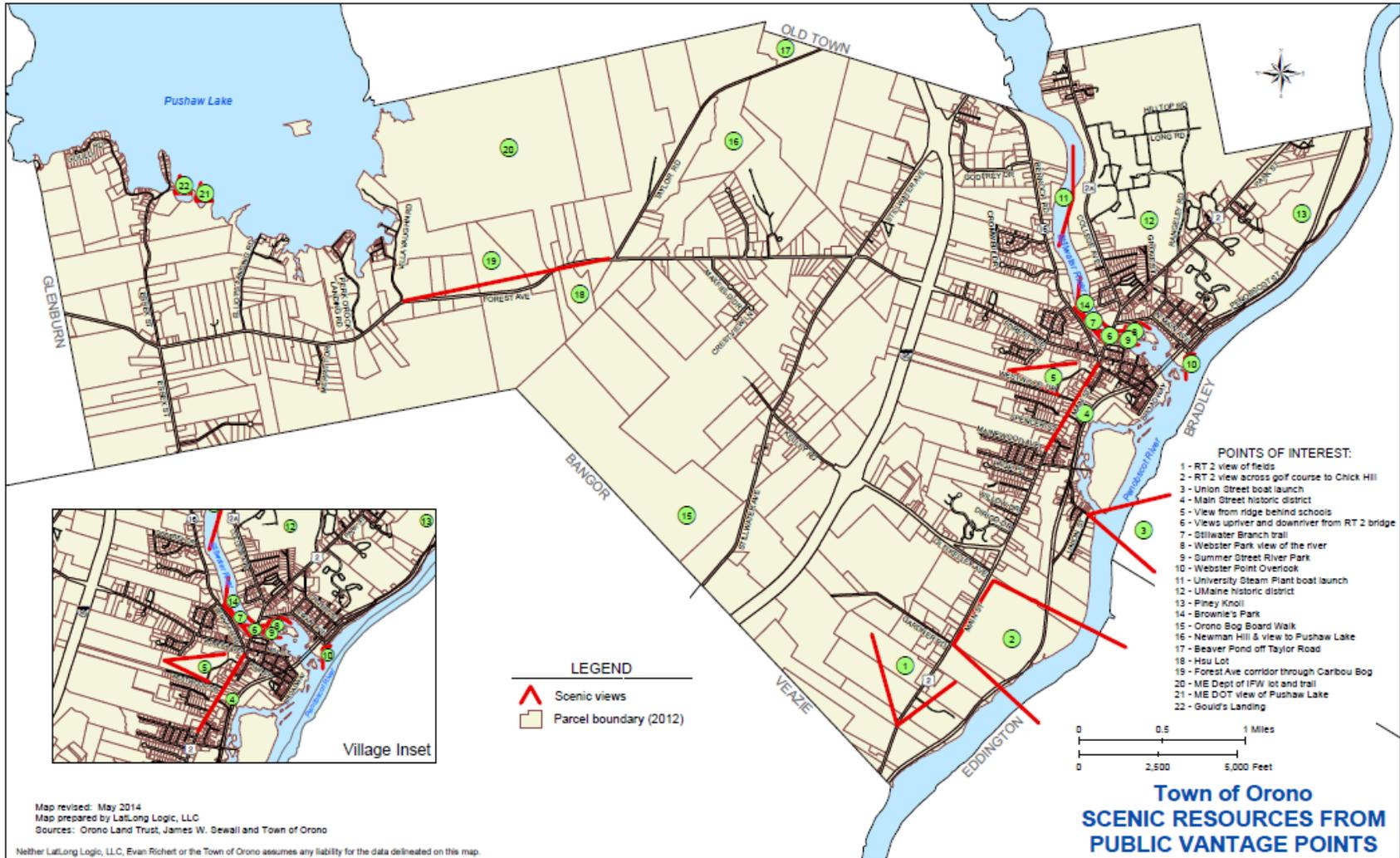
The scenic resources include natural settings such as the rivers, Pushaw Lake, and Caribou Bog. From different public vantage points, the views can be short-range or to far horizons, intimate in their detail or of whole scenes. They can also be human creations, such as the historic districts along Main Street and on the University of Maine campus.

Scenic resources are appreciated both for their "soft" values that enhance recreation, produce memories, or are sought for quiet moments of reflection – and thus contribute to the quality of life in the town – and for their hard economic value that attract people to a community. In some cases, they define the community and are the community's strongest economic selling point – as in the case of many harbor towns, for example – and as a result invoke regulatory protections of the resources. That is not explicitly the case in Orono, which does not have a single, dominant scenic focal point. But the accumulation of Orono's scenic resources is part of its identity and its economy.

Visual assessment is both an art and a science, and rating systems that take into account a scene's complexity, natural and human made elements, length of view, foreground/background character, uniqueness, and other factors are often employed in visual impact analyses. For the purpose of this Comprehensive Plan, an inventory of scenic resources was compiled by members of the Comprehensive Plan Committee simply based on local knowledge and the impressions of how they and others use and value different scenic resources.

The inventory depicted on **Figure 6-3** is of scenic resources as viewed from public vantage points – a public road, public land, or property on which the public is explicitly permitted as a matter of operating procedure, such as property of the Orono Land Trust.

Figure 6-3. Scenic Resources from Public Vantage Points



D. Issues and Opportunities

Historic and scenic resources as economic assets: Orono's historic and scenic resources can be effective parts of the Town's identity and brand. Although they are appreciated by those who pass by them and experience them daily, as economic assets they have been under-publicized and underused. There are opportunities to more completely weave them into the visitor, cultural, and recreational experiences of the Town.

Protecting historic and scenic resources: Beyond the existing protections in the Land Use Ordinance, the most acceptable approach to protecting these resources may be in making sure that they are seen as important economic assets to be conserved, and that historic structures continue to have uses that are economically viable and that enable investment in them.

CHAPTER 7. LAND USE

A. The Big Picture

Land cover: Orono contains 19.78 square miles (12,659 acres), according to the U.S. Census. Of this, about 1.57 square miles are the sections of Pushaw Lake, Penobscot River, and Stillwater Branch that lie within Town boundaries. The remainder, 18.21 square miles, is land.

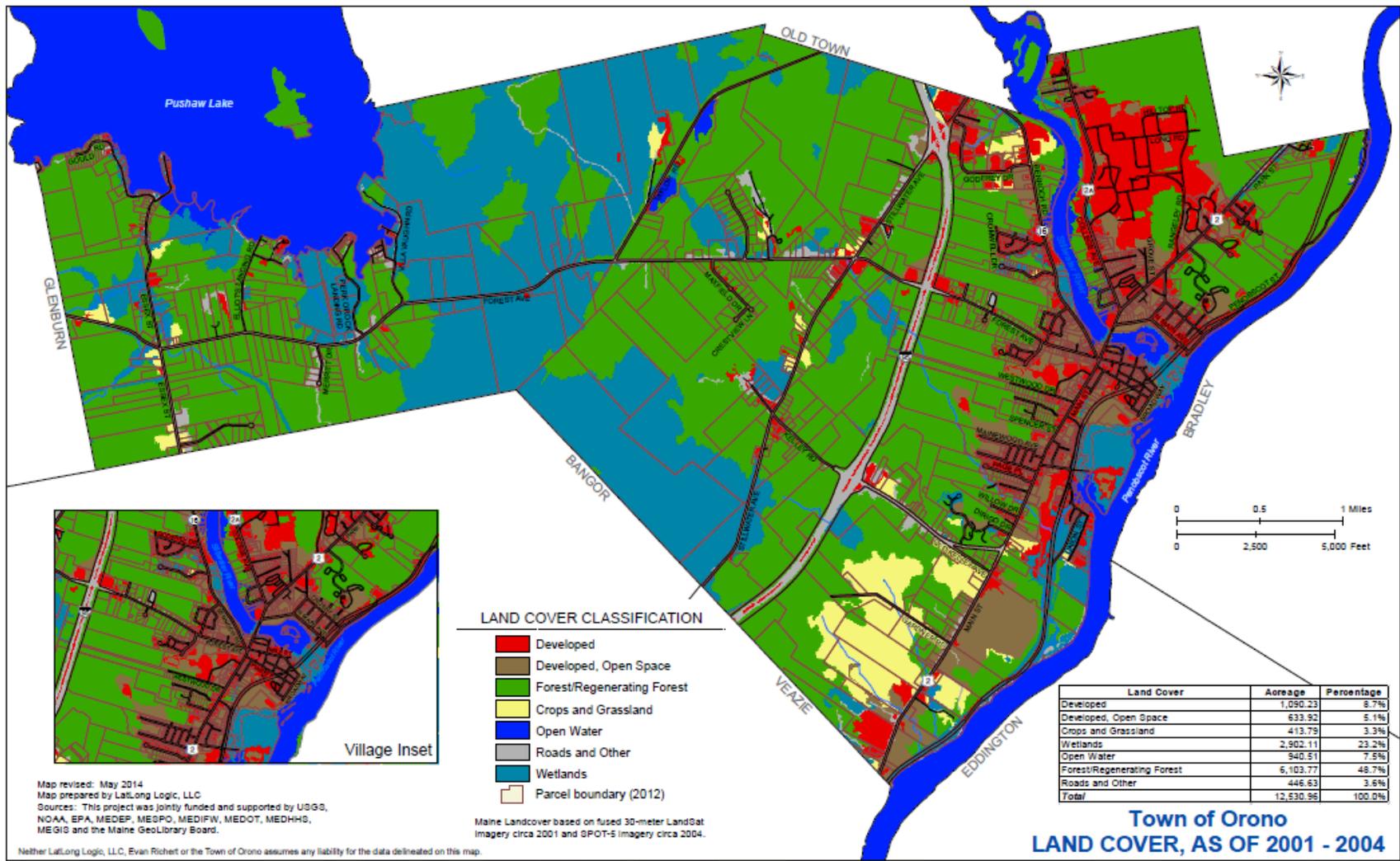
Land cover information gives a bird’s eye view of the intensity with which the land is used. It distinguishes among developed land, forested land, and farmland, for example. In broad strokes, based on satellite imagery from the early 2000’s (and thus is a bit outdated but still useful), land cover in Orono breaks down as follows:

Table 7-1. Land Cover in Orono (2001-04 data)		
Land Cover Category	Acres	% of Town
TOTAL	12,531*	100.0%
Total Open Water Area	941*	7.5%
Total Land Area	11,590*	92.5%
• Developed	1,090	8.7%
• Developed, Open Space (e.g., rec. fields, parking, etc.)	634	5.1%
• Forested/Regenerating Forest	6,104	48.7%
• Crops and Grassland	414	3.3%
• Wetlands	2,902	23.2%
• Roads & Other	447	3.6%
*The calculation of area from land cover data varies slightly from the Census calculation		
Source: USGS et al, Landsat and Spot-5 Imagery; calculations by LatLong Logic, LLC		

See also **Figure 7-1**.

Developed land is a modest percent of the total, but there are several concentrations where it is dominant: the University of Maine campus; Downtown and surrounding village (large portions of the village are interpreted by the imagery as “developed, open space” – e.g., yards, recreational fields, golf course, driveways and parking lots, and other open areas ancillary to development); developments along sections of Route 2, and the commercial area around Exit 193. Two large apartment complexes – Orchard Trails and Campus Crest – built since the images were taken would expand the developed land cover off Park Street. The dominant land uses in the Town as a whole, as percentages of the total, are forestry and wetlands. A close look at the imagery shows how low-density residential development has spread out in a narrow ribbon along Forest Ave., Stillwater Ave., and Essex St., bounded by forest and wetland with occasional subdivision, mobile home park, and camp roads breaking through.

Figure 7-1. Land Cover, Town of Orono, as of 2001-2004



Land parcels: The land in Orono, excluding roads, has been divided over time into about 2,155 lots that collectively contain nearly 11,100 acres. Two-thirds of the lots are occupied by single-family homes (detached and attached), and these lots account for about 37% of the total land contained in lots. However, a number of the single family house lots are significantly larger than required by zoning. It is estimated that housing itself plus allowances for areas around homes used as yards or other personal space actually occupy roughly 22% of the land in lots.

Lots in other types of residential uses – multifamily and mobile home parks – account for 10% of all lots and less than 5% of the land. While these lots occupy less than 5% of the land area, they accommodate around half of all residential units in Orono.

There are more than 400 entirely vacant parcels in Town, and they contain 43% of the Town’s land in lots – about 4,800 acres. Of these parcels, a number are in Town, State, or conservation land ownership; these account for 15% of the land in parcels while all other entirely vacant parcels account for 28%. However, this understates the amount of vacant land. The vacant land on significantly larger-than-required single-family house lots – after allowing for generous yard areas – adds 1,700 acres to the vacant total, or another 15% of all land in parcels.

See **Table 7-2** and the composite existing land use map in **Figure 7-2**.

Table 7-2. Land Use by Type, 2012		
Land Use	No. of Parcels	% of Land in Parcels
TOTAL	2,155	100%
Residential	1,600	42%
Single-family*	1,370	37%*
Multi-family, mobile home parks, frat & sorority	230	5%
Commercial, Comm. Mixed-Use, & Industrial	103	7%
Civic/Institutional	41	8%
Vacant	411	43%
Town, State, Conservation	68	15%
Other	343	28%
*Approximately 65 significantly larger-than-required single-family lots contain an estimated 1700 vacant acres, or about 15% of land in parcels, which brings total vacant land to about 58% of the total and reducing actual single-family use (homes and yards) to about 22% of the total land in parcels.		
Sources: Tax Assessor’s records as of FY 2012; compiled by Town Planning Office		

The land use map shows large areas of vacant land, especially south of Kelley Road and west of I-95. Not all of this is developable, of course. Wetlands, flood plains, and other significant natural resources (as described in Chapter 5) limit the potential for development. In **Figure 7-3**, a general map of wetlands and flood plains is overlaid on the land use map to give an idea of the amount of land that is constrained by these resources.

Figure 7-2. Existing Land Use, 2012

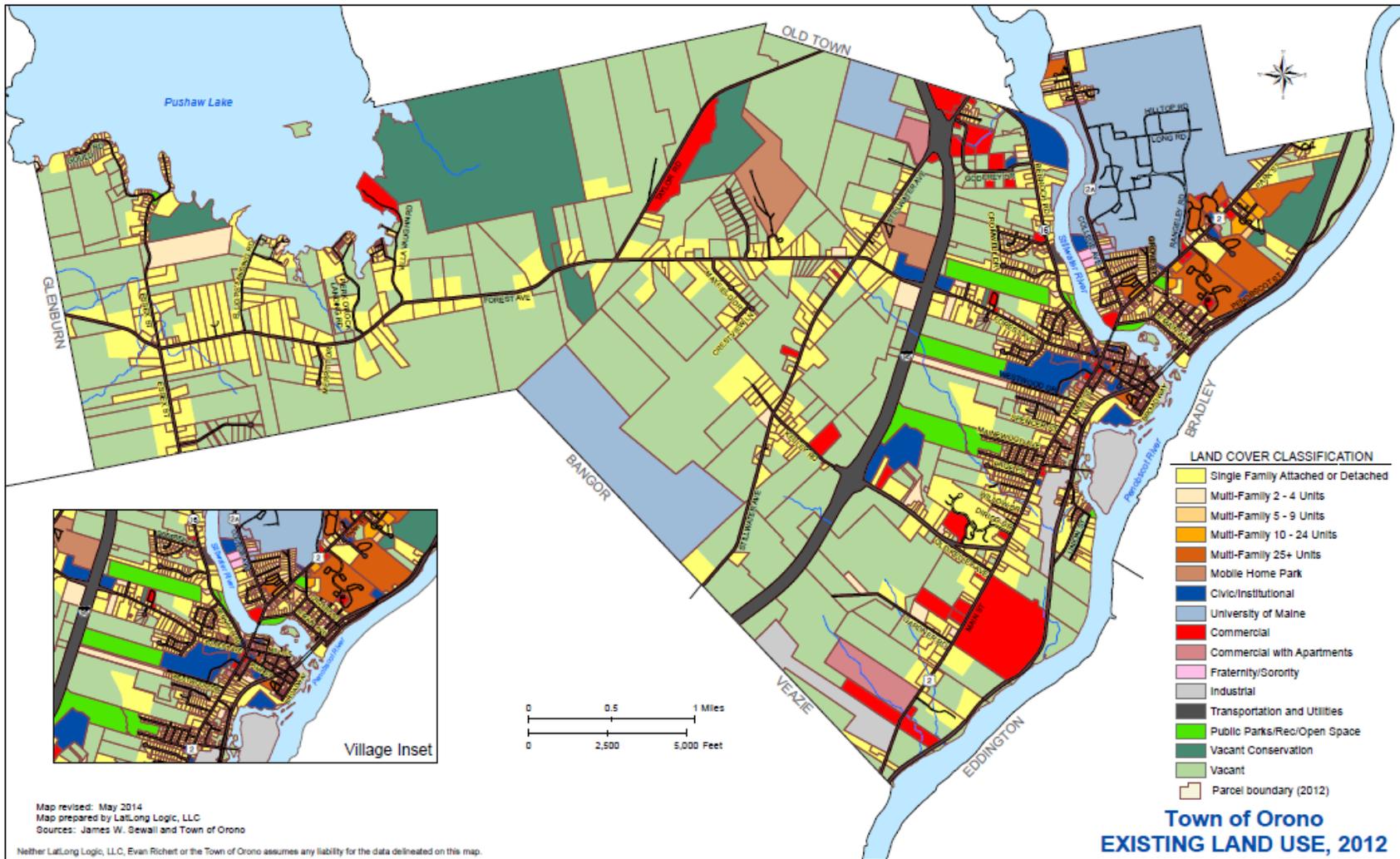
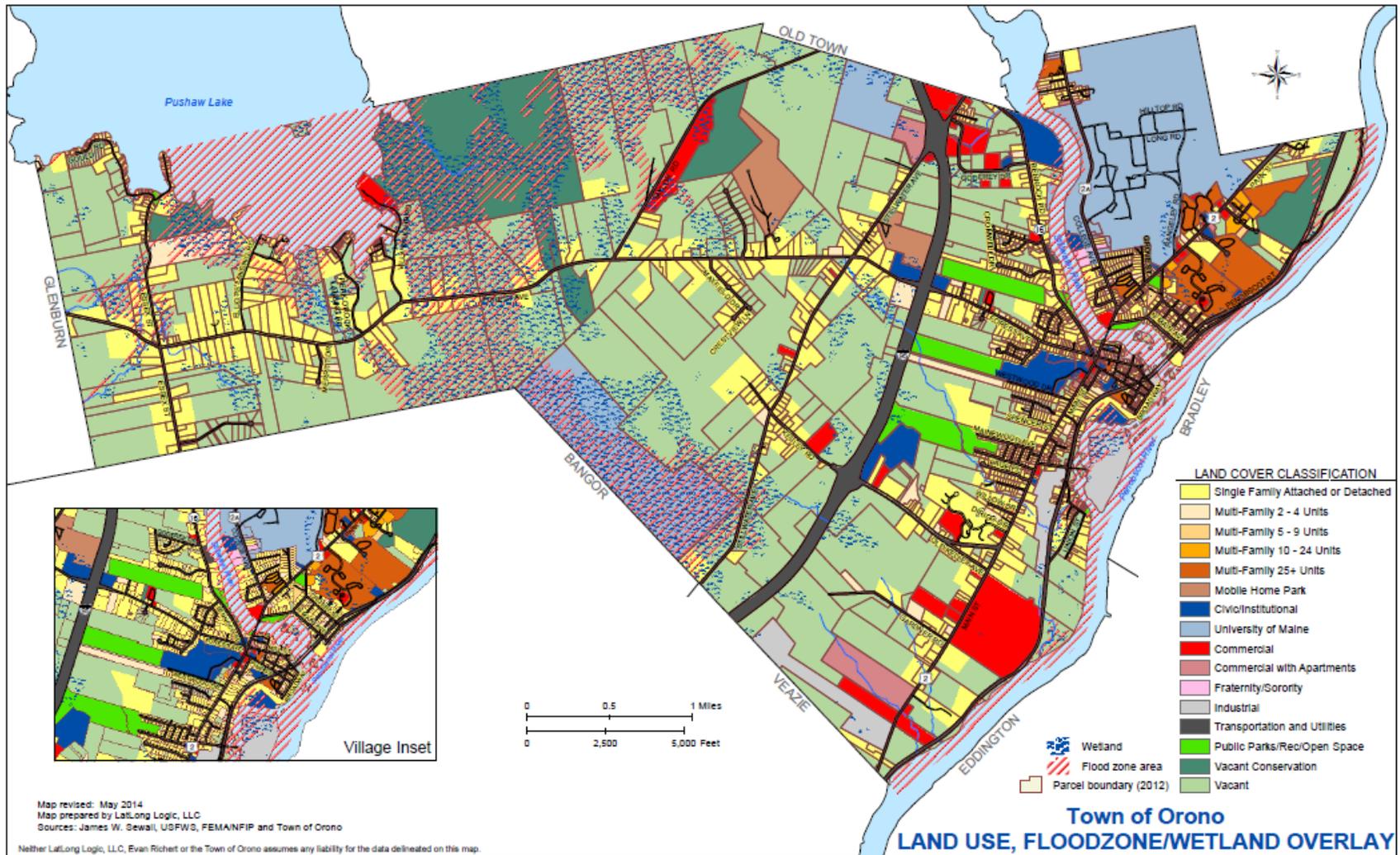


Figure 7-3. Existing Land Use with Large Wetland Areas and 100-Year Flood Zones Overlaid



B. Development Trend

Growth, Rural, and Transitional Areas: Maine's Growth Management statute directs municipalities to designate "growth," "rural," and "transitional" areas in their Comprehensive Plans. Orono's 1998 plan did so, and this was updated as part of the 2009 amendment addressing the Forestry and Agriculture District.

- A municipality's "growth" area is the area to which the Town intends to guide the majority of its residential and commercial growth. In most towns of typical geographic size, the growth area (or areas) constitutes a relatively small percentage of the land area. It is the part of town most easily served by municipal infrastructure and public safety departments and where an economic base has the best chance to expand. Orono's designated growth area has been identified generally as the area east of I-95 and north of Kelley Road; the golf course side of Route 2; and economic development and commercial zoning districts on the west side of I-95 at Exits 191 and 193 and along Route 2.
- A municipality's "rural" area is the area usually distant from municipal services, environmentally fragile, or providing important rural functions, such as farming, forestry, gravel mining, outdoor recreation, and large blocks of wildlife habitat. Rural areas typically make up the largest part of a town's geography, in part because rural functions require expanses of land. Orono's designated rural area encompasses the Forestry and Agriculture District and shoreland Resource Protection districts.
- A municipality's "transitional" area is between growth and rural; it may be suitable for low density growth, may not be too far from municipal services, and/or has the prospect for extended services in a 10-to-30 year timeframe. Since 2009, the first year in which Orono's comprehensive plan formally identified "transitional" areas, Orono's transitional area has been the Low Density Residential District (roughly Stillwater Ave to Taylor Rd), including the Stillwater Ave. Overlay District.

Distribution of Development, 1998-2012:

Residential building permits – Over the 15 years since the adoption of the 1998 Comprehensive Plan, building permits have been issued for a total of 502 dwelling units. Of these:

- 106 have been for single-family detached homes
- 48 have been for single-family attached homes, primarily at Dirigo Pines

- 8 have been for units in 2-family structures (not including single-family attached homes)
- 340 have been for units in multi-family structures, primarily Orchard Trails (144 units) and The Grove (188 units), both student housing developments.

Of the single-family detached homes, 59% were located in rural and what became transitional areas, and 41% were located in the growth area. All of the other units, which use public water and sewer, were located in the growth area. See **Table 7-3**.

Table 7-3. Distribution of Permits for Residential Dwelling Units 1998-2012					
	Single-family detached	Single-family attached	Two-family dwellings	Multifamily dwellings	TOTAL UNITS
Growth Area	43	48	8	340	439
Rural Area	37	0	0	0	37
Transitional Areas	26	0	0	0	26
Total	106	48	8	340	502
% in Growth	41%	100%	100%	100%	87%
% in Rural/Transitional	59%	0%	0%	0%	13%
Source: Orono Code Enforcement Office records					

Subdivision Lots: The supply of approved but still unbuilt subdivision lots and units gives an idea of the pattern of future housing permits.

In the 15 years since adoption of the 1998 Comprehensive Plan, 15 residential subdivisions – both single and multi-family – were approved. Of these, three were abandoned before ground was broken. The remaining 12 approved subdivisions include:

- *Seven with lots for single-family detached homes* – 79 lots were approved, of which 51 were vacant and available as of December 2012. Of the 51, seven are in the Growth Area, 24 are in the Transitional Area, and 18 are in the Rural Area.
- *Two with single-family attached units* - 75 units were approved at Dirigo Pines, of which 20 were still to be built as of December 2012, and 14 were approved at Webster Point (former Webster Mill site), of which 12 were still to be built.
- *Three multi-family developments* – 340 units were approved and all have been built.

In sum, the pattern of the recent past is likely to continue into the near future: Most of the lots available for single-family detached homes are in the Transitional and Rural areas, while other types of units are being built in the Growth Area. Notably, the property of one of the

abandoned subdivisions, Black Bear Heights, was located in the Growth Area close to schools and downtown, and this property remained on the market as of December 2012.

See **Table 7-4**.

Table 7-4. Residential Subdivisions Approved, 1998-2012							
Name	Location	No. of lots or units			Remaining to be built, by type of area		
		SF detached	SF attached	Multi-family	Growth	Transition	Rural
CHOM	Park St			8			
K Kennedy	Edgewood	3					
Oak Hill Ph I+II	Maxfield	20				4	
Dirigo Pines	Main/Kelley		75		20		
Eagle Crest	Merritt	9					2
Johnny Mack Ln	End of Sunset	3					
Orchard Trails	Park St			144			
Forest Hollow	Forest Ave	21				20	
Shad Bush Ln	Forest Ave	7			7		
Great Brook Hts	Essex St	16					16
The Grove	Park St			188			
Webster Pt	Shore Dr		14		12		
Totals		79	89	340	39	24	18
Approved but Abandoned							
Peregrine	Park St			153	Part of these lands now occupied by The Grove & part owned by Orono Land Trust		
Woodland Trails	Park St		108				
Black Bear Hts	Main St	26					

Commercial development: Since the 1998 Comprehensive Plan, 150,000-175,000 square feet of commercial space have been built in Orono, nearly all of it prior to the 2008-09 recession, and the majority of it accounted for by three office buildings and the postal annex in the Maine Technology Park. In addition, the Inn at Dirigo Pines, a continuum of care facility with 135,000 square feet, was built in the Dirigo Pines complex.

Multiple academic, research, and recreational buildings also have been built or renovated on the University of Maine campus, and a number of Downtown spaces have been renovated, including the former St. Mary's Church, where an event center is planned, offices for a software engineering company, and the spaces now occupied by several restaurants. A new 18,000 square foot downtown office building was built in 2013-14 as the headquarters of the University Credit Union.

Virtually all of the new commercial construction has occurred within the Growth Area.

C. Existing Zoning Districts

Primary Zoning Districts: The existing zoning map was adopted in 2010 following amendments to the Comprehensive Plan. It divides the Town into:

- **One Rural/Residential District** - Forestry and Agriculture

F&A District is intended to provide for agriculture, forestry, recreational facilities, and other non-intensive uses, as well as intact blocks of land for wildlife habitat and other environmental functions. Low-density residential uses are allowed, but, as a result of the 2010 amendments, new subdivisions must use a cluster format that preserves open space. Allowed density is 1 unit per 160,000 sq. ft. (about 4 acres)

- **Four Residential Districts** – Low Density, Medium Density, and High Density Residential, plus the Gateway Medium Density Residential

Low Density Residential District was created as part of the 2010 amendments as an area where central water and sewer facilities are not available, but the land is close enough to municipal services to accommodate residential growth. A mix of residential and rural uses is allowed. Average allowed residential density is one dwelling unit per 60,000 sq. ft. (about 1.5 acres), but clustered development can have density up to 2 units/ac.

Medium Density Residential District covers much of the in-town residential area where public sewer and water are available. Average allowed residential density is one dwelling unit per 20,000 sq. ft. (about 2 units/ac), but clustered development can have density up to 4 units/ac.

Gateway Medium Density Residential District, located on the river side of Rt. 2 south of the Penobscot Valley Golf Club, is similar to the MDR District in uses but residential subdivisions must be clustered and set back from Route 2 to help preserve the scenic character of the southern entry into Town. Public water is available along Route 2 but public sewer ends at the golf course, and the minimum lot size for individual house lots therefore is 40,000 sq. ft. Subdivisions, which must be clustered and can include single-family attached homes, can have up to 2 units per acre with on-site, engineered wastewater disposal systems.

High Density Residential District covers small, in-town sections with apartment complexes, with a density of one unit per 10,000 sq. ft. (just over 4 units/ac.).

- **Two Mixed Use Districts (allows both commercial and residential uses) – Village Commercial and Commercial-2**

Village Commercial District covers the Downtown area and allows a wide mix of uses in a compact format, with residential densities of one unit per 2,500 sq. ft. (about 17 units/ac.) allowed. Many commercial structures in the VC District have apartments above the first floor.

Commercial-2 District also allows a mix of residential and small-scale commercial uses. Residential development can be single-family or multi-family. One of its intended functions is to provide places for neighborhood-scale commercial activity. Allowable residential densities are relatively low – one unit per 40,000 sq. ft. – unless the development is clustered with areas of open space, in which case density can be up to 8 units per acre. Several large apartment complexes are located in the C-2 District off Park Street, having utilized the clustering provisions of the ordinance.

- **Two Commercial Districts – Commercial-1 and Economic Development Zone**

Commercial-1 District, located in the vicinity of Exit 193 off I-95, is a suburban commercial district that accommodates shopping center and highway commercial uses, as well as office and business park uses.

Economic Development Zone, located at Exit 191 off I-95 and covering a portion of the Maine Technology Park, is intended to accommodate light industry, office building, and research and development in a planned design format.

- **One Industrial District - Industrial**

Industrial District is very limited in Orono. With the final exit in the 1990s of the 19th and early 20th Century mills, the only industrially zoned space is Ayers Island, to which access is very limited by a deteriorated bridge.

- **The University District - covering University lands**

University District recognizes the unique institutional nature of the University of Maine and its status as a state-owned entity. Public sewer and water connections are required, there are no density or other dimensional limits, and the District limits the Town's site plan review authority to within 500 feet of College Ave. and Park St.

Shoreland Zoning: The Town also has adopted the State's mandatory Shoreland Zoning Ordinance. The districts cover lands within 250 feet of the normal high-water line of great

ponds and rivers, including in Orono the Penobscot River, Stillwater Branch, and Pushaw Lake; within 250 feet of the upland edge of freshwater wetlands greater than 10 acres; and within 75 feet of the normal high-water line of a stream, including, in Orono, Johnny Mack Brook. There are four districts within the shoreland area: Limited Residential, Limited Commercial, General Development, and Resource Protection. These districts have their own sets of allowable uses, but the primary tool in shoreland zoning are performance standards aimed at preserving water quality. Frequently the same use that is allowed in a townwide district also is allowed in a shoreland district, but the standards by which the use is built are more stringent.

Overlay Districts: Finally, the Town has adopted two Overlay Districts: the Aquifer Protection Overlay District and the Stillwater Avenue Overlay District. The land within an overlay district is governed by the primary, underlying district, but the overlay creates additional standards or uses that recognize the unique circumstances of the area.

Aquifer Overlay Protection District extends in a swath along the Stillwater Branch into and through downtown along Main Street, to Kelley Road. As described in Chapter 4 on Geology, Soils, Topography and Water Resources, this area has sandy soils and gravels that allow rainwater to recharge groundwater. The Orono and Veazie Water District's well field is in this overlay area along the Stillwater. Within the district, certain high risk activities that rely on chemicals, chemical processing activities, and below-ground storage of petroleum and chemical products are not allowed. Projects subject to site plan review are required to conduct groundwater impact analyses.

Stillwater Avenue Overlay District, which extends along most of Stillwater Ave., was created as part of the 2010 amendments. Its underlying district is the Low Density Residential District. It recognizes the Stillwater Ave. corridor as still essentially residential but with growing volumes of traffic and several small-scale businesses. The overlay district creates a category of non-residential use called "low impact use." A "low impact use" is not limited to any particular kind of activity, but rather is performance-based. Thus, a non-residential use that generates a limited amount of traffic, has limited parking needs and few truck deliveries, is limited in size and follows certain design standards can locate in this area.

Contract and Conditional Zoning: Contract or conditional zoning is a tool that, in limited circumstances, can be used to customize zoning for a particular parcel, without being considered illegal "spot" zoning. With this tool, the Town Council agrees to rezone a property to a zone that allows more intense uses, and the property owner in turn agrees to limits on those more intense uses that would not normally apply in that new zone. A contract or conditional zone also addresses design standards to protect surrounding properties.

The Zoning Map pre-identifies several properties as ripe for conditional zoning. These are typically parcels that host (or hosted) unique uses, such as an industrial mill or gravel processing operation, and for which there may be limited re-use potential in their existing zoning districts. However, other property owners may also seek a contract or conditional zone if they believe their circumstances warrant. At present six properties have contract or conditional zoning agreements, all of which were previously in a residential district. These include the former St. Mary Church property, the former Webster Mill property, a Main Street property that is now in a mixed residential-office use, a Mill Street property that is in a mixed residential-office use, a Stillwater Ave. property that is used as a trades shop and office, and a Park St. property used for a place of worship.

Table 7-5 provides a breakdown of the primary and shoreland zoning districts by area. **Figure 7-4** at the end of this section presents the zoning map effective as of 2010.

Table 7-5. Areas of Zoning Districts		
District	Acres	%
Forestry and Agriculture (F&A)	4,851	43.8%
Low Density Residential (LDR)	1,474	13.3%
Medium Density Residential (MDR)	1,642	14.8%
Gateway Medium Density Residential (GMDR)	248	2.2%
High Density Residential (HDR)	22	0.2%
Village Commercial (VC)	17	0.2%
Commercial-2 (C-2)	348	3.1%
Commercial-1 (C-1)	181	1.6%
Economic Development Zone (EDZ)	450	4.1%
Industrial	22	0.2%
University	647	5.8%
Shoreland Limited Residential	580	5.2%
Shoreland Limited Commercial	22	0.2%
Shoreland General Development	47	0.4%
Shoreland Resource Protection	534	4.8%

D. Issues and Opportunities

The following issues relate primarily to the Growth Area zoning districts. Rural and Transitional Area zoning districts were addressed, with recommendations implemented, in the 2009 amendments to the Comprehensive Plan and the 2010 amendments to the Land Use Ordinance. See “Addendum to Town of Orono Comprehensive Plan, Amending Land Use Inventory, Policies, and Future Land Use Map as They Affect the Forestry & Agriculture District.”

Medium Density Residential District: The MDR District covers the largest part of the Growth Area in Orono. Issues to consider include (1) density and frontage standards; (2) MDR zoning of Main Street frontage; and (3) MDR zoning at edge of Village Commercial and Commercial-2 Districts.

- **Density and Frontage:** Are the 20,000 sq. ft. minimum lot size and 100 feet of frontage appropriate for an in-town district if public water and sewer are available? This is the minimum lot size that under state law is required when septic systems are used. There appears not to be a public health reason for 20,000 sq. ft. (nearly one-half acre) where lots are served by public facilities. Meanwhile, this requirement works against other objectives of an in-town area:
 - A walkable district, because the 100-foot frontage pushes land uses too far apart;
 - Housing affordability, because the per lot infrastructure costs are high, pushing lot prices above prevailing wages for many Orono workers and pushing them to more affordable, outlying towns;
 - Traditional neighborhood design, which is gaining favor in the marketplace and is becoming common in many university towns and towns with significant retiree populations.

A majority of lots occupied by single-family and two-family homes in the MDR District – an estimated 62% -- are on lots smaller than 20,000 sq. ft. The median size of occupied lots in the district is an estimated 0.36-acre (about 15,000 sq. ft.). Many have lot frontages of 75 feet or less. Are there public health, safety or welfare reasons to retain the existing standards? Are there portions of the MDR District that still warrant them, while other portions may not?

- **MDR zoning along Route 2:** The Main Street corridor in the MDR District from Old Kelley Road to Juniper Street includes notable residential structures, including most of the Main Street Historic District. Existing uses are principally single-family and small multi-family

residences. The MDR District recognizes and provides a basic assurance that this corridor will maintain its residential character as Main Street approaches downtown from the south.

But there also are countervailing pressures and opportunities in the corridor, including

- High traffic volumes that reduce the corridor's appeal for single-family homes
- The cost of maintaining large and aging structures, which tend to need an income-producing use
- Several locations in the corridor that have been rezoned for uses not allowed in the MDR District or that are grandfathered, such as offices, institutional uses, and boarding care. These uses are low impact, adhere to standards, and are not incompatible with the surrounding MDR District. The Town often receives inquiries as to whether there is flexibility in the MDR district to allow similar uses.

Given the conditions and needs of the corridor, is MDR zoning, which effectively limit uses to single-family and two-family dwellings, too restrictive? Can it be modified to allow similar low impact, non-residential uses?

- **MDR zoning at edges of VC and C-2 district:** Are there edges of the MDR District adjacent to the Village Commercial or Commercial-2 districts that have more in common with their adjacent district than to MDR, and should they be rezoned accordingly?

Village Commercial District – design standards: This compact district appears to be working well in most respects. However, over many years it has lost much of its architectural character that, had it been preserved, might now be adding economic value to the Downtown. The several buildings on Main Street where the Village Commercial District and the Main Street Historic District overlap retain their notable architectural character, and a few Downtown buildings, such as the buildings occupied by Verve and Metropolitan Soul, maintain traditional storefront facades. But many of Downtown's buildings have been compromised and that part of their appeal has been lost or masked. A number of communities have adopted design standards – either as regulations or as guidelines – to preserve or encourage the return to traditional village facades and streetscapes. Should Orono consider similar strategies?

Commercial-2 District – lot size and frontage: The C-2 District serves as a mixed-use district that allows both residential and neighborhood-scale commercial uses. However, its minimum lot size and other dimensional requirements may not be consistent with this purpose. Mixed-use districts tend to be compact, suitable for walking between uses and adjacent residential areas, and suitable for small "infill" development. The C-2 District's minimum lot size of 40,000 sq. ft. and minimum frontage of 200 feet tend to push the district toward large-scale multi-

family development or highway-oriented commercial design rather than mixed-used design. Should these standards be reconsidered?

Zoning for light industry: Light industry is not allowed in the C-1 zoning district east of I-95 at Exit 191. This is also in the vicinity of where a number of new or incubating companies are located. If they succeed in growing, the district may offer opportunities for space into which to expand. Should the existing limits be reconsidered?

Economic Development Zone boundaries and uses: The EDZ district boundaries may warrant modest, incremental expansion to make utility extensions into the district economical or to provide logical opportunities for future development. The EDZ may also unnecessarily prohibit certain uses – such as housing targeted at a young workforce -- that would be compatible and enable the district to function more efficiently.

Building Height – the 35-foot limit: The Land Use Ordinance’s building height limit in most zoning districts is 35 feet “from the mean original grade at the downhill side” to the highest point of the structure, excluding chimneys, steeples and similar appurtenances. There are allowances to go to 45 feet in the Village Commercial and Commercial-2 districts with site plan review. These limits restrict buildings generally to three stories. The public health and safety reasons for these limits in the non-residential and high density residential districts are unclear. The Town’s fire apparatus can serve structures up to 70 or 80 feet; and the shadowing of adjacent buildings may not be an issue in many instances, depending on distance from property lines, surrounding uses, and orientation of buildings. On the other hand, 35 feet (with occasional allowances to 45 feet) fits the scale of a small town. Is there merit in considering a moderately higher height for commercial and high density residential districts?

Clustered Development: The Clustered Development provisions of the Land Use Ordinance were amended in 2006. To date, the provisions have been used only for large-scale developments. In certain instances (student apartment developments in the C-2 District), the scale may be too large, putting unanticipated pressure on remaining open space and municipal services. Conversely, there may be instances when small residential clusters may be appropriate but are not allowed, because the ordinance requires a minimum of 5 acres of land to be eligible. Should density standards in the C-2 District be reviewed? Is there a compelling reason to keep the minimum area for clustered development at 5 acres?

Newer Mobile Homes – current limit to west of I-95: “Newer mobile homes” are defined by state law (they are mobile homes constructed after 1976 when federal building standards were adopted). State law also requires every municipality to make provision for them to be treated like single-family dwellings and to allow them to be located “in a number of locations on

undeveloped lots” in the Town. Orono restricts them to the F&A district west of I-95 and the Low Density Residential District, which also is west of I-95. The question has arisen as to why the area west of I-95 should be treated differently than the F&A area that is located east of I-95.

Home Occupations – current requirement for Planning Board review: Home occupations are allowed throughout the Town but require approval by the Planning Board. Home occupations are defined as “an accessory use of a dwelling unit or accessory structure for gainful employment by the occupants.” They are subject to a series of standards in the ordinance (limits on employees, signs and advertising, commercial vehicles, outdoor storage, parking, etc.). Many communities allow home occupations – in particular, office-based and other home occupations that do not typically involve outside customer or commercial traffic – as a matter of right. Is there a need for Planning Board review home occupations that do not generate customer or commercial traffic and do not create external nuisance effects such as noise or odors? Does the current regulation perpetuate an image of Orono as unfriendly to business; and does it discourage Orono as a home for start-up businesses?

Conditional Uses – whether they should continue to be excluded; and confusion with site plan review: “Conditional uses” or “special exception uses” have been a staple in zoning ordinances for many decades. These are uses that may be generally suitable in a zoning district, but that may have some characteristics that on occasion would not be suitable in a particular location without additional conditions (or not at all). Most ordinances authorize Planning Boards to review such uses according to a set of standards. But in the 1990s, Orono eliminated “conditional uses” as a category of uses from its Ordinance. This apparently was done because of concern about being able to devise appropriate review standards for them. Instead, the ordinance shifted uses that might have been reviewed as “conditional” uses to allowed uses subject to site plan review. However, conditional uses and site plan review are different tools with different purposes and legal standing. The Planning Board sometimes end up reviewing proposed uses that have no construction or site plan elements involved, for example; and submission requirements and review standards for site plan review have little relevance to the proposed activity. Should reinstating conditional uses be considered?

At the same time, the trigger for site plan review is based on use rather than whether new construction or disturbance of the land will occur. If a use involves no new construction or disturbance of the land, there are few standards by which the Planning Board is authorized to evaluate the use. Should site plan review be reserved for projects that disturb the land or that have certain levels of traffic or other off-site impacts?

Aquifer Protection Overlay District in Downtown Orono: This overlay district is critical to the protection of Orono and Veazie's water supply. However, it applies equally to the portion of the aquifer recharge area that lies beneath the Downtown/Village area as it does to less intensely developed areas. Downtown is well down-gradient of the public water supply wells, which are located to the north; and public water supply is available all the way to the Veazie line. Should some distinction be made between the overlay district as it applies in the Downtown area versus the rest of the recharge area?

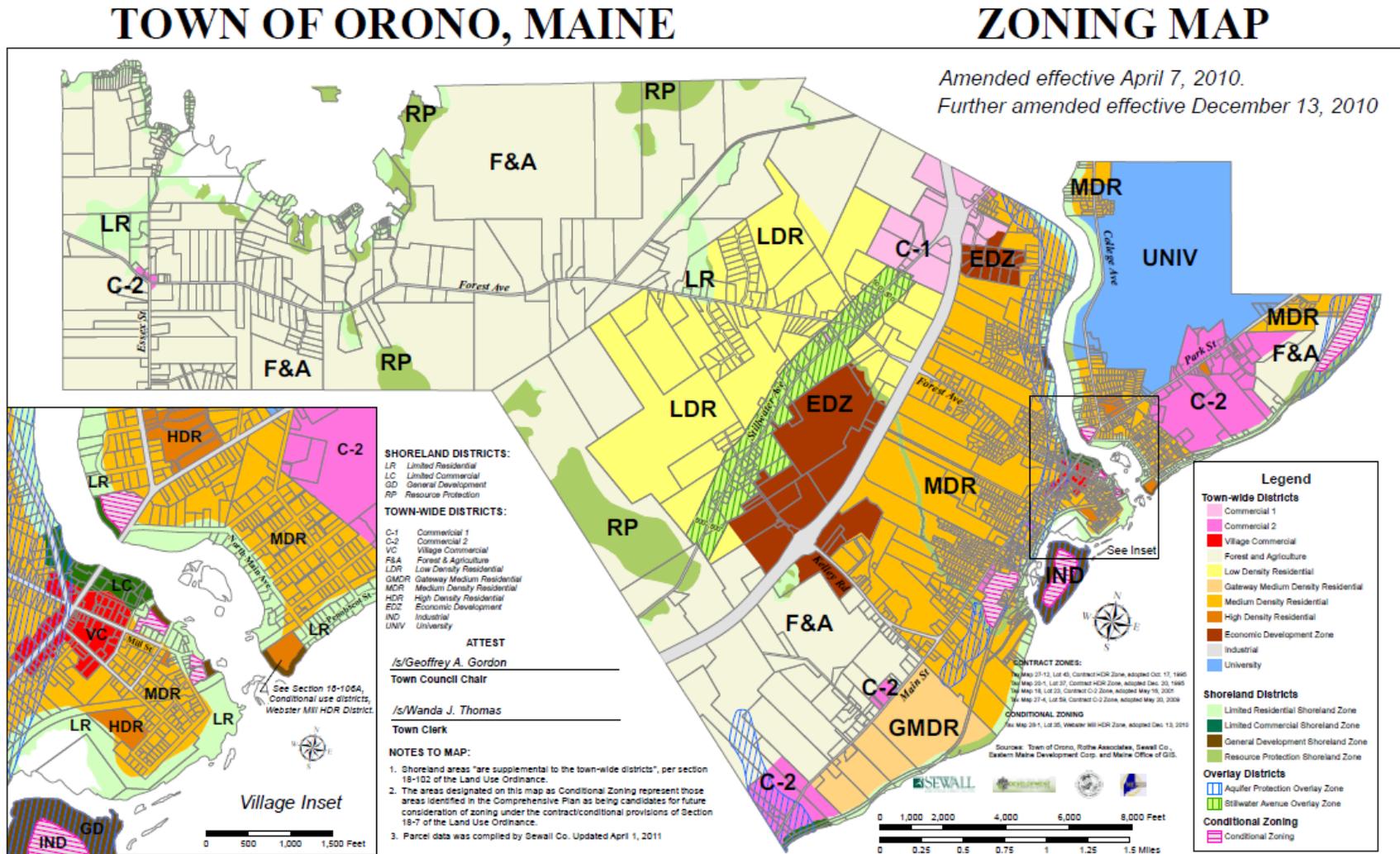
Clarification of Uses: There may be some instances in which certain generally acceptable land uses have been omitted from the ordinance or too tightly defined. An example is "bed and breakfast," which is defined in a way as to be uneconomical (no more than 3 guest rooms).

Ambiguities and inconsistencies in the Land Use Ordinance: Orono's Land Use Ordinance really is several ordinances rolled into one: zoning, subdivision, site plan review, flood plain, shoreland zoning. While there is a common set of definitions for the entire ordinance, at times definitions and standards prepared for a specific purpose – e.g., regulation of the shoreland area – were inserted in a way that they create internal conflicts in the ordinance, or are inadvertently applied to other sections where they don't make sense, or create ambiguities as to what was intended. A few examples include:

- Whether shoreland zoning districts are districts unto themselves or are supposed to function as overlay districts
- Conflicting provisions as to when traffic impact studies are triggered in site plan v subdivision ordinances (400 trips/day v 400 trips during peak hour)
- Definition of "net density" vs. "lot area per family"
- Separate uses for "two-family" and "duplex" structures
- Confusion over similar uses that arise from different sections of the ordinance – such as "excavation, removal and filling of land" and "mineral extraction"
- Provisions relating to the filing of subdivision improvement guarantees for public improvements – whether at the time of Planning Board approval or simply before construction begins
- Sign standards – for example, whether they apply per structure or per business

Many of these are housekeeping items, some have policy implications, but the inconsistencies and ambiguities exist and need to be corrected.

Figure 7-4. Orono Existing Zoning Map Adopted 2010



CHAPTER 8. TRANSPORTATION

Orono is a transportation hub in a regional network with connections to highway, air, and sea. Within Orono itself, those who live and work in-town and at the University of Maine can easily choose among auto, transit, bicycle, or walking. Those who live or work in lower-density areas west of I-95, south of Kelley Road, and in the Exit 193 area depend more exclusively on automobiles for travel.

A. The Regional Transportation Network

Roads: Interstate 95 is part of the U.S. National Highway System with two interchanges in Orono at mile 191 (Kelley Road) and mile 193 (Stillwater Ave.). I-95 connects Orono to points south – most immediately, Bangor, and more distantly, the Augusta-Waterville and Portland regions; to points north, including the “wood basket” of Northern Maine and the recreational region around Baxter State Park; and to points east, including coastal Maine, via its interchange with I-395 in Bangor.

Two U.S.-numbered routes also go through Orono. U.S. Route 2 parallels I-95 to the east and is Orono’s Main Street. It runs generally north-south in Orono but turns west in Bangor and connects the region to Maine’s western mountains, New Hampshire and markets to the west. To the north, it continues into Old Town, where it also serves as that city’s Main Street, and ultimately to Houlton in Aroostook County. U.S. Route 2A branches from Route 2 on Marsh Island, following College Ave. by the University of Maine to Stillwater Ave. before reconnecting with Route 2 in Old Town.

The only state-numbered route in Orono is Route 16, which follows Bennoch Road from Main Street into Old Town and west to Dover-Foxcroft.

Park-and-Ride: Park-and-ride lots serve carpoolers and accommodate vanpooling services such as GO MAINE. The only official (state-sponsored) park-and-ride lots in the Bangor area are at the intersection of I-395 and Odlin Road in Bangor and in the Wal-Mart parking lot near the intersection of Hogan Road and Stillwater Ave. in Bangor.

Regional Transit: Orono is served by the Community Connector, the region’s daily, fixed-route bus system operated by the City of Bangor. Orono is on the Bangor-to-Old Town run with hourly service on weekdays from 7 a.m. to 6 p.m., and two-hour service on Saturday. This run serves Orono village via Route 2, the University of Maine, and the Stillwater area, including the University Mall and the Maine Technology Park. The Town pays a proportional share of the cost of serving this route. The Community Connector and the University have an agreement to provide students and staff with fare-free rides. The cost is offset by fees paid by the University.

In 2009 the Town and the University of Maine, in cooperation with the Orono Village Association, jointly launched the Orono Black Bear Express, a shuttle bus between Downtown Orono and the campus. The shuttle is operated by the Community Connector. Equipment was provided by the Maine Department of Transportation, although there is no guarantee that MaineDOT will assist with replacement equipment in the future. Operating expenses are split between the Town and University plus a contribution from the Orchard Trails apartment complex. Rides are free. Objectives of the shuttle are to provide convenient travel between the village and campus, relieve parking demand on campus, and physically connect students and University staff with Downtown and its restaurants and shops.

The shuttle operates when the University of Maine is in session. It makes stops in the Webster neighborhood, Orchard Trails apartment complex, and Talmar Woods apartment complex en route. The shuttle completes its cycle every 30 minutes, from 7 a.m. to 10 p.m. on weekdays and noon to 10 p.m. on Saturday.

The Town’s share of the operating expenses – about \$60,000 for the 2012-2013 academic year – comes from the Downtown and Transit-Oriented Development Tax Increment Finance District established by the Town in 2009. This type of TIF district allows use of funds to pay for transit operating costs. Ridership for the first four years of operation is shown in **Table 8-1**.

Academic Year	Riders	% Change
2009-10	39,317	---
2010-11	41,080	4.5%
2011-12	49,355	20.1%
2012-13	53,870	9.1%

Other Alternative Transportation:

GO MAINE: GO MAINE is a statewide carpool and vanpool resource for employers and commuters. It was established in 2002, having grown out of an earlier rideshare program in Southern Maine. GO MAINE still has not penetrated the Bangor Region deeply, but it does offer, among other things, a vanpooling service and statewide matching of commuters.

The Lynx: Penquis, the community action agency serving Penobscot and Piscataquis counties, operates the Lynx, with a variety of individualized transportation services for the elderly and people with low incomes, health needs or disabilities. It also serves the general public in the rural regions of the counties with service on selected days of the week between outlying towns and Bangor and a few other service centers, but not Orono.

Air Transportation: Bangor International Airport is located off Union Street in Bangor, about 11 miles and less than 20 minutes from the center of Orono. The airport offers domestic air

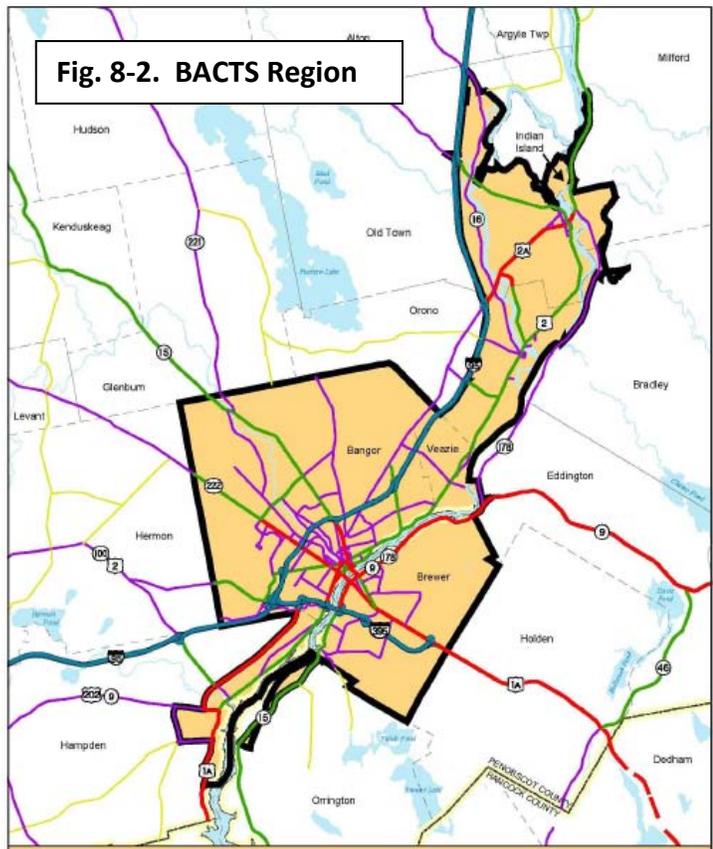
including Orono. Route 16 (Bennoch Rd.) is a “Priority Three” highway in Orono and “Priority Two” west of Orono.

See **Figure 8-1**. Priority One routes are red, Priority Two routes are orange, and Priority Three routes are blue. PARI is the abbreviation for Pan Am Rail; and MMA is the abbreviation for Montreal, Maine & Atlantic Railway.

Port of Searsport: The Port of Searsport is 40 miles (about one hour) south of Orono via Route 1A. It is one of three major ports in Maine, along with Portland and Eastport. The deep water port is located at Mack Point in Searsport and is primarily a terminal for petroleum products, but it also handles bulk items such as coal, road salt, and gypsum.

Regional transportation planning: Every metropolitan area in the U.S. has a designated “metropolitan planning organization” (MPO) to carry out regional transportation planning and to set priorities for federal and state transportation improvement funds. In the Bangor Metro Area, the organization is the Bangor Area Comprehensive Transportation System, or BACTS. Its jurisdiction is the urbanized area that consists of Bangor, Brewer, and Veazie and portions of Orono, Old Town, Milford, Hampden, Bradley, Eddington, Orrington, and the Penobscot Indian Nation. See **Figure 8-2**. The urbanized part of Orono is everything east of I-95.

BACTS is governed by a Policy Committee and a Technical Committee. For a federally funded transportation improvement (such as a road resurfacing project, a bikeway, or traffic signalization) to become a reality in Orono, it must first be included in BACTS’ Transportation Improvement Program. MaineDOT relies on BACTS to identify the specific projects for inclusion in the State Transportation Improvement Program.



BACTS also carries out a variety of transportation planning studies and prepares a Long-Range (25-year) Transportation Plan.

B. The Local Transportation Network

How Orono Gets to Work: Orono workers are six times more likely to walk to work than workers either in the Bangor Metro region as a whole or the state as a whole: 24% versus about 4% in the region or state. Another nearly 7% use other means, including bicycles (est. 4%) and public transportation (nearly 2%). With its high walking and relatively high bicycling percentages, Orono commuters have the second highest share of human-powered commuting in Maine, behind Bar Harbor, according to BACTS. Still, a majority – 55% - drive alone to work – a slightly higher percentage than 20 years ago (52% in 1990). Another 10% carpool. About 4% work at home. See **Table 8-2**.

Table 8-2. Means of Travel to Work			
	Orono	Bangor Metro	Maine
Drive alone	54.7%	79.6%	78.6%
Carpool	10.3%	10.1%	10.1%
Public transportation	1.9%	1.0%	0.6%
Walk	24.3%	4.3%	4.1%
Other means	4.6%	1.6%	1.5%
Worked at home	4.3%	3.5%	5.1%

Source: U.S. Census, American Community Survey, 2006-10, Table DP03

The average travel time to work for Orono residents is 16.4 minutes, well under the Bangor Metro area’s average of 21.5 minutes, but more than the average 20 years ago, 11.6 minutes.

Streets and Traffic:

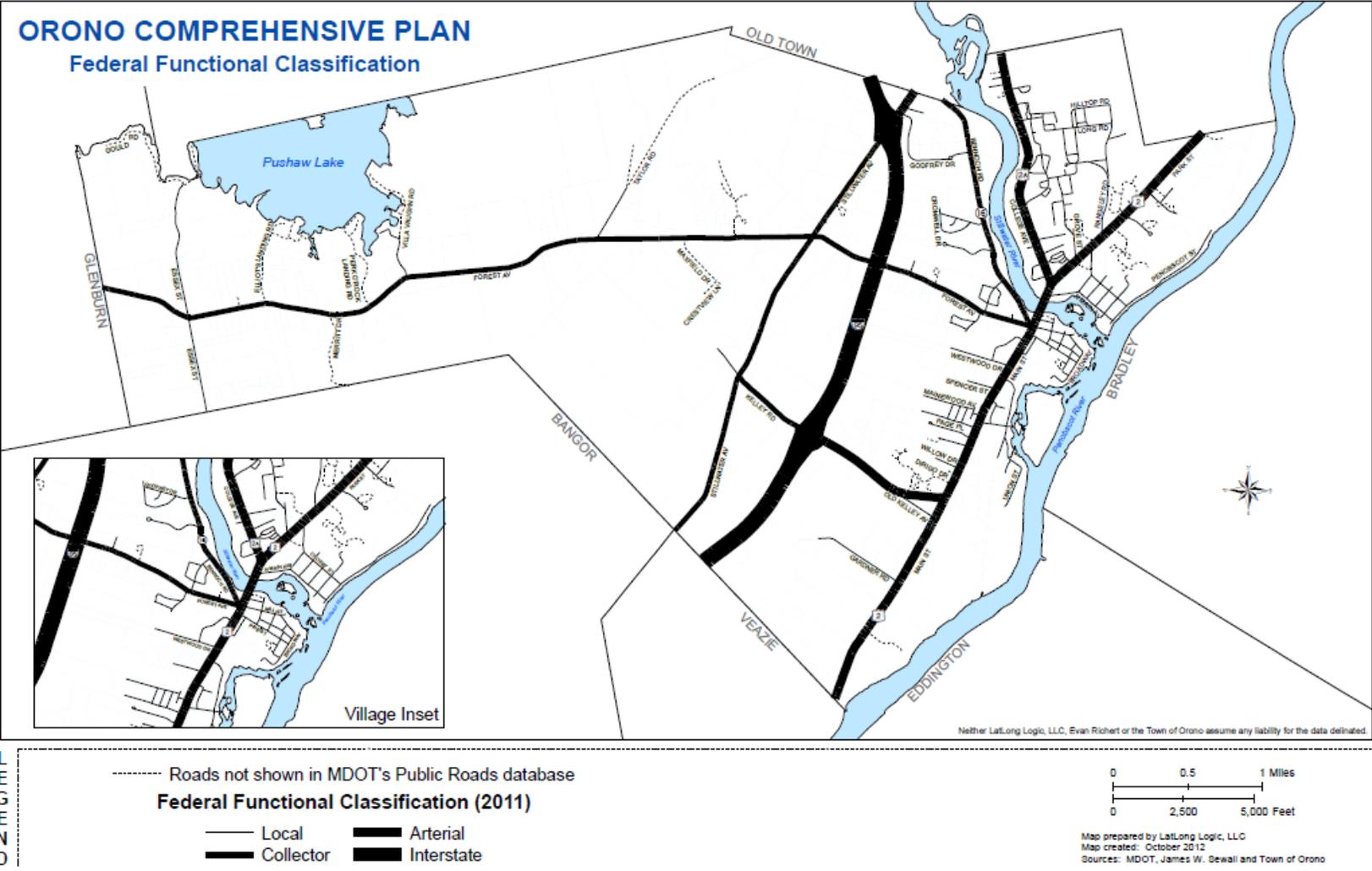
Classifications: Within Orono there are about 48 miles of public roads and streets. These roads and streets are classified in different ways. One classification is by function (see **Figure 8-3**):

Interstate Highways (9.09 mi., north- and southbound, plus ramps) are limited access highways of four lanes or more that are part of the National Highway System.

Arterials (7.19 mi.) are highways that serve regional traffic over distances to and between larger communities or other large traffic generators, such as recreational areas. In urban areas, arterials are the major access roads. Arterials in Orono include all or portions of Main St., Kelley Road, College Ave., Park St., and Stillwater Ave.

Collectors (12.24 mi.) are roads that carry traffic between residential areas and arterial roads and between smaller communities. Collectors in Orono include all or parts of Bennoch Road, Forest Ave., Kelley Rd., Mill St., North Main St., Pine St., and Stillwater Ave.

Fig.8-3. Orono's Street System Based on Federal Functional Classifications



Local Roads (19.41 mi.) serve travel within the community and are more lightly used than other types of roads.

Certain regulations, such as driveway and entrance permits, and certain state and federal funds for capital improvements are associated with the functional classification of roads.

A second classification system is for the purpose of assigning summer and winter maintenance responsibilities to the state or local government. These responsibilities differ depending on whether the streets are considered to be within or outside of an “urban compact area.” Orono has an urban compact area that covers most of the area east of I-95. The classifications are:

- State highway in urban compact, maintained by the Town: 9.06 mi
- State highway outside of urban compact, maintained by the State: 9.37 mi
- State-aid roads in urban compact, maintained by the Town: 0.93 mi
- State-aid roads outside of urban compact, maintained by the State in the summer, Town in the winter: 9.15 mi
- Townways maintained by the Town: 19.41 mi

Finally, there are a number of private ways in Orono, such as those serving residential complexes at Dirigo Pines and some student housing developments, some roads serving camps on Pushaw Lake. In addition, the University maintains the street network on its campus. The University’s network totals 6.92 mi.

Traffic Counts: The most heavily traveled road in Orono is Stillwater Ave. north of the I-95 ramps. This segment of Stillwater carried an average of more than 19,000 vehicles per day (both directions) during 2009. Next highest is Main Street at the Stillwater River Bridge, with nearly 15,000 vehicles per day (both directions). I-95 between Exits 191 and 193 averages between 10,500 and nearly 12,000 vehicles per day; this falls off to about 5,000 north of Exit 193. See **Table 8-3**.

Table 8-3. Summary Av. Annual Daily Traffic Counts, Selected Locations, Orono		
Road	Location	Count (for latest year, 2008-11)
Main Street	S of Kelley Rd	5,000 (2008)
	N of Kelley Rd	12,340 (2008)
	N of Island Ave	12,890 (2008)
	S of Goodridge Dr.	13,570 (2008)
	N of Pine St.	14,150 (2009)
	N of Oak St. at Stillwater Bridge	14,620 (2011)
Park Street	NE of College Ave.	10,720 (2009)
Rangeley Road	N of Park St.	9,190 (2008)

RECOMMENDED TO COUNCIL June 2014

Munson Road	NE of College Ave.	2,550 (2008)
College Avenue	NW of Park St.	5,770 (2009)
	S of Long Road	5,100 (2011)
	N of Long Road	9,380 (2008)
Stillwater Avenue	SW of I-95 southbound off-ramp	5,040 (2009)
	NE of I-95 northbound ramps	19,340 (2009)
	NE of Godfrey Drive	18,540 (2009)
	NE of Forest Ave.	4,900 (2011)
Godfrey Drive	E of Stillwater Ave.	3,800 (2009)
Kelley Road	SE of I-95 NB ramp	8,410 (2011)
Forest Avenue	W of Bennoch Road	1,870 (2009)
	E of Stillwater Ave.	1,430 (2011)
	W of Stillwater Ave.	2,800 (2011)
Pine Street	E of Main Street	2,260 (2009)
Mill Street	E of Main Street	1,630 (2009)
I-95 (NB)	N of off ramp to Kelley Rd.	10,500 (2011)
	N of off ramp to Stillwater Ave.	4,460 (2011)
I-95 (SB)	N of on ramp from Stillwater Ave.	5,640 (2011)
	N of off ramp to Kelley Rd.	11,910 (2011)

Source: Maine Department of Transportation, Traffic Count Report, 2011

High crash locations: MaineDOT has identified eight high crash locations in Orono as of the 3-year period 2009 through 2011. A high crash location is either an intersection or a stretch of road that experienced at least eight crashes during the 3-year period and has a “critical rate factor” of more than one. The critical rate is a comparison of the actual accident rate to the expected accident rate based on the type of road and traffic volume. A rate of more than one indicates more accidents than expected and may indicate the need for remedial steps. See **Table 8-4.**

Table 8-4. High Crash Locations, Orono, 2009-11		
Location	No. of Crashes	Critical Rate
Intersection I-95 southbound on-ramp and Stillwater	9	5.66
Intersection Park St. and Rangeley Rd.	24	4.75
Intersection I-95 northbound off-ramp and Stillwater	25	3.59
Intersection Forest & Stillwater	8	3.29
Stillwater Ave., from Old Town town line to Univ Mall entrance	15	2.18
I-95 northbound from Forest Ave. bridge to Stillwater off-ramp	15	1.32
Intersection Bennoch Rd. and Main St.	14	1.32
Park St. from Colburn Dr. to Washburn Pl.	10	1.24

Source: Maine Dept. of Transportation, HCL 2009-2011

Access management: One ingredient in managing high traffic corridors and improving traffic safety is through the management of the number of driveways (curb cuts) between the road and adjacent properties. The Land Use Ordinance has standards for number of curb cuts per lot, sight distances, and for the location and spacing of curb cuts, but it does not specifically address high traffic arterials.

Local street design standards: New local streets, which are built primarily in new residential subdivisions, follow standards set out in the Subdivision article (Article VII) of the Land Use Ordinance. Referred to as “minor” streets, they consist of a 24-foot wide paved surface centered within a 50-foot right-of-way. A 5-foot wide sidewalk is required to be located on one side of the street. Dead-end streets are allowed and have been the most common type of new street built over the last 30 years. However, they cannot exceed 2,500 feet in length and, unless located in a clustered development, cannot serve more than 20 dwelling units. Curbs are optional based on the circumstances of the development (location, drainage, etc.). While on-street parking is typically allowed on these streets, the ordinance requires that provision be made for off-street parking (see Parking below).

New streets serving commercial uses, such as in a business park, require a 30-foot paved surface within a 66-foot right-of-way, with a 6-foot wide sidewalk on one side.

As part of the 2009 amendments to the Comprehensive Plan and subsequently the Subdivision article of the Land Use Ordinance, a separate set of standards is available for clustered residential developments in the Forestry & Agriculture zone. These standards recognize the low density and small scale of development in the F&A zone and the priority placed on conserving open space. Provided that the street remains in private ownership and is privately maintained, the street can consist of an 18-foot graveled surface, with either a 4-foot sidewalk or pathway, which can be located outside of the right-of-way.

The street system: Dead-end streets have been the norm for new residential developments over the last 30 or 40 years for two primary reasons.

- Residential development in the Bangor region, including Orono, tends to be relatively small scale, and individual subdivisions tend to be located on a single, existing parcel of land. These individual parcels are most easily and economically designed with a dead end street.
- The market responds well to streets that have no through traffic. Dead-end streets offer a sense of quiet and protection and may have open space (private or public) at the end that may be viewed as a neighborhood amenity.

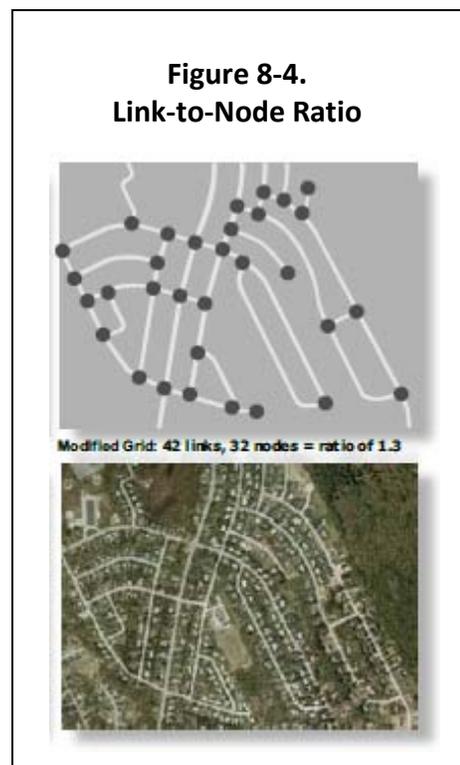
Thus, there are advantages to dead-end streets for developer and homebuyer. There also are disadvantages:

- Dead-end streets impede circulation through a neighborhood or area of town for police, fire, and public works personnel. They also create dead ends for water lines, which impede flows for fire protection and under some circumstances contribute to water quality issues.
- They force drivers on the street, including residents, visitors, service and delivery vehicles, onto arteries even for local trips (to school, local stores, etc.), with turns that cumulatively slow traffic on the artery and increase the potential for accidents.
- By forcing traffic to single points of concentration rather than distributing it over a network, residential properties located downstream from the dead-end streets bear a disproportionate share of local traffic going past their doors.
- Dead-end streets limit the choice of routes and tend to limit modes of travel. They encourage auto use since, unless there are separate pathways, travelers are directed to main streets rather than a network of local streets favored by walkers and bicyclists.
- They tend to cut off development potential of land just beyond the dead-end, encouraging instead a leapfrog pattern of development into areas farther from local utilities and services.

For these reasons, transportation guidelines encourage at least a minimum level of connections between local streets. This “minimum level” can be expressed in different ways, such as a “link-to-node” ratio.

A “node” is an intersection or the end of a dead-end street. A “link” is the connection between nodes. The more links there are for each node, the more connected the street system. The recommended minimum for an in-town neighborhood is 1.3 or 1.4 links per node. See **Figure 8-4** for an example. The intersections are mostly internal to a neighborhood; the number of ways into the neighborhood – that is, the number of intersections with the main road – can be intentionally limited to discourage through traffic.

The link-to-node ratio in Orono’s in-town neighborhoods varies. For example, the village between Main Street and Broadway has a ratio of 1.4. The Webster neighborhood has a ratio



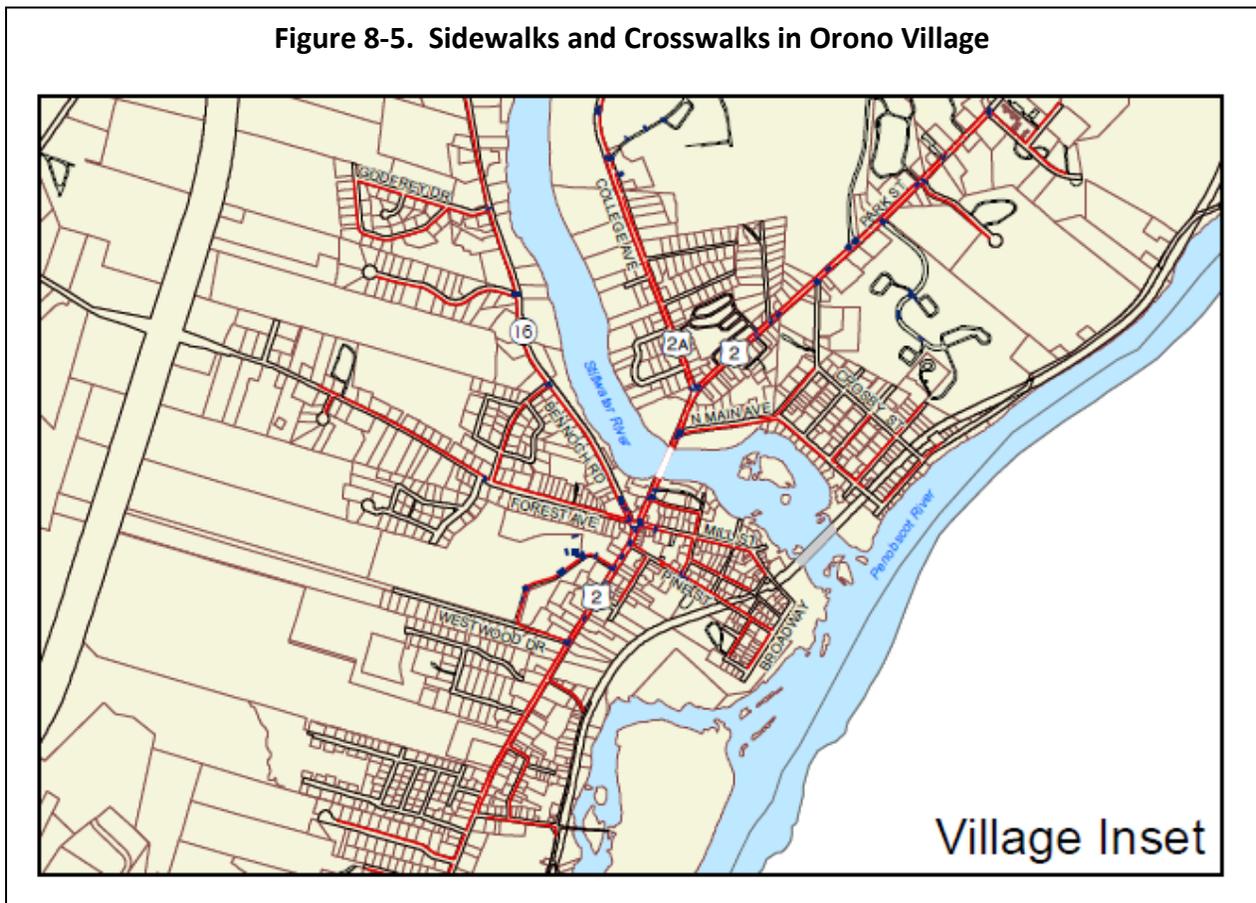
of 1.3. The Sailor neighborhood has a ratio just under 1.2. The three residential streets just south of the Sailor development, whose only connections are to Main Street, together have a ratio of about 0.8.

While most new single-family residential subdivisions over the last 30 years have been on dead-end streets, the Land Use Ordinance requires that provision be made in these subdivisions for future connections to adjacent vacant land, typically by reserving a 50-foot wide right-of-way for this purpose.

Sidewalks and Crosswalks

Orono maintains about 13 miles of public sidewalks. Sidewalks serve the primary streets in the built-up part of town. Many side streets also are served, though there are significant gaps even in-town. There are no sidewalks on Kelley Road, on Main Street south of Dirigo Pines, or on most of Stillwater Ave. West of I-95, the only sidewalks are those that were built as part of new subdivisions. **Figure 8-5** shows the sidewalk network in the village area.

Figure 8-5. Sidewalks and Crosswalks in Orono Village



Because Route 2 is also Main Street and is heavily traveled, crossing it safely is a concern. The municipal offices, public school campus, Post Office, and Keith Anderson community building are located on the west side of Main Street, while most downtown businesses, the Public Library, and Birch Street School senior center are located on the east side. People of all ages must cross Main Street often. Crosswalks are located at frequent intervals in the center of the village; crossing guides staff two crossings before and after school; and traffic signals at Pine Street and Mill Street include pedestrian cycles.

The existing sidewalks have conditions ranging from new to deteriorated. Sidewalk repair and reconstruction are routine parts of the Town's capital improvement plan, often in conjunction with road resurfacing and reconstruction.

Bicycling

Bicycling is a common means of transportation in Orono, but not every road is equally suitable. Some primary roads, such as Route 2, have shoulders that accommodate bicycling, while others don't. BACTS has published an area bike map that classifies major streets in the urbanized part of the region by the skill or comfort level of the bicyclist. The classification of Orono roads selected for this map is as follows:

Beginner bicyclists and children: Bennoch Road to Godfrey Drive; Colburn Drive; Penobscot Street; and Union Street.

Intermediate bicyclists (defined as disliking riding in busy traffic conditions unless there are wide shoulders): Main Street; Park Street; Margin Street; Kelley Road; Stillwater Ave.; Rangeley Road; Water Street; and North Main Street.

Advanced bicyclists (defined as preferring riding on roads and feeling comfortable riding a bike in heavy traffic): College Ave.; Forest Ave.; Goodridge Drive; and Mill Street.

Since the 1970s, Orono has had a marked on-road bicycle route along a portion of Main St., and shoulders generally of adequate width are available for most of Route 2 in Orono from Veazie to Old Town. The University of Maine maintains a dedicated, off-road bike path across the campus that connects Park Street at the eastern edge of the campus to Stillwater Ave. and Perkins Ave. in Old Town just west of campus. The university's internal street system also is available to bicycles.

One of Orono's assets also is its system of trails for walking, jogging, cross-country skiing, snowshoeing, and in some cases bicycling. These trails are discussed in Chapter 10, Parks and Recreational Facilities.

Bridges

There are four major bridges in Orono, three of which cross I-95 and one of which crosses the Stillwater River in the Downtown. Each bridge has a “sufficiency” rating, in which a rating above 80 is good; 50 to 79 is fair; and below 50 is poor. The ratings for these four bridges are:

Stillwater Ave. bridge over I-95: 77.70

Forest Ave. bridge over I-95: 63.70

Kelley Rd. bridge over I-95: 78.30 as of 2010; work to extend life of steel members has since been done

Ferry Hill (Main St.) bridge over Stillwater River: 76.80

In addition, a bridge connects Ayers Island to the mainland. It consists of two segments built in 1902 to serve a now defunct mill. The shorter segment of the bridge, called the Island Avenue Bridge (108 feet long) is Town-owned and is in poor to serious condition, is posted for weight limit, and has a sufficiency rating of 17.10. The longer segment, called the Shaddy Mill Bridge (359 feet long) is privately owned, although the Town retains the right (but not the obligation) to maintain or replace it. It is in poor to critical condition, is posted for weight limit, and has a sufficiency rating of 2.00. These ratings were based on inspections conducted by Maine DOT in 2010. The condition of the bridge(s) is a severely limiting factor in the redevelopment and re-use of Ayers Island.

C. Parking

Parking is accommodated in Orono by a combination of public parking lots, private parking lots, and on-street parking. Off-street parking is required of all new development, residential and commercial, located outside of the Village Commercial zoning district. Within the Village Commercial district, off-street parking is required only of new residential development.

Supply: The demand for parking spaces varies by time of day, day of week, and whether University classes are in session. As in most downtowns, the demand for spaces within a few hundred feet of businesses exceeds supply at peak periods, creating the need to (a) manage parking (e.g., with time limits, designated employee parking farther away, meters) and/or (b) expand the supply of spaces to better meet peak demand.

Five parking lots with public parking are located within 1,000 feet of the center of downtown. See **Figure 8-6**. These lots have 331 parking spaces. During late winter/early spring 2012, in preparation for the updating of this Comprehensive Plan, these five parking lots plus two sections of on-street parking were surveyed over a 7-day period. Three of the lots and one of the sections of on-street parking are within 500 feet of the center of downtown (considered to be in the vicinity of Pat’s Pizza) and have a total of 205 spaces:

- Pine Street lot (111 spaces)
- Orono Pharmacy lot (37)
- Bennoch Road lot opposite Post Office (31)
- Mill Street, Main to Wagner (26)

The other two lots and stretch of on-street parking have 164 spaces:

- Municipal lot between Municipal Building and Asa Adams School (121)
- Public Library lot (31)
- Bennoch Road adjacent to Post Office (12)

Some additional parking is in the area within 1,000 feet of the center of downtown, including parking on Main Street south of Goodridge Street and several private lots serving individual businesses or office buildings. These were not included in the survey. The survey was conducted by volunteer Merylene Thomas, an Orono resident and architect by training, from Monday, March 19 through Saturday, March 24 and on Saturday, April 14 (a Farmers’ Market day in the Pine Street lot). A total of 23 time slots over the seven days were surveyed, as shown in Table 8-5.

Fig. 8-6



Table 8- 5. Timeslots for Downtown Parking Survey, March and April 2012

	Mon 3/19	Tues 3/20	Wed 3/21	Th 3/22	Fri 3/23	Sat 3/24	Sat 4/14 (Fm Mkt)
8-9 am		X	X			X	
8:30 – 9:30 am							X
9:30 - 10:30 am				X	X		
10:30 am – 12:30 pm						X	
11 am – 1 pm	X	X	X	X	X		
11:30 am – 12:30 pm							X
4 pm – 5 pm	X	X	X	X	X		
7 pm – 9 pm		X	X	X	X	X	

This was a fairly representative time for the survey – the University was in session, the weekdays were normal school and work days, and a Farmers Market Day was included. However, the weather was unseasonably mild (65+ degrees). And the survey was done after the University's hockey season was over, so the unique demand associated with home hockey games (or similar big events) was not included.

Demand for spaces within 500 feet of the center of Downtown: For the 205 parking spaces in the lots and on Mill Street within 500 feet of the center of Downtown, there were three time periods when occupancy rates were 85% or higher, which can be considered full or near-full occupancy (*i.e.*, either cannot get a space or must search for one):

- Friday from 4 p.m. to 5 p.m.
- Friday from 7 p.m. to 9 p.m.
- Saturday from 7 p.m. to 9 p.m.

There were four other periods when occupancy was at least 70%:

- Wednesday from 7 p.m. to 9 p.m.
- Thursday from 7 p.m. to 9 p.m.
- Friday from 11 a.m. to 1 p.m.
- Saturday (non-Farmers' Market day) from 10:30 a.m. to 12:30 p.m.

Occupancy rates for all other time slots ranged from 25% to 69%.

The experience of the individual parking areas within 500 feet varied somewhat. The 26 spaces on Mill Street were at or near capacity during nine timeslots and were at least 70% full seven other periods. Except for first thing in the morning, there is competition for these spaces nearly all the time. The Pine St., Bennoch Rd., and Orono Pharmacy lots were at or near capacity during Friday and Saturday evenings, with heavy demand during a few other time slots, but were less than 70% full at other times.

Demand for spaces 500 to 1,000 feet from center of Downtown: For the 164 spaces located farther than 500 feet away from the center but within 1,000 feet, there were no time slots when these spaces were 70% or more filled. Peak demand is during the morning, when they frequently are 50% - 60% full. During the times when spaces within 500 feet are at or near capacity, these 164 spaces were relatively unused.

There is some variation by lot: the Public Library lot was at or near capacity on Saturday, 10:30 am to 12:30 pm, and also was in the 70% range during two other mid-morning to noon periods. The on-street spaces on Bennoch Road were busy on Saturday evening, probably serving as spillover from slightly closer parking spaces. The lot behind the Municipal Building has some busy morning periods.

Off-street parking standards: Off-street parking standards are contained in the Town's Land Use Ordinance (Sec. 18-135) and apply to new development and the re-use of existing property. The parking ratios are typical of industry standards in most respects, with some variation by zoning district – most notably the Village Commercial district, where businesses are not required to provide off-street parking.

The most atypical requirement in Orono's ordinance is for residences. The preamble to the standards explains why:

“Residential uses in this university community put unusual and extremely variable loads on the community's parking facilities. The number of off-street parking spaces appropriate for dwellings used by families or related individuals is not adequate when the same dwellings are rented to groups of unrelated individuals, typically university students.” (Sec. 18-135(b)(1)(a))

As a result, new dwelling units must provide three parking spaces per dwelling unit. Exceptions are efficiency apartments, which must provide two spaces, and low-income housing for the elderly, which must provide three-fourths space per unit (plus five spaces for the complex). The norm in other, non-university communities tends to be one space for an efficiency apartment, one-and-one-half spaces per one-bedroom apartment, and two spaces per unit for other dwellings.

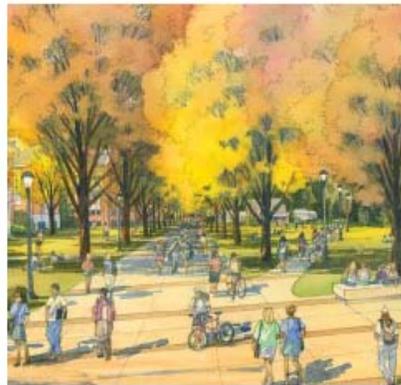
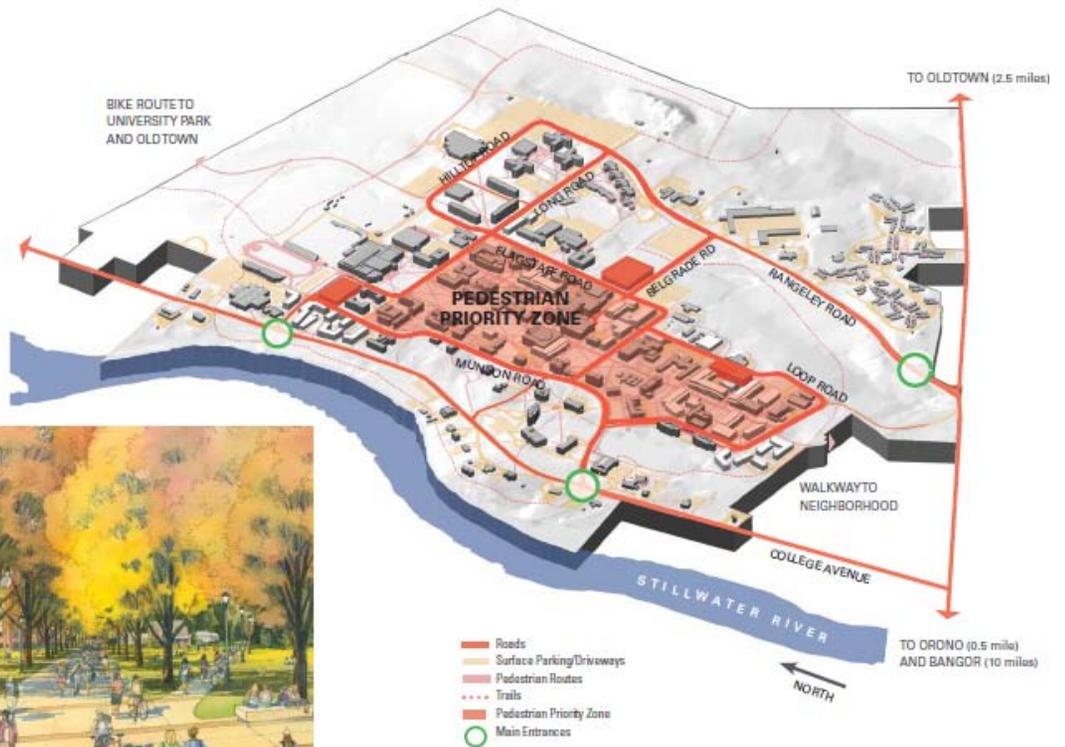
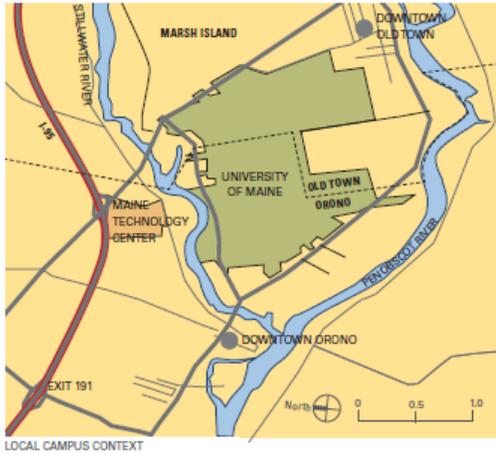
D. University of Maine Envisioned Circulation System

The University of Maine's 2008-2009 Campus Master Plan called for a significant re-shaping of the campus' circulation, parking, and pedestrian system. Key elements include designating a pedestrian core within a loop road; focusing most new development inside this core, which is within 10 minutes' walk of Folger Library; preserving wetlands and forestlands outside of this growth boundary; and moving much of the parking to the periphery of the campus. The loop road would be bounded by Grove Street on the east, Munson Rd. on the south, Long Rd. on the west, and Flagstaff Rd. on the north. The main entrances to the campus would continue to be Rangeley Rd. off Park St., and Munson and Long Roads off College Ave.

The Orono Black Bear Express, besides providing a physical connection between the campus and downtown Orono, is intended, among other things, as a step toward reducing parking demand on campus. Most riders are student commuters.

See **Figure 8-7** for images from the Campus Master Plan

Figure 8-7. Circulation and Parking Elements of UMaine Campus Master Plan, 2008-09



- Roads
- Surface Parking
- Structural Parking

E. The Land Use-Transportation Connection

In recent decades much has been learned about the connection between transportation and land use. As stated in *Sensible Transportation*, Maine's handbook for local transportation planning:

“Transportation is nothing more or less than the means to connect Land Use A to Land Use B: home to work, manufacturer to supplier, or skier's residence to ski resort. This means that transportation and land use planning are tightly bound. Transportation systems influence most important land use decisions and thus shape communities, regions, and their economies. In turn, if a transportation system is not working well, there often is something wrong with the arrangement of land uses. To paraphrase a common saying, if the transportation (or land use) system sneezes, the land use (or transportation) system catches a cold.”

Transportation modeling nationally and in Maine, including for corridors serving metropolitan areas and small town regions, indicate that certain desirable transportation outcomes come with a multi-centered pattern of development in a region – that is, development that is focused on a series of fairly compact, mixed-use centers. This pattern does better than the spread-out pattern of development often referred to as “sprawl” (low-density, single-use development spread over large areas) across a number of measures, including:

- Vehicle hours traveled
- Traffic congestion
- Pedestrian and traffic safety
- Choice in transportation, including use of transit, walking, and bicycling

For these reasons, Maine's Sensible Transportation Policy Act encourages a variety of measures aimed at managing traffic, reducing arterial congestion, and increasing options for moving along corridors. These measures are sometimes grouped under “the four Ds” – density, distance, diversity, and design.

- Density of development is a predictor of the viability of buses and other alternative forms of transportation. Transit starts to become feasible when residential development is in the range of 3 to 5 units per residential acre. At 5 to 7 units per residential acre, service improves in terms of frequency of buses and design of routes. Carpooling and van pooling can serve lower density regions, because participants drive to a point of concentration – e.g., a park-and-ride lot – to join up with others.
- Diversity refers to mix of uses. The mix depends on the type of neighborhood or commercial district. A predominantly residential neighborhood preferably will have embedded within it or nearby at least a few activities that people need routinely (food, day care, schools, drug store, hardware store, entertainment, park, etc.). If the mix of uses is

located close enough to each other, data show significant shares walking and/or short auto trips on local streets.

- Distance between land uses is a good predictor of how many trips can be “captured” within a neighborhood or commercial area without having to travel on highways. A good objective is to have a variety of activities such as those mentioned above within 0.25 to 0.5 mile of a most residences in a designated growth area.
- Design covers a lot of ground, from the geometry of the street to the “streetscapes” of neighborhoods. A few key items are:
 - Limiting the number of driveway entrances onto arterials and collectors (“access management”);
 - Connecting local streets to each other (see discussion earlier in this chapter);
 - “Context sensitive” design -- preserving the elements of a community that are important to it and give it “character.” For example, features on the landscape such as rock walls, a square or green, a downtown building, or a scenic vista may have value to the community. If identified in a comprehensive plan, Maine DOT will try to preserve such features when it upgrades an arterial or collector.
 - “Complete street” design, aimed at providing easy, safe and enjoyable use of streets by all users (motorists, pedestrians, bicyclists, transit riders) of different ages and abilities. A number of manuals provide designs for “complete streets.”

F. Issues and Opportunities

“Complete streets”: Orono already is committed to a street network that is safely accessible by all modes of travel, by people of all ages and capabilities. Should the Town adopt a “complete streets” policy that formalizes this commitment, guides transportation improvements, and communicates it to future decision-makers and to state and federal agencies?

Interconnected street network: There are advantages and disadvantages for both the existing street system, which is poorly connected outside of the immediate village area, and a better connected street system that provides alternative routes between neighborhoods, schools and downtown. Would the Town benefit from an advisory, future street map that could guide future extensions of streets and utilities?

High priority street and sidewalk improvements: Because street and sidewalk reconstruction is expensive, the Public Works Department’s highest annual priority is to preserve the existing pavement in as good a condition as possible. At the same time, there is a need for

reconstruction, including pavement, drainage, and associated utilities, in a number of locations. The challenge is to balance the allocation of limited funds between the competing priorities of reconstruction and pavement preservation. As a member of BACTS, the Town actively works to put eligible reconstruction and other large-scale transportation improvements into the regional ranking system for state and federal funds.

Transit: With the growth of large student apartment projects in the Park Street corridor, there is a need to expand shuttle bus service between the developments and the University campus, but public funds to do so are very limited. Should large-scale projects be required to provide some level of service as part of their state traffic movement permits? Is there also a way to expand service to other nodes of activity, especially Stillwater Ave./Godfrey Drive?

Access management: Does the Planning Board, in conjunction with Maine Department of Transportation standards, have the tools to manage the number of curb cuts in high travel corridors – Route 2 and Stillwater Ave.? Is there a need – and does the Town have the means – to encourage or require consolidation of driveways in these corridors?

Ayers Island bridge: The badly deteriorated bridge to Ayers Island is a seemingly intractable problem: the cost of replacement is high and state and federal assistance is unlikely without a prospective use of the island for jobs or similar public purpose. But there will not be a prospective use that creates jobs unless assured, safe access is first in place. What are the options to resolve this longstanding issue?

Parking: There is a parking shortage in and around downtown during several times of the week, though rarely in “second tier” lots more than 500 feet away. To what extent should downtown parking be expanded versus managed to meet peak period demands? If expanded, can the expansion be for a multi-purpose facility (such as for a roofed Farmers Market location or for a recreation venue); and/or in anticipation of expanded downtown development? Do the Town’s residential parking standards properly balance the need to accommodate multiple vehicles per dwelling unit versus the need for efficient use of in-town land?

CHAPTER 9. MUNICIPAL SERVICES AND INFRASTRUCTURE

This chapter provides the status of services provided by Town departments and quasi-municipal agencies, with particular attention to those departments that affect – or are affected by – development in Orono.

A. Municipal Government

In 1969 Orono adopted a charter establishing a Council-Manager form of government. The Town Council is the legislative and policy-making body of the Town. It is composed of seven members elected by voters at-large for three-year terms. The Council elects one of its members to serve as Chair. The Council also has three standing committees: Finance, Operations, and Community Development. In recent years, these have been committees of the whole: that is, all seven members serve on all three committees. The Town Council adopts an annual operating budget and capital improvement program, considers and acts on all proposed ordinances, considers and adopts the policies of the Town, appoints Town boards, and has the other powers and duties vested by State law in municipalities.

The Town Council hires a Town Manager, who reports to the Town Council. The Town Manager among other things, prepares an annual budget and an annual capital improvement program for submission to the Town Council, advises the Council on other matters coming before the Town, carries out the policies adopted by the Town Council, oversees the Town's finances and operations, and hires and supervises the heads of the Town's departments.

The operations of the Town are carried out by ten departments and offices:

- Assessor's Office
- Code Enforcement Office
- Fire Department
- Library
- Parks and Recreation Department
- Planning and Economic Development Office
- Police Department
- Public Works Department
- Water Pollution Control Facility
- Town Office

Several of these particularly affect, or are affected by, growth and development decisions in the Town and are discussed in more detail in this chapter. The Parks and Recreation Department is covered in Chapter 10, Parks and Recreational Facilities.

In addition to these Town departments and offices, the Orono-Veazie Water District is a key agency affecting both the health and safety of the Town and its capacity for growth.

B. Municipal Building

The Municipal Building is located at 59 Main Street in Downtown. The building formerly housed the Fire and Police departments and was expanded and renovated as the Town Office in 1996. A new Public Safety building was constructed next door on Main Street.

The Municipal Building is a two-story structure with 10,000 square feet and a parking lot to the rear. The Town Council's chambers are on the second floor, with direct entry from Main Street. The building is in good condition and has a strong architectural presence on Main Street.

The building houses the Town Manager and Assistant Town Manager, Town Office functions, Assessor's Office, Code Enforcement Office, Parks and Recreation Department, and Planning and Economic Development Office.

The Town Office (in addition to the Town Manager and Assistant Town Manager) consists of six employees, including the Town Clerk, Assistant Town Clerk/Registrar of Voters, Administrative Assistant to the Town Manager, IT coordinator, Finance Director, and Treasurer. In addition to overseeing the Town's administration, human resources, and finances, the staff provides direct daily services to the public, including licenses, voter registration, and birth/death/marriage records, among other things.

C. Public Safety

The 15,800 square foot Public Safety Building was built on Main Street in 1995 in tandem with the renovation and expansion of the Municipal Building. It shares an architectural style with the Municipal Building, as well as walkways and parking lot. The Fire Department and Police Department are located in the building. The building serves as the only fire station in Orono.

Fire Department

Staff: The Fire Department transitioned from a volunteer to a full time department in the 1990s and early 2000s. In 1999 it also absorbed rescue services, which previously had been carried out by an independent nonprofit organization. The department has three basic functions: fire protection and prevention, emergency medical services, and hazardous materials response. Its fire protection services cover the University of Maine as well as the Town at-large. The University has its own volunteer ambulance service, although Orono Fire Department provides paramedic service when needed.

Presently the Fire Department’s staff is composed of a Fire Chief, Fire Marshal, and 15 fire fighters. The staff of 15 is divided into three shifts. Most of the staff have EMS licenses, and all are trained to operate ambulances. Under an arrangement with the University, the department also trains five university complex marshals – students hired by the University to inspect dormitories, respond to malfunctions, and make safety presentations. These students are not involved in fire suppression.

Codes and fire prevention: Orono follows the State Fire Code, which is the set of codes published by the National Fire Protection Association. From time to time the Town has considered adopting its own fire code – which would incorporate the state codes – to enhance local enforcement capabilities, but to date has not.

Under authority of State law, the Fire Marshal carries out routine inspections of commercial and multifamily structures, typically on a three-year rotation. If problems are found, he works with owners to correct them. This is one of the key fire prevention initiatives of the Town.

Calls: In 2011-2012, the Fire Department responded to 1,630 requests for service, compared with 1,364 in 2001-2002, an increase of nearly 20% over 10 years. The types of calls broke down as follows:

Type of Request	Number of Calls
Fire	51
False Alarms	269
Medical Emergencies	1,078
Hazardous Conditions	67
Service Calls	75
Good Intent Calls	85
Other	5

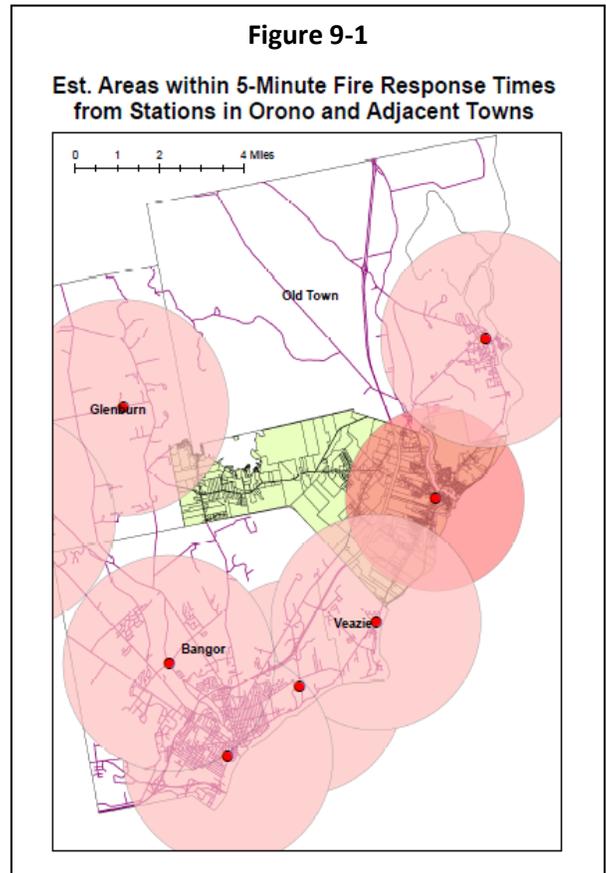
Response time: Response time is a key measure of fire protection and emergency medical capacity. In general, the objective is to arrive at a firefighting scene within five minutes of a call, with one minute for turn-out and four minutes to get to the scene. The rationale for this timeline is that fire in a room reaches a critical stage – flashover – and moves beyond the room to the whole building within eight to 10 minutes. At that point it is difficult to save the property.

Based on NFPA formulas, the critical response time correlates with a distance of about 2 to 2.5 miles from the fire station, depending on urban vs. rural setting and average travel speed of the fire apparatus. **Figure 9-1** shows a 2.125-mile radius around the Orono Central Fire Station on

Main St. (based on an average 30 mph speed in village conditions) and a 2.5-mile radius around stations in neighboring towns (based on average 35 mps speed in suburban/rural conditions).

The Fire Department estimates actual response times to different locations in Orono as shown in **Table 9-2**. Response times vary based on weather, hills, street connections (for shortest paths) and quality of roads.

Table __-2. Estimated Fire Response Times in Orono to Selected Locations	
Location	Est. Response Time
Village – Broadway area	2 min.
Webster neighborhood	3 min.
University of Maine campus	<5 min.
Godfrey Dr – Stillwater at Exit 193	5 min.
Forest Ave @ Stillwater	5 min.
Kelley Rd at Exit 191	6 min.
Maxfield-Crestview Dr area	7 min.
Forest Ave @ Merritt Dr	>10 min.
Pushaw Lake	>10 min.
Essex St near Bangor city line	>10 min.; 7 min. from Bangor
AA Landing Rd	15 min; 10-12 min from Glenburn



In western-most Orono, along Essex Street, Bangor apparatus and – depending on the availability of volunteers—Glenburn apparatus likely will arrive before Orono apparatus.

The critical response time for emergency medical personnel is not greatly different than for fire: an often cited standard is arrival at the scene within nine minutes.¹ In the populated part of Orono, response time is under that.

¹ International City/County Management Association, 2007. *EMS in Critical Condition: Meeting the Challenge*, p.8.

Water supply for firefighting: As important as response time is the availability of water to fight fires. The urban portion of Orono, where there is public water supply, is well served, with approximately 130 public fire hydrants distributed through the area and about 30 hydrants on the University campus and within private developments. The hydrants are owned by the Orono-Veazie Water District and the Town pays annual rental fees for the public hydrants. In general, the public water lines have both sufficient quantity and pressure for firefighting. New commercial and multifamily developments are required to install lines that can support sprinkler systems.

One challenge to maintaining pressure and reliability is that the public water supply lines are dead ended at the end of the service areas (on Kelley Road near Exit 191, on Forest Ave near the I-95 bridge, and on Stillwater Ave near Exit 193); and the Town's dead-end streets have inhibited the looping of lines in some cases.

Outside of the public water service area west of I-95, water is carried to the scene on tankers. There are two dry hydrants near Pushaw Lake, one at Gould Landing and one at Elliot Landing.

Mutual aid agreements: Orono has signed mutual aid agreements for firefighting with Old Town and Veazie. It is working with Glenburn and Milford on similar agreements. The Town is under contract to Veazie to provide ambulance service to that town.

Hazardous materials response: The Fire Department maintains a hazardous materials response team and is under contract to Penobscot County for haz-mat response services.

Equipment: The primary fire protection and EMS equipment owned by the Town are:

- Two fire engines
- One tower ladder
- Two ambulances
- A rescue boat
- Special operations response vehicle (for hazardous materials)

Police Department

The Police Department is staffed with 14 full time officers, including the Chief of Police, captain, three sergeants, a detective, a school resource officer, and seven patrol officers. The department shares an administrative assistant with the Fire Department.

The Department, which employs three shifts, divides the Town into patrol zones on Marsh Island and on the mainland side of the Stillwater, and a third zone that is townwide. The University of Maine has its own state-certified police force with jurisdiction on campus, including fraternity and sorority properties. The Orono Police Department otherwise has

exclusive jurisdiction in the Town. Because the population and most commercial activity are concentrated on the east side of I-95, police response times are generally very good. Seasonally, activity increases in the developed area around Pushaw Lake.

The Orono Police Department – along with the Old Town Police Department and the University of Maine Police Department – in 2011 earned accreditation by the Commission on Accreditation for Law Enforcement Agencies. This is a national accreditation based on best standards and practices and to date has been awarded to only a handful of police departments in Maine.

The Police Department has adopted community policing policies and practices. It interacts with different segments of the Town's population in a variety of ways to be visible in the community, build rapport, provide education on crime prevention, and assist vulnerable populations. These activities range from a full-time school resource officer who works with the schools daily; a Good Morning program to check on elderly citizens each morning; educating seniors about fraud prevention and identification theft; discussions with University of Maine classes and organizations; a prescription drug return program; and a women's self defense program, among others.

The Police Department also enforces the Town's Disorderly Property Ordinance, which was adopted in 2004 to address chronic unlawful and nuisance activities in neighborhoods. A "disorderly property" is a residential property that has two or more documented, disorderly events (loud music audible beyond the property line, boisterous gatherings, altercations) within 60 days.

In 2011 the Police Department responded to more than 6,500 incidents, many of which were for various kinds of assistance, such as property checks, public service, and medical assists. They also included more than 200 crime-related incidents, more than 350 traffic accidents and hazard reports, more than 100 alcohol-related incidents and nearly 200 noise incidents and 46 disorderly conducts.

D. Public Water Supply

The Orono-Veazie Water District, a quasi-municipal utility established in 1976, owns and operates the public water supply system in Orono and Veazie. The District is governed by a five-member board of trustees and is administered by a superintendent at the direction of the board. The district maintains about 2,050 service connections that serve a population of 5,125 plus the population on the University of Maine campus (the University is treated as one connection).

Source: The source of water for the district is a well field in a sand and gravel aquifer that parallels the Stillwater River along Bennoch Road. The well field consists of four wells. Three

wells were re-established and expanded in the 1990s, and the fourth well was added in 2009. The water from all four wells is filtered and treated at OVWD's plant at 116 Bennoch Road, where chlorine (to prevent bacterial contamination), fluoride and potash (to reduce lead solubility) are added before the water enters the distribution system. The treatment plant was built in 1995 and was upgraded in 2008.

The system produces an average of 1.3 million gallons per day when the University is in session and about 1.0 mgd during other times. The University is the largest customer, using about 400,000 mgd, although this usage has dropped about 26% over the last five years as a result of conservation measures on campus as well as an overall trend toward more efficient fixtures. The safe yield of the system – the yield projected to be available under drought conditions – is in excess of 2.0 mgd. The maximum daily demand has been well below this at 1.7 mgd.

The wells thus supply ample water for the district's needs. There is some concern, however, about the vulnerability of all four wells located in the same area. Although the wells are protected and subject to strict operating protocols, ideally the district would like a well in a separate location as a hedge against a serious event, such as an off-site petroleum spill, that could affect the primary well field.

In 2000 the Town adopted an Aquifer Protection Overlay zoning district that covers the entire identified sand and gravel aquifer along both the Stillwater and Penobscot Rivers. The zoning district prohibits land uses that involve the use or handling of petroleum products and hazardous materials.

Distribution: The distribution system serves virtually all of the built area in Orono east of I-95, from the Veazie town line to The Grove apartment complex on Park Street near the Old Town city line. It does not extend west of I-95. Under a long-time arrangement, the Old Town Water District serves the University Mall on Stillwater Ave., but OVWD serves the Maine Technology Park on Godfrey Drive.

The system includes two water storage towers in Orono (one off Forest Ave. and one off Kelley Road). The top of each tower is at an elevation of 341 feet. A third tower is on Bucks Hill in Veazie.

See **Figure 9-2** at the end of this chapter.

The distribution system has been continually upgraded, with older lines or undersized lines replaced as needed and new technologies incorporated. Overall, the system is considered to be in good condition. Water pressure for domestic and firefighting purposes generally also is good, although the district seeks to loop lines for improved pressure and reliability when the opportunities arise.

Water quality: Water quality tests conducted reported in OVWD's 2011 *Annual Drinking Water Quality Report* found all detectable microbiological, radioactive, and inorganic contaminants to be within regulated limits. The tests found no bacterial contamination. However, a disinfection byproduct, Total Trihalomethanes (TTHM), which form when the chlorine used to disinfect the water combines with naturally occurring organic matter in the water, was above the regulated limit (a running average of 89 ppb compared with the regulatory limit of 80 ppb) and continued to exceed the limit in 2012, when the District entered into a consent agreement with the Maine Department of Health and Human Services. TTHM has since fallen below the maximum allowed level.

TTHM are more likely to form when water is detained in pipes for a period of time and when temperatures are warm. In summer, the levels rise at the extremities of the system, where lines are dead ended. The district continues to explore options to reduce TTHM, including the possibility of an additional water source located farther from the Stillwater River, which is a source of organics in the Bennoch Road wells. The looping of lines also would eliminate detention times that now occur at the end of the lines.

E. Sewer and Waste Water Treatment

The Water Pollution Control Facility is a department of the Town, headed by a Superintendent with four other full time staff: a chief operator, an operator mechanic, a treatment plant operator, and an operator/lab technician. The facility hires a part-time employee in the summer to assist with the collection system.

Collection: A public sewer collection system serves much of the built-up area east of I-95 and north of Kelley Road. See **Figure 9-3** at the end of this chapter. Within this service area are approximately 1,330 users with the University of Maine being the single largest user, accounting for approximately 54% of the billed flows. The collection system consists of:

- 22 miles of pipe, including three interceptors:
 - the University interceptor, which runs down the northeast side of the Stillwater Branch on Marsh Island and collects flows from the University and other development in the northeast section of Town;
 - the Stillwater interceptor, which runs down the southwest side of the Stillwater Branch and collects flows from the urban center of Town; and
 - the Johnny Mack Brook interceptor on the south side of Route 2, which collects wastewater from the southern section of Town;
- About 500 manholes;
- Four pump stations – at Union St., Penobscot St., College Ave. near the Alford Arena, and Stillwater Ave. at the Old Town city line;
- A siphon to transport wastewater from the University interceptor across the Stillwater Branch from Marsh Island, in the Webster neighborhood; and

- A combined sewer overflow (CSO) located in the Headworks Building at the treatment plant.

In addition to the Town's sewer lines, the University operates its own 50,000 feet of lines, which are connected to the Town system at five different locations along College Avenue and a sixth location on Park Street.

The sewer lines carrying waste water are separate from storm water lines. There is no intentional inflow of storm water into the system during rainfalls, a key factor that greatly reduces CSO events – when untreated waste water overflows into the Penobscot River or other streams – although there likely still are some unidentified inflow sources in places. And, despite the separation, all sewer systems experience infiltration of groundwater into their pipes through joints or deteriorated sections of pipe especially after rainfalls, and this can cause CSO events when the flows exceed the volumes of waste water that can be handled at the treatment plant.

CSO events in Orono have been greatly reduced as a result of the upgrade, replacement and repair of older pipes over several decades. The Town has been implementing a CSO reduction master plan since 1994, most recently updated in 2012. (*Updated Master Plan for CSO Abatement*, August 2012) Major upgrades in the last decade, both to reduce CSOs and to remediate old and deteriorated lines, have included the University and Stillwater interceptors, the Sailor development, and the Crosby Street-Hill Street area.

As a result of these efforts, from 2009 – 2012, there was an average of fewer than two CSO events per year – compared with an average of 24 per year from 1989 to 1996 and about 5 per year from 1997 to 2008. In 2013 there were no CSO events.

Treatment: The water pollution control facility to which wastewater is carried for treatment is a secondary activated sludge wastewater treatment plant. It uses oxygen and bacteria to break down the waste before the water is discharged to the Penobscot River. The byproduct is sludge.

The original plant was built in 1968 at 60 Broadway and was extensively upgraded in 2006-2008. The upgrade included:

- A new headworks building, which is where the wastewater is pre-treated to remove inorganic material like trash and grit and also where the CSO is located;
- Modification of the aeration basins, including biological nutrient treatment equipment and reactors
- New ultraviolet light disinfection system, which operates from May to September
- Upgrade of clarifier equipment
- New aerobic digester to reduce the volume of sludge

- New three-bay maintenance and storage garage

The \$12.9 million upgrade was financed in part with a loan from Rural Development.

The plant has a capacity to treat 1.85 million gallons of wastewater per day and to accept a peak flow of 5.65 mgd. The current average flow is 1.2 mgd when the University is in session. It drops to 0.7 mgd at other times. The plant has the capacity to disinfect 5.65 mgd – the volume before which the CSO would be opened if necessary. The plant is licensed by Maine Department of Environmental Protection and consistently achieves removal of 90% - 95% of measured organic pollutants.

The system produces as a byproduct about 1,200 cubic yards of sludge. This is a reduction of about 40% since the upgraded plant came on line. For a number of years the sludge has been shipped to a composting facility in Old Town for composting. However, the future of the composting facility is in doubt, requiring Orono to seek another means of sludge disposal. One option is Juniper Ridge Landfill, where there is a proposal to convert sludge into bio-gas for use at the University of Maine.

Ordinance and Fees: The use of the Town's sewer system, standards for line extensions or replacements, and standards for the discharge of waste into the system are regulated under the Town's Utilities Ordinance (Article II of Chapter 36 of the Code of Ordinances). The ordinance also authorizes fees for the system, which are established by the Town Council annually.

The Water Pollution Control Facility administers three fees to pay for operation and upgrades of the system: a user fee; a connection fee for activities requiring a sewer connection permit; and, for developments that would require the replacement or expansion of the system, an impact fee.

F. Public Works

The Public Works Department is responsible for:

- Streets, including the plowing and sanding of all public ways both state and local (except I-95) during the winter; and non-winter maintenance of town ways within the urban compact area as defined by the Maine Department of Transportation. This non-winter maintenance includes everything from street sweeping to repairs and pavement marking;
- The general maintenance of all other public facilities in Orono, including sidewalks, storm water drainage system, parks and building grounds, public parking lots, signs and lights;

- Solid waste management, including trash collection and disposal and the Town's landfill off Taylor Road; and
- Administering the Town's Riverside Cemetery on Bennoch Road.

The department works out of a 7,000 square foot structure on Penobscot Street that is in very poor condition. In 2013 the Town acquired a site for a new public works facility and received permits in 2014. The new location will be at 135 Kelley Road just west of I-95, Exit 193. The facility will consist of a 15,000 square foot building; a 2,000 cubic yard salt-sand storage building; a cold storage area for parking major pieces of equipment; and a fuel depot.

The department has 12 full time employees, including the director.

Streets: Information about the Town's street system and the Public Works Department's responsibilities for maintaining the system is included in Chapter 8, Transportation.

Solid waste:

Municipal Solid Waste (MSW): Orono provides for curbside pick-up of trash under contract with a private provider. The trash (or "municipal solid waste" – MSW) is delivered to the Penobscot Energy Recovery Company's waste-to-energy plant in Orrington. In calendar year 2011, a total of 3,931 tons of MSW were hauled from Orono to PERC. The sources of the MSW were: the University of Maine (1,175 T), private businesses and multifamily dwellings with more than 3 units (1,533 T), and curbside pick-up from residences (1,222 T). The University transports its waste to PERC directly.

The Town pays a price per ton of MSW taken to PERC from all sources and then invoices the haulers serving private parties, including the University, for their shares. The Town is under agreement with PERC to guarantee a certain volume of MSW for their energy production. The guaranteed annual tonnage from Orono is 4,270 tons. The Town pays a surcharge for shortfalls. This additional fee is negotiated through the Municipal Review Committee – a nonprofit corporation organized by municipalities that supply MSW to PERC to serve as a liaison with PERC. The contract with PERC that includes this guaranteed tonnage runs through 2018.

Recycling: Until 2013 the Public Works Department collected recyclables curbside and transported them to consolidation centers in Old Town and Bangor. The recyclables included mixed paper, cardboard, #1 and #2 plastics, metal, and glass, which residents needed to sort for pick-up. The recycling rate in Orono in 2011 was 21% (excluding returnable bottles), which is well under the statewide goal of 50%.

In 2013 the Public Works Department migrated to single stream collection of recyclables, which eliminates the requirement for residents to sort, expands the types of recyclables, and typically increases recycling rates. Over the long term (beyond the PERC contract with the guaranteed annual tonnage), it may also reduce costs as tipping fees for MSW increase.

Landfill: The Town closed its MSW landfill, located on Putnam Road off Taylor Road, in the mid 1990s. The landfill is monitored with wells according to standards and protocols established by the Maine Dept. of Environmental Protections.

In 1995 the Maine Dept. of Environmental Protection licensed a landfill for construction and demolition debris (CDD) only adjacent to the closed out MSW site. The license envisions three phases with a maximum capacity of approximately 110,600 cubic yards, which at that time was projected to have a life of about 30 years. Phase I, with a capacity for about 25,000 cy, lasted longer than expected and was capped in 2012, and Phase II was concurrently permitted and opened. Its estimated capacity is 40,000 cy, which itself would have a life of about 30 years at current disposal rates. The capping of Phase I cost \$200,000, and the entire project, including the opening of Phase II, cost about \$330,000. The Town had been making an annual contribution into a reserve fund for this purpose, and the fund covered the costs.

The site also includes a metals storage pad, where the Town accepts scrap metal free of liquids and white goods. These are sold to local vendors for processing.

G. Code Enforcement

Orono's Code Enforcement Office consists of a full time Code Enforcement Officer and a full time Administrative Assistant, who is shared with the Planning and Economic Development Office. As needed, the Code Enforcement Office has available an alternate licensed electrical inspector and an alternate licensed plumbing inspector. The office assists residents and businesses with understanding the requirements of various local and state codes and enforces the provisions of the codes. The major codes address buildings and related systems, zoning, subsurface wastewater disposal (septic systems), and flood plains.

Buildings and related systems:

International Building Code: In 2010 the State adopted the statewide Maine Uniform Building and Energy Code, which consists of four codes developed by the International Code Council. Municipalities in Maine with populations of more than 4,000 were required to start enforcing the new code if they had a building code already in place. Orono had a building code in place -- the International Building Code -- and so was included in this requirement. The four IBC codes that constitute the statewide uniform code are:

- 2009 International Residential Code

- 2009 International Building Code
- 2009 International Existing Building Code
- 2009 International Energy Conservation Code

Housing Code: The Town, under Chapter 8 of its Code of Ordinances, also has a Housing Code that addresses maintaining dwellings in safe and sanitary condition and maintaining heating, electrical, refrigeration, and cooking facilities in good working order.

Rental Registration: In addition to the building and housing codes, the Town in 2008 adopted a Rental Registration Ordinance. Its purpose and provisions are reviewed in Chapter 2, Housing. The Code Enforcement Office enforces the ordinance and maintains the registry of rental properties in Town.

Zoning: Orono's townwide zoning ordinance and the state-mandated shoreland zoning ordinance are incorporated in the Land Use Ordinance (Chapter 18 of the Code of Ordinances). The Code Enforcement Officer is charged with administering the zoning ordinance, interpreting its provisions when necessary, and issuing permits under the ordinance. The Code Enforcement Officer also advises the Board of Appeals on matters, such as requests for variances, that come before it.

Subsurface wastewater disposal: The Code Enforcement Officer is also the certified Local Plumbing Inspector under state law. In this role, the CEO reviews applications for the installation of septic systems and leach fields based on the standards and procedures of Maine's Subsurface Wastewater Disposal Rule, issues related permits, and conducts inspections.

Floodplains: Orono participates in the National Flood Insurance Program and agrees to comply with the requirements of the National Flood Insurance Act. Any construction in flood hazard areas identified by the Federal Emergency Management Agency (primarily 100-year flood plains) is required to meet the standards of the Land Use Ordinance (Article VIII, Floodplain Management) and obtain a permit from the Code Enforcement Officer.

H. Planning and Economic Development

Town Planner: Orono's Planning and Economic Development Office is staffed part-time under contract with a professional planner and shares an Administrative Assistant with the Code Enforcement Office. The responsibilities of the office include:

- Staffing the Planning Board and assisting applicants in understanding the requirements of the matters that come before the Planning Board, including applications for Site Plan Review, Subdivisions, and requests to amend the Zoning Ordinance, all of which are governed by the Land Use Ordinance.

- Long-range planning, including neighborhood-based and comprehensive townwide planning.
- Assisting with the planning and funding of community development projects in Downtown Orono and elsewhere in the community.
- Economic development, including advising the Orono Economic Development Corporation and cooperating with other local and regional economic development organizations. See Chapter 3, Economy, or a discussion of economic development in Orono.

Planning Board: The Planning Board reviews applications for Site Plans, Subdivisions, home occupations, and other types of development activity specified in the Land Use Ordinance. It also advises the Town Council on all requests to amend the Zoning Ordinance and takes an active role – either as the full Board or through representatives of the Board – in the preparation of long-term plans. The Planning Board consists of nine persons appointed by the Town Council. Two are associate members who vote in the absence of one of the seven regular members.

I. Public Library

In 2009 the Orono Public Library relocated from quarters at the High School to a new, 6,100-square foot, LEED-certified building on Pine Street in the village at the edge of Downtown. The Library has a staff of three – Director, Youth Services Librarian, and Library Clerk – plus many volunteers. A Board of Trustees, appointed by the Town Council, advises the Director and helps to manage donations to the Library. Two other entities provide essential support to the Library: the Orono Public Library Foundation, which formed in 2002 to raise funds and help in the design and construction of the new Library; and the Friends of the Orono Public Library, dedicated to helping the Library fulfill its educational, intellectual, and cultural mission.

The Library has a collection of more than 19,000 adult books, more than 13,300 children’s books, about 4,200 audio, video, and music items, and nearly 100 periodical titles. It receives more than 42,000 visits per year and loans out nearly 69,000 items from its collection.

The Library also helps connect its users to the world through its network of public computers. The computers account for a growing share of the Library’s borrowing activity, including Internet, children’s games, and office applications.

As described in Chapter 10, Parks and Recreational Facilities, the Library is raising funds to construct a “village green” behind its building for outdoor performances. The building also is designed to allow future expansion.

J. Orono Health Association

The Orono Health Association plays an important role in the health and welfare of local citizens. It is a volunteer, nonprofit organization based at the Town's former Birch Street School. The Association:

- Operates a Thrift Shop at the Birch Street School, with the proceeds supporting a number of charitable endeavors;
- Operates a medical rides program, which connects Orono residents who need rides with volunteer drivers who take them to medical appointments;
- Maintains a medical equipment loan building behind the Birch Street School, stocked with durable medical supplies; and
- Supports dental health care for Orono school children, K-12, and Orono senior citizens, in cooperation with the Penobscot Community Dental Clinic.

K. Schools

This Comprehensive Plan does not analyze, plan, or make recommendations relating to the school system that serves Orono. However, the Plan does recognize the broad impact of the school system on the future of the Town. The quality and offerings of the system compared with schools elsewhere in the region are a determining factor in the decisions of families to move to Orono or elsewhere. The schools are a large fraction of the Town budget and affect the local tax rate and the ability of families to afford to live in Orono. They also are a center of community activity, located in the heart of the Town.

Until 2009, the Orono School Department was a department of the Town governed by its own elected Board. In 2009, the school system was separated from the Town and joined Regional School Unit (RSU) 26 – also called Riverside RSU – as a result of the State's initiative to regionalize school districts. The RSU also included the towns of Glenburn and Veazie. However, in 2012, Glenburn and Veazie voted to leave the RSU. The RSU remains in place as a legal structure separate from the Town, but Orono's school system is the only member.

RSU currently serves 750-800 students from pre-Kindergarten through high school. The students attend Asa Adams Elementary School (pre-K through 5th grade), Orono Middle School (6 through 8), and Orono High School (9 through 12), all located on a campus along Goodridge Drive behind the Municipal Building. The schools are within walking distance or a short drive of most of the Town's households.

The students are predominantly from Orono, but some are tuitioned from surrounding towns without their own middle and high schools. Enrollments in 1995 (the last year reported in the 1998 Comprehensive Plan), 2008-09 (just prior to formation of the RSU), and 2013-14

(following the departure of Glenburn and Veazie from the RSU) are presented in **Table 9-3**. The long-term decline in school-age children is evident, although enrollment has remained steady the last five years.

Table 9-3. School Enrollments, Orono Schools, for Selected Years				
	Grades	1995-96	2008-09	2013-14
Asa C. Adams	Pre-K - 5	397*	239	256
Middle School	6 - 8	200	144	156
High School	9 - 12	346	364	354
TOTALS		943	747	766
*Pre-K not available in 1995-96				
Sources: Maine Dept. of Education Data Warehouse; Orono Comprehensive Plan 1998				

L. Issues and Opportunities

Most of the issues and opportunities related to municipal services and infrastructure are described in other chapters, including Population and Households (Ch. 1), Economy (Ch. 3), Land Use (Ch. 7), Transportation (Ch. 8), Parks and Recreational Facilities (Ch. 10), and Municipal Finance (Ch. 11). Additional issues and opportunities of note include:

Guiding growth to areas close to municipal services: This is one of the objectives of Maine’s Growth Management Program and this Updated Comprehensive Plan. It is discussed in detail in other sections, especially Land Use (Ch. 7), but is mentioned here due to its importance to the efficient delivery of services.

Public sewer system: As a result of its recent modernization, the waste water treatment facility is state-of-the-art and performing well. Consistent, regular investments in the collection system also are paying off in reduced combined sewer overflows. But the 2012 updated Master Plan for CSO abatement outlines the work still to be done. In addition, in the last several years there has been confusion about the applicability of the Town’s sewer impact fee ordinance (whether it can be applied to projects after the upgrade of the system and that do not themselves require additional expansion of capacity). Further, the service area of the system does not extend to all of the Town’s designated growth area, limited development potential in a few key areas of Town, especially around the I-95 interchanges.

Public water supply: The Orono-Veazie Water District in recent years has invested in an additional well and in its treatment facility; and the Town has an Aquifer Protection zoning district that encompasses the public water supply. The Water District is a quasi-municipal organization with an independent government board and subject to state regulations. The Comprehensive Plan does not delve into district practices or engineering solutions, but the Town and District have obvious mutual interests in the water supply system. High priority

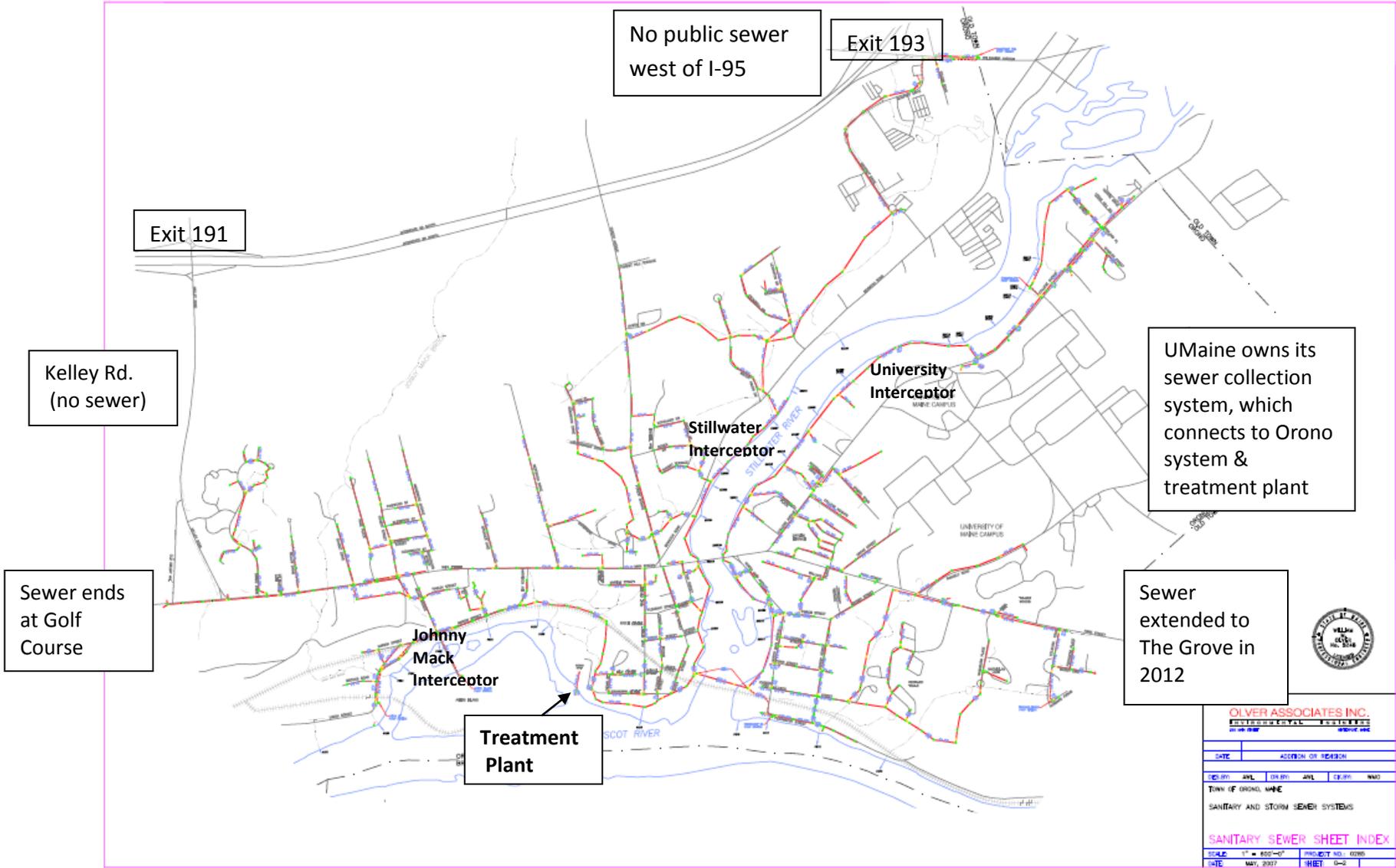
issues for the Town include assured water quality, including reductions in the byproduct (THHM) of the disinfection process; extension of lines to serve the remainder of the Town's designated growth area, especially around the I-95 interchanges; and reliable flows and pressure for fire safety.

Cooperation: The Town cooperates in the delivery of municipal services in a number of ways: directly with the University of Maine (*e.g.*, fire protection, recreation, public sewer, stormwater management) and with surrounding communities through mutual aid agreements, certain contracts for services, and pursuit of economic development in the region. Over the last 15 years there also have been other discussions about cooperation (combining fire departments, recreation departments, and assessor's offices, for example) that have not materialized. And the RSU endeavor lasted only a short time without evident cost savings. Are there untapped possibilities for cooperation that would deliver service more effectively or as effectively at less cost?

Figure 9-2. Public Water Service Area



Figure 9-3. Orono Sewer Service Area



CHAPTER 10. PARKS AND RECREATIONAL FACILITIES

Community recreation – indoor, outdoor, and year-round – is embedded in Orono’s way of life. Opportunities for many kinds of recreation are both expected and valued. The demographics behind the demand for recreation are wide, from young children to college students to senior citizens.

The Town, the University of Maine, the Orono Land Trust, and private parties – individually and in partnership with each other – all are part of meeting the recreational needs of the community.

A. Parks and Recreation Department

Orono’s many parks and recreation facilities and programs are managed by the Parks and Recreation Department. The department has three full-time staff and between four and 22 part-time workers, depending on the season. The 2012-13 annual budget was approximately \$334,000.

B. Municipal Recreation Facilities

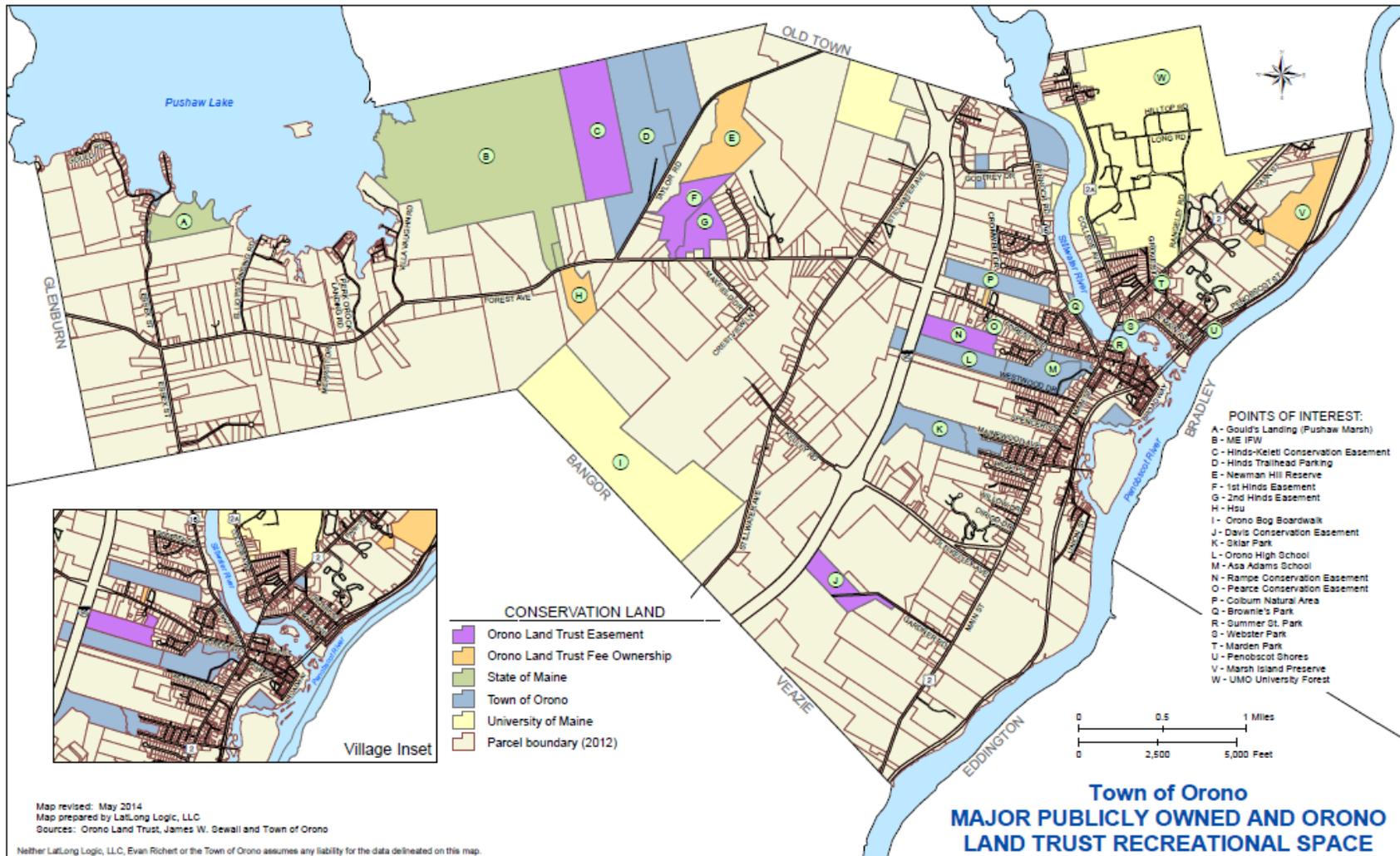
Parks and Water Access: The Town owns seven parks, including four with water access, and is scheduled to assume ownership of another boat ramp as part of the Penobscot River Restoration Project. **Figure 10-1** shows the locations of the parks, along with other recreational open spaces discussed in this chapter.

Marden Park – Marden Park is located at the corner of Park and Crosby streets. This 3.1-acre park is the site of a Little League baseball field. Parking is at times inadequate for park users. Drainage has been an issue and as of 2012-13 is in the process of being addressed.

Webster Park – Webster Park is located along the northern banks of the Stillwater River on North Main Avenue. The 4.4-acre park, a 19th Century gift from the Webster family, has more than 1,000 feet of frontage on the river. It is used for picnics, summer concerts, weddings, group outings, and passive recreation. There are no structured facilities at the park. The park has electrical power for concerts.

Gould’s Landing at Nadeau-Savoy Park – Nadeau-Savoy Park is on Pushaw Lake on outer Essex Street. The 2.1-acre site on the south shore of the lake and on either side of Hemlock Point Road provides picnicking, a boat landing, and is used as access for swimming (which is not recommended by the Town because it is not supervised). The boat landing consists of a new ramp and three 8-foot dock sections. There is parking for six cars with boat trailers. The park is used to capacity, but expanding the facility, which is on a dead end road, would create problems with traffic flow.

Figure 10-1. Major Publicly Owned and Orono Land Trust Recreational Spaces as of 2012



Sklar Park – Sklar Park is located off Mainewood Avenue and Gilbert Street about one mile from downtown. It is a 60-acre park divided into two parts: (1) a 45-acre “wilderness” park on the west side of Johnny Mack Brook and running west to I-95, and (2) a 15-acre open space on the east side of the brook and extending into the Sailor Development between Mainewood and Gilbert. The land was donated to the Town by David Sklar in 1984, with the “wilderness” portion restricted to passive recreation. This is a well wooded area with walking and ski trails. The trails need improvement. The Orono Land Trust assists with the stewardship of the property.

The portion of the park that extends into the Sailor Development is maintained by the Town for passive recreation, though it was laid out for possible addition of house lots as well. It has potential for a neighborhood play area.

Brownie’s Park – Brownie’s Park is a node along a 1,500-foot strip of Town land located between Bennoch Road and the Stillwater River. The park is on the river below the point at which Noyes St. intersects Bennoch Rd. and is easily reached on foot via a pathway that begins in Downtown or down a pathway from Bennoch. In 2011 a small parking lot was built off Bennoch near Noyes for easier use by those who arrive by car. The property is maintained by the Orono Land Trust. The park is used for relaxation, views, and picnics, as a stopping point along the Stillwater River trail, and informally by swimmers. It is possible to carry a canoe or kayak to a recently improved launching area in the park.

Summer Street Park – This is a half-acre “pocket park” at the end of Summer Street, with 379 feet of frontage along the south side of the Stillwater River. The Town acquired the property in 2006, removed a dilapidated house, and with assistance from the Land for Maine’s Future Program prepared it as a hand-carry boat launch site. It is a short walk from Downtown and is intended to serve, among other things, as a scenic lunch spot for those who live or work in or visit Downtown. It is positioned as a trail head for a potential future “lunch time” trail



Figure 10-2. Summer St. Park and Proposed Downtown Loop Trail

loop around Downtown. See **Figure 10-2**.

The Jeremiah Colburn Natural Area – This 20.6-acre natural area was acquired by the Orono Land Trust in 1986 with a combination of private and public dollars from the Land and Water Conservation Fund, and OLT gave it to the Town in 1988. OLT continues to manage the property. It is located off Forest Avenue, adjacent to Forest Avenue and Bennoch Road neighborhoods. It is designated for passive recreation such as hiking, cross-country skiing, showshoeing and walking. No motorized vehicles are permitted.

Union Street Boat Landing – The Penobscot River Restoration Project will restore access to historic breeding grounds for a number of anadromous fish species, including Atlantic salmon. Under a settlement agreement among Penobscot River dam owners, federal and state agencies, and a coalition of environmental organizations, three dams were acquired by the Penobscot River Restoration Trust for removal or bypassing. The Union Street Boat Landing, which was built and owned by the dam owners as part of its hydropower license, was acquired by the Trust in the process. The Trust, in turn, will transfer title to the landing to the Town. The 1.1-acre parcel is located at the “elbow” on Union Street, just below Ayers Island. The facility includes a ramp and 15 parking spaces for cars with boat trailers.

Athletics Fields, Pool, and Community Playground

Municipal Pool – Orono built a municipal pool on Goodridge Drive, across from the High School, in 1979. It is in good condition with a new PVC membrane liner and a new sun shade. It is used by 6,000 people per summer. The pool is open during 10 weeks of the summer, every day. The Parks and Recreation Department hires a summer staff of two pool directors and five life guards, who have lifeguarding certification from the Red Cross. Swimming lessons are offered for a fee, and the pool is available to persons with disabilities, and there are scheduled times for lap swimming.

School/Community Athletic Complex – This complex, located behind the High School on RSU 26 property, consists of two soccer fields, football game and practice fields, a track facility and a field



hockey field. The track is in poor condition and needs to be replaced. The football and baseball fields drain extremely poorly and need improvements. The softball field needs a new infield to allow for better drainage and a better, safer playing surface.

Asa Adams Multi-Purpose Fields – There is a make-shift field at Asa Adams Elementary School for soccer and baseball games, school recess, and large group outdoor activities. The field has poor drainage and has never been properly seeded. The land is owned by the Town and maintained by the Parks and Recreation Department.

Multi-Purpose Field (former St. Mary's) – This Town-owned field, formerly owned by St. Mary's Church, is located off Goodridge Road behind the Main View Apartments. It is used for softball, baseball, soccer, and field hockey.

Tennis and Basketball Courts – Two tennis courts are located behind the High School, but this property was deeded to the Riverside RSU (RSU 26) during the state-sponsored school consolidation process with Glenburn and Veazie. The two courts have lighting for night play. The High School tennis team practices here, the Parks and Recreation Department offers lessons, and the courts are open to the public as well. A number of large cracks in the courts are patched every year but are getting worse. There appear to be severe drainage problems under the courts.

The basketball courts are adjacent to the tennis courts and are available to the community. They are in relatively good shape, but, like the tennis courts, there appear to be drainage problems, requiring posts to be reset.

Outdoor Ice Rink – Orono's ice rink is also located behind the High School. This is a regulation-sized outdoor rink with boards, lighting, and a warming hut. It is open to the public and for use by the University Recreation Center. The facility has been improved and now has a building for x-county ski waxing along with two miles of x-country ski trails behind the track/football field complex. The trails are maintained by the Orono Ski Club.

Orono Community Playground – The community playground was built in 2000 for elementary school-aged children. It is located adjacent to Asa Adams School on Town property and is maintained by the Parks and Recreation Department. It is the only Town playground in Orono; neighborhood playgrounds are among the recreation needs in the community identified by the Department.

Community Buildings

Keith Anderson Community House – The Keith Anderson House is located downtown on Bennoch Road. It is a 2-story, 19th Century, former Congregational Church. For many years it has been used for community-based programs and activities, ranging from after-school programs to coffee house performances, dances, community theater, fitness programs,

receptions, elections, and meetings. It is equipped with a new vertical lift for access to the second floor by people with disabilities.

Orono Senior Citizens Center – The senior center is a multi-purpose facility housed in the former Birch Street School off Pine Street adjacent to the Public Library. The center was renovated in 2007 with the assistance of a community development block grant and is in good condition. Functions at the center include the Orono Thrift Shop and a senior citizen meal program, and the center is a meeting place for community-based organizations. A community garden is located behind the center.

Other Venues

Orono Public Library – The library, which opened the doors to its new, freestanding facility at 39 Pine Street in 2009, hosts a variety of recreational activities for youth and families. These have included, among other things, arts programs, theater, and other performances for children, as well as book groups for adults.

The design of the library anticipated space for an outdoor performance venue behind the library, and in 2011 a site plan as approved for a green that incorporates a 125-seat amphitheater with granite seating, a large, flat stone stage, and a pergola. As of 2013, fundraising was under way to construct this space. See **Figure 10-4**.



Figure 10-4. Planned Library “Village Green”

Downtown – Downtown Orono hosts the annual Orono Festival Day, which attracts about 1,000 visitors to Mill Street, the Christmas Tree lighting event, the Stillwater Community Arts’ annual “Artsapalooza,” and other community events.

C. Trails and Recreational Open Space Network

The Town, Orono Land Trust, University of Maine, and private property owners have cooperated over many years to establish an extensive local network of trails and open space. The trails are within minutes of most residents.

Town and Orono Land Trust

While significant trails are on public land or land owned by the land trust, many are on private property and used only with the permission of the property owners. Most of the trails on both public and private lands are maintained by the land trust, and much effort is made to assure that users respect the private properties they are crossing.

The Town has an appointed Trails Committee, which monitors trail conditions on Town lands, advises the Planning Board on projects that may affect the trail network, and cooperates with the Orono Land Trust in its trail maintenance activities.

Trails on Town-owned land are located behind the High School, in Sklar Park, in the Jeremiah Colburn Natural Area, and along the Stillwater River where the Town owns stretches of riverfront land (the Stillwater Trail crosses both public and private property). Other public lands with trails on them include a large tract with frontage on the southeast shore of Pushaw Lake owned by the Maine Department of Inland Fisheries and Wildlife and the University of Maine's property that includes the Orono Bog Walk.

As of 2012, OLT owned nine properties with 314 acres in fee (198 acres in Orono), nine conservation easements covering 657 acres (641 acres in Orono), and eight additional trail easements (seven in Orono). Its properties and trails are available for public, non-motorized use. The trails in Orono maintained by OLT, on both its land/easements and on public land include:

- Gould Landing Trail
- Jeremiah Colburn Natural Area
- Newman Hill & Hinds Conservation Easements
- Orono Bog Boardwalk
- Town property between RSU 26 High School and I-95
- Piney Knoll Conservation Area
- Rampe Conservation Easement
- Sklar Park
- Stillwater River Trail

OLT provides maps of trails on these properties at its web site, www.oronolandtrust.org. An overview of the trail system is shown in **Figure 10-5**. This figure should be considered an

overview only, and not authoritative; some but not all changes and additions since the map was originally prepared in 2009 have been incorporated. Before crossing private property, it is important to assure that permission has been granted.

University of Maine

The University of Maine also maintains an extensive trail system on its campus, both in Orono and in Old Town. The system includes a bicycle path, numbered trails, and dirt roads. The system connects off-campus with the OLT's trails in the Marsh Island Conservation Area (Piney Knoll). See **Figure 10-6**.

D. Other Recreational Facilities

University of Maine

Several indoor recreational facilities on UMaine's campus are available for public use. The principal ones include:

Student Recreation and Fitness Center – This state-of-the-art facility, with LEED certification, was opened in 2007. It is an 85,000 square foot center with a full array of fitness equipment, basketball courts, track, racquetball/squash courts, and indoor recreational pool. The public can purchase memberships or pay by the visit.

Alfond Arena – The Alfond Arena, home of the University of Maine ice hockey team, offers public skating hours. Orono's Skate With Us program is held there.

Wallace Pool – This 8-lane pool with two diving boards, located in the Memorial Gym, also offers open swim hours.

Major Private Recreational Facilities Open to the Public

Penobscot Valley Country Club – The Penobscot Valley Country Club golf course was created by famed golf course architect Donald Ross in 1924. Shortly after the club was acquired by Harris Golf, the company in 2008 undertook to restore the 18-hole course to its original design. Penobscot Valley is a membership club that is open to the public.

Pushaw Lake Campground – The Pushaw Lake Campground is located on the southeastern shore of Pushaw Lake, off outer Forest Avenue via Villa Vaughn Road. The campground includes RV, tent, and cabin sites, a camp store and a restaurant. The campground also owns Moose Island in Pushaw Lake. Customers can rent canoes or kayaks to paddle to the island.

Figure 10-5. Overview of Trail System in Orono as of 2013

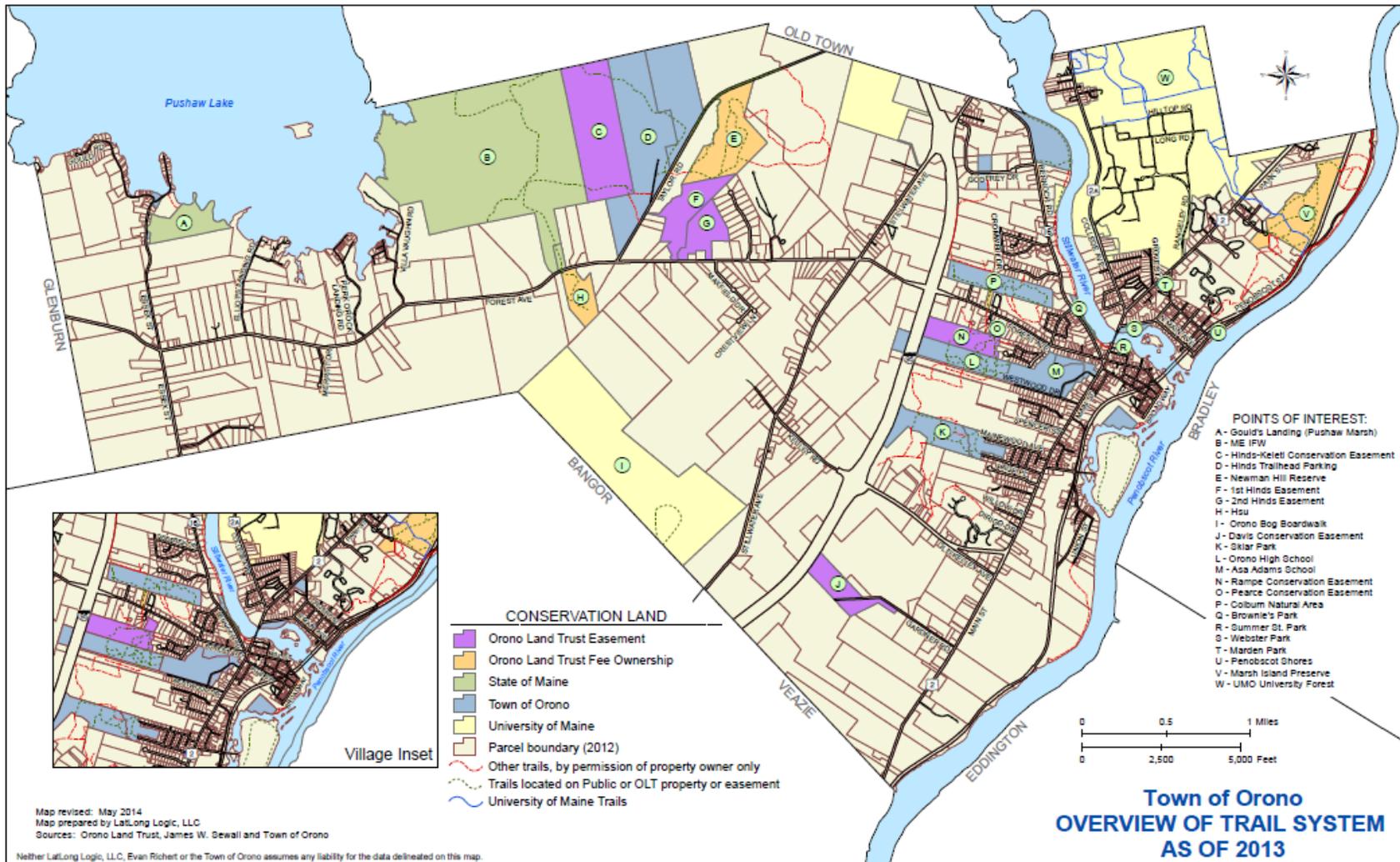
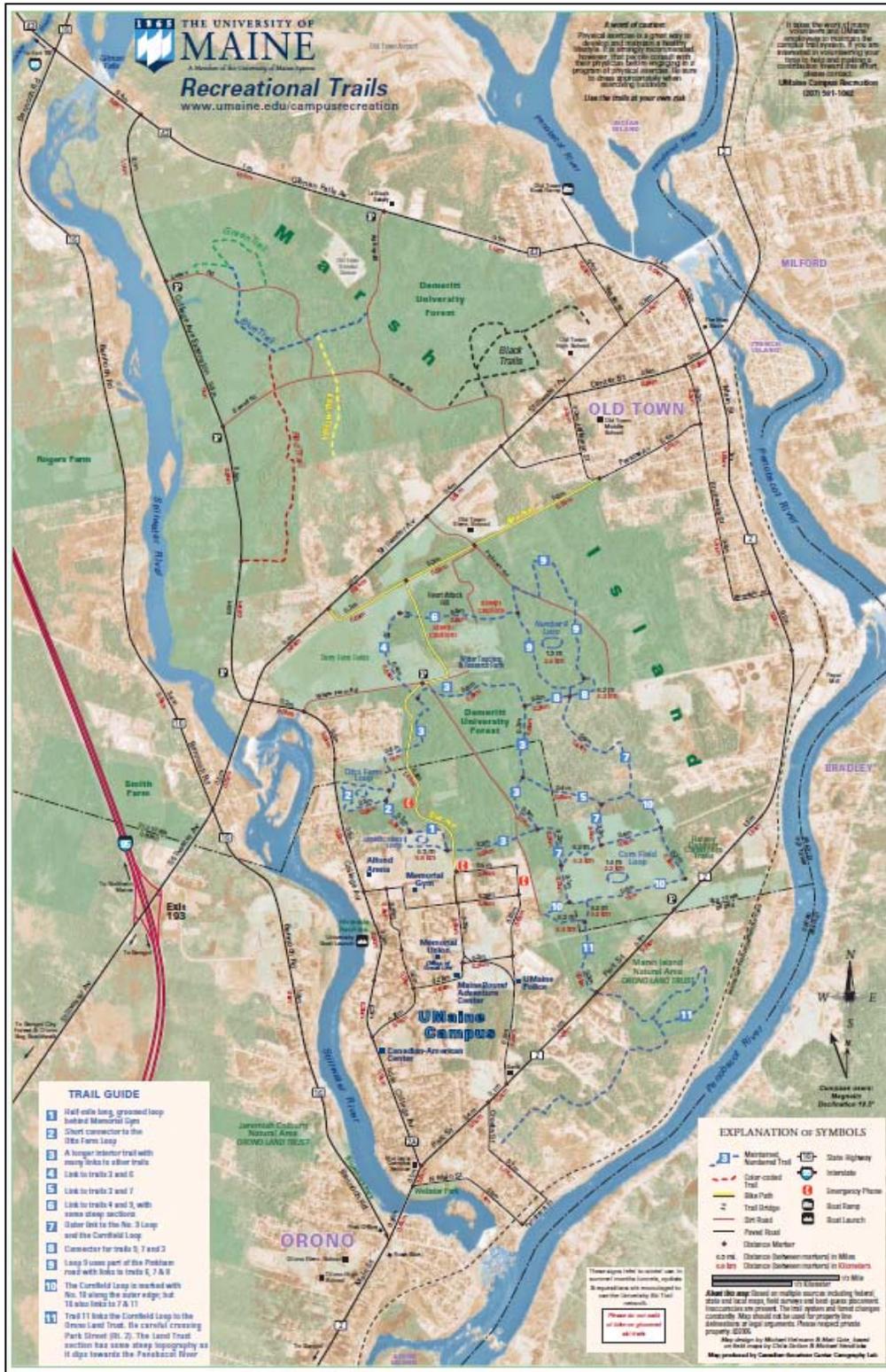


Figure 10-6. University of Maine Recreational Trail System as of 2013



E. Issues and Opportunities

Lack of neighborhood playgrounds: Ideally, most homes in the built-up part of Orono would be within a short, safe walking distance – on the order of one-quarter mile – of a playground. The single Town-owned playground next to Asa Adams Elementary School is centrally located but well beyond walking distance of most homes.

Condition of athletic fields and facilities: Drainage issues have been chronic at several of the Town's and school facilities, compromising their condition and longevity.

Trail connections, locally and regionally: The local network of trails is exceptional for a town of Orono's size and fairly well connected. However, it is not well connected to a larger, regional system, and the local network does not provide for the longer distance recreation that some users would like. This is a high priority for the Orono Land Trust, which sees a particular opportunity along the former Veazie Railroad bed, which connects Orono to the Bangor City Forest to the south and to Old Town in the vicinity of Taylor Road to the north.

Another opportunity may be along the Penobscot River shoreline. With the removal of the Veazie Dam in 2013, water levels along the shore may have dropped sufficiently to allow for a new trail that might connect to Veazie and to trails along the Stillwater River.

Stewardship: The Town's open space and trail network relies heavily on volunteers. Many volunteers are retirees. There is a need to educate and involve youth to build the next generation of stewards.

College-aged population: Off-campus, alcohol-free recreational opportunities for the college-aged population are limited. The Town of Orono and the City of Old Town are cooperating in the efforts of students and the University to establish a skateboarding park on campus (near the Student Recreation and Fitness Center), but off-campus possibilities – by way of example: outdoor movies or other non-alcohol entertainment/games venue, disc golf, music studio/practice facility – need to be explored as well. Such opportunities would be in keeping with the idea of Orono as an interesting university town.

CHAPTER 11. MUNICIPAL FINANCE

The Town’s ability to maintain services and to borrow to support growth depends on its financial capacity.

A. Property Values and Property Tax Rate

Property Values: Because municipalities in Maine rely heavily on property taxes to fund services and capital investments, taxable property values underlie the Town’s financial capacity. As of FY 2013, the taxable assessed property value in Orono totaled about \$418.6 million. See

Table 11-1. This value has grown slowly since 2009, when the nation entered a deep recession with depressed property values and little growth. During the six years prior to that, growth in valuation was steady, increasing by 61% from FY 2003 – FY 2009. The picture improved somewhat in FY 2014 with completion of The Grove apartment complex (Campus Crest LLC) and partial completion of second Orono Dam powerhouse (Black Bear Hydro).

The properties in Orono with the largest taxable assessed values are rental housing complexes, utilities/energy companies, nursing and retirement facilities, and commercial facilities in the Maine Technology Park. In 2012, the top 20 taxable property

owners had \$106.1 million of taxable value, or about a quarter of Orono’s tax base. These properties generated about \$2.3 million in property taxes in FY 2013. See **Table 11-2.**

Orono also has an extraordinary share of property that is exempt from property taxation, mostly due to the presence of the University of Maine. The share of property value in key, non-municipal categories that was tax exempt in Orono in 2011 – about 46% -- far exceeded that of most other municipalities in Maine. As **Table 11-3** shows, only 12 municipalities in the state

Fiscal Year	Taxable Assessed Value	% Change	Property Tax Rate per \$1000
2003	\$258,835,900	---	\$ 24.30
2004	270,982,200	4.69%	\$ 25.10
2005	289,534,200	6.85%	\$ 24.20
2006	308,880,270	6.68%	\$ 23.10
2007	343,897,190	11.34%	\$ 22.00
2008	392,874,635	14.24%	\$ 20.00
2009	417,499,265	6.27%	\$ 19.70
2010	408,312,500	-2.20%	\$ 20.80
2011	415,448,300	1.75%	\$ 20.75
2012	413,922,200	-0.37%	\$ 21.30
2013	418,583,000	1.13%	\$ 21.60
2014	442,456,800	5.70%	\$ 23.20

Source: Orono Financial Statements, June 30, 2012; Tax Assessor

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had shares of tax exempt property values that exceeded 20%, and only five, including Orono, had shares that exceeded 40%. The average share of tax exemption for these categories in Penobscot County was just over 10%, and the average statewide was just over 6%. The City of Bangor has more tax exempt property value in these key categories than Orono -- \$479.2 million – but that total represented just 16.2% of assessed value in the city.

Table 11-2. Largest Orono Taxpayers as of April 1, 2012

Property Owner	Type of Property	FY 2013 Assessment	FY 2013 Tax	% of Net Levy
Orchard Trails Housing, LLC	Rental housing	\$16,978,500	\$366,736	4.06%
Dirigo Pines Inn, LLC*	Retirement housing	14,536,900	313,997	3.47%
Dirigo Pines Homeowners Corp.	Cooperative housing	14,354,500	310,057	3.43%
Black Bear Hydro	Electric utility	7,705,700	166,443	1.84%
Bangor Hydro-Electric Co.	Electric utility	5,948,299	128,481	1.42%
Campus Crest at Orono, LLC**	Rental housing	5,808,700	125,468	1.39%
Orono Economic Dev. Corp.***	Office building	4,586,900	99,077	1.10%
Cabrel, Inc.	Rental housing	3,736,700	80,713	0.89%
Brown Trout Acquisition Corp.	Nursing home	3,717,400	80,296	0.89%
6 Stillwater Ave, LLC	Office buildings	3,561,800	76,935	0.85%
EWT, LLC9	Rental housing	3,135,900	67,735	0.75%
Three Founders Place	Rental housing	2,976,200	64,286	0.71%
Penobscot Golf Holdings, LLC	Golf course	2,900,400	62,649	0.69%
MacMillan, Stanley E.	Rental housing	2,630,300	56,814	0.63%
Black Bear Inn Associates	Hotel	2,500,500	54,011	0.60%
Hagan, Gary J.****	Office buildings	2,496,700	53,929	0.60%
Main Street Apartments, LLC	Rental housing	2,484,200	53,659	0.59%
Time Warner NY Cable, LLC	Cable TV	2,039,500	44,053	0.49%
Bangor Gas Co.	Gas utility	1,992,400	43,036	0.48%
Springer, Lawrence G.	Office building	1,991,300	43,012	0.48%
TOTAL		\$106,082,700	\$2,291,386	25.34%

* Dirigo Pines Inn, LLC: a portion of real estate taxes returned to the property owner under TIF credit enhancement agreement.

** Campus Crest’s development, The Grove, was under construction as of April 1, 2012. Assessment as of April 1, 2013 will reflect completion of the project.

*** OEDC leases the office building to NexxLinx, a call center

****One property is in a TIF district, with tax revenues used for a variety of public purposes; no dollars are returned to the owner

Source: Orono Tax Assessor

Table 11-3. Maine Municipalities with 20%+ Share of Tax Exempt Property Value in Selected Categories, 2011				
Municipality	Taxable Valuation	Total Exempt in Selected Categories*	Total Taxable + Exempt in Selected Categories	Percent of Value Exempt
Chelsea	\$138,476,193	\$2,004,035,500	\$2,142,511,693	93.5%
Limestone	\$60,266,135	\$280,193,600	\$340,459,735	82.3%
Cutler	\$75,261,693	\$74,631,932	\$149,893,625	49.8%
Orono	\$413,927,500	\$347,002,400	\$760,929,900	45.6%
Bar Harbor	\$1,407,890,760	\$966,435,800	\$2,374,326,560	40.7%
Charleston	\$64,197,710	\$39,132,200	\$103,329,910	37.9%
Brunswick	\$1,295,834,340	\$561,550,700	\$1,822,841,940	30.8%
Lincoln	\$360,079,447	\$126,692,250	\$486,428,697	26.0%
Winter Harbor	\$220,191,850	\$62,911,400	\$283,103,250	22.2%
Warren	\$289,716,500	\$82,658,600	\$372,375,100	22.2%
Beaver Cove	\$60,457,153	\$17,101,100	\$77,558,253	22.0%
Jackman	\$78,211,020	\$19,758,900	\$94,906,520	20.8%
<p>*Selected categories are those considered to generally serve regional or statewide populations. They are U.S. and State properties, properties of benevolent & charitable organizations, properties of literary & scientific organizations, and airports. They do not include properties of religious organizations, veterans' organizations, municipalities, water/sewer utilities, or boards of trade, which serve primarily local populations.</p> <p>Source: 2011 Maine Valuation Return Statistical Summary, Maine Bureau of Revenue Services Note: The rigor with which tax exempt properties are assessed likely varies widely from municipality to municipality. As a result, these figures should be considered estimates for comparison purposes.</p>				

By itself, a high share of tax exempt value does not automatically limit a municipality's financial capacity. A companion measure of how limiting it might be is the amount of taxable property value per person in the population. Some communities with high shares of tax exempt property – such as Bar Harbor – also have large taxable property value per capita. Others – including Orono – have taxable property values per capita that are well below average. Among municipalities with high shares of non-municipal tax exempt property value, Orono has one of the lowest levels of taxable property value per capita in the state (under \$40,000), far below the statewide and county averages. See **Table 11-4**.

Table __-4. Taxable Property Value Per Capita, Orono v Other Municipalities with High Shares of Tax Exempt Property Value*			
Municipality	2011 Taxable Valuation	Percent Tax Exempt	Taxable Value per capita (2010 Pop.)
Beaver Cove	\$60,457,153	22.0%	\$495,550
Winter Harbor	\$220,191,850	22.2%	\$426,728
Bar Harbor	\$1,407,890,760	40.7%	\$268,938
Cutler	\$75,261,693	49.8%	\$148,445
Jackman	\$78,211,020	20.8%	\$90,732
Lincoln	\$360,079,447	26.0%	\$70,812
Brunswick	\$1,295,834,340	30.8%	\$63,903
Warren	\$289,716,500	22.2%	\$60,980
Chelsea	\$138,476,193	93.5%	\$50,892
Charleston	\$64,197,710	37.9%	\$45,563
Orono	\$413,927,500	45.6%	\$39,947
Limestone	\$60,266,135	82.3%	\$26,044
<i>Penobscot Co. Municipalities with Highest Shares of Tax Exempt Property:</i>			
Brewer	\$773,256,000	6.8%	\$81,550
Bangor	\$2,522,711,400	16.2%	\$76,356
Lincoln	\$360,079,447	26.0%	\$70,812
Old Town	\$480,215,900	12.8%	\$61,252
Charleston	\$64,197,710	37.9%	\$45,563
Orono	\$413,927,500	45.6%	\$39,947
Penobscot Co.	\$10,323,339,106	10.4%	\$67,068
State of Maine	\$152,793,776,985	6.4%	\$115,024
*In selected categories – see Table 3. Sources: 2011 Municipal Valuation Return Statistical Summary; 2010 U.S. Census; compiled by E. Richert			

The University of Maine’s assessed property value in FY 2013 was about \$328 million. The second largest tax exempt property owner is The Housing Foundation, which owns federally subsidized housing for elderly and family households, with an assessed value in FY 2013 of nearly \$9 million. Importantly, while tax exempt, the University of Maine and The Housing Foundation make voluntary payments to the Town in lieu of taxes. The payments are well below what would be required if the properties were taxable but are nevertheless significant. In 2012, the payments were \$655,000 and \$35,000, respectively. UMaine’s payment made it, on a voluntary basis, the largest “taxpayer” in Orono – the equivalent of a tax on a property valued at \$30.2 million.

Property Tax Rate: Because the property tax rate is tied to valuation, and valuation grew faster than expenses from FY 2003 to FY 2009, Orono’s tax rate fell during this period of growth from \$24.30 per thousand dollars of value to \$19.70. From FY 2009 to FY 2014, the mill rate inched back up to \$23.20. Refer to **Table 11-1.**

Orono’s tax rate is the highest in the Greater Bangor area. See **Table 11-5.** For an “apple-to-apple” comparison, the table categorizes the area’s municipalities as job centers (serving many commuters), suburban, and rural (“suburban” and “rural” designations are based on housing densities in the communities). The tax rates are “full value” rates that have been equalized to account for differences in ratios of assessed value to estimated market value.

Municipality	Mill Rate \$ per \$1000	Municipality	Mill Rate \$ per \$1000
<i>Job Centers</i>		<i>Rural Towns</i>	
Orono	\$20.28	Greenbush	18.51
Bangor	18.92	Milford	16.12
Old Town	18.25	Newburgh	14.05
Brewer	17.78	Bradford	13.95
<i>Suburban Towns</i>		Charleston	12.78
Veazie	18.09	Bradley	12.11
Glenburn	15.89	Clifton	11.14
Hampden	15.22	Hudson	10.49
Holden	13.85	Alton	10.48
Orrington	13.16	Lagrange	9.98
Carmel	12.69	<i>Averages</i>	
Eddington	11.58	Penobscot Co.	\$16.40
Hermon	11.31	State	\$12.78
Kenduskeag	11.02		
Levant	10.85		
Corinth	10.29		
Source: 2011 Municipal Valuation Return Statistical Summary, Maine Revenue Services			

Among municipalities statewide of similar population size, Orono’s full value tax rate is second only to Presque Isle. See **Table 11-6.**

Municipality	2010 Pop	2011 Mill Rate	Municipality	2010 Pop	2011 Mill Rate
Presque Isle	9,692	\$20.81	Cape Eliz	9,015	14.19
Orono	10,362	20.28	OOB	8,624	13.33
Caribou	8,189	18.96	Kittery	9,490	12.93
Brewer	9,482	17.78	Kennebunk	10,798	12.73
Bath	8,514	17.44	Falmouth	11,185	12.60
Lisbon	9,009	17.23	York	12,529	11.39
Yarmouth	8,349	17.00	Buxton	8,034	10.88
Topsham	8,784	15.66	Standish	9,874	10.11
Skowhegan	8,589	15.28	Wells	9,589	8.98
Sources: 2011 Municipal Valuation Return Statistical Summary; 2010 U.S. Census					

Property tax burden: One measure of the impact of property taxes on households in a municipality is “property tax burden.” This statistic is based on a hypothetical family with the municipality’s median family income and living in a home with the municipality’s median value. The burden is the share of that family’s income that is paid for property taxes. Based on U.S. Census data on the median value of owner-occupied homes and on median family income, it is estimated that the property tax burden in Orono is 4.5%. The range of tax burden among nearby communities is 3% - 5%, as shown in **Table 11-7**.

Table 11-7. Estimated Property Tax Burden, Orono v Selected Area Municipalities				
	Median Value, Owned Home	Median Property Tax	Median Family Income	Property Tax Burden
Orono	\$172,000	\$3,285	\$72,404	4.5%
Bangor	146,400	2,581	60,976	4.2%
Brewer	161,700	2,697	66,544	4.1%
Glenburn	165,200	2,466	71,148	3.5%
Hampden	170,200	2,438	87,008	2.8%
Hermon	182,400	1,956	63,125	3.1%
Old Town	136,600	2,310	45,924	5.0%
Veazie	171,200	2,916	86,333	3.4%

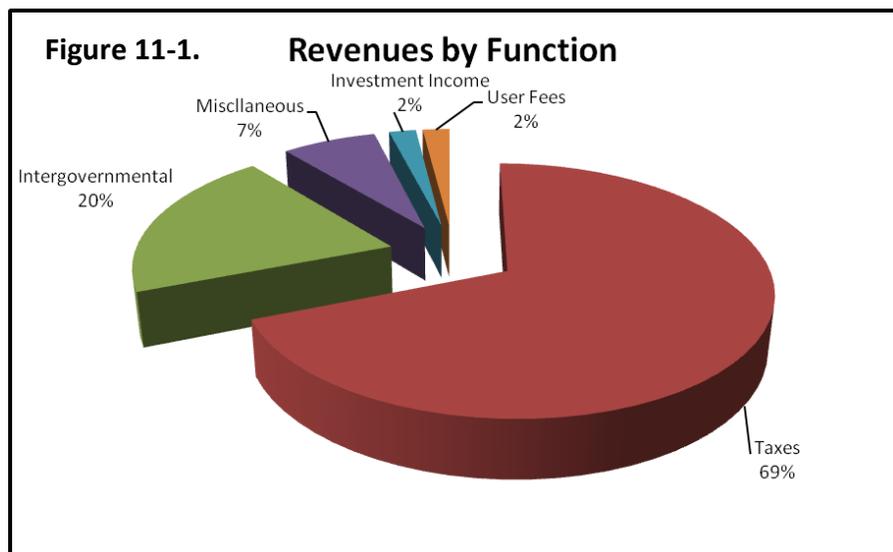
Sources: Median value of homes and median family income – American Community Survey, U.S. Census
 Property tax rates: 2011 Municipal Return Statistical Summary
 Property tax burden: calculated by E. Richert

B. Municipal Revenues and Expenses

Orono’s general fund budget, including the Town’s share of education expenses for RSU 26 and its county taxes, was about \$14 million in FY 2012. Nearly seven of every \$10 of revenues came from property taxes.

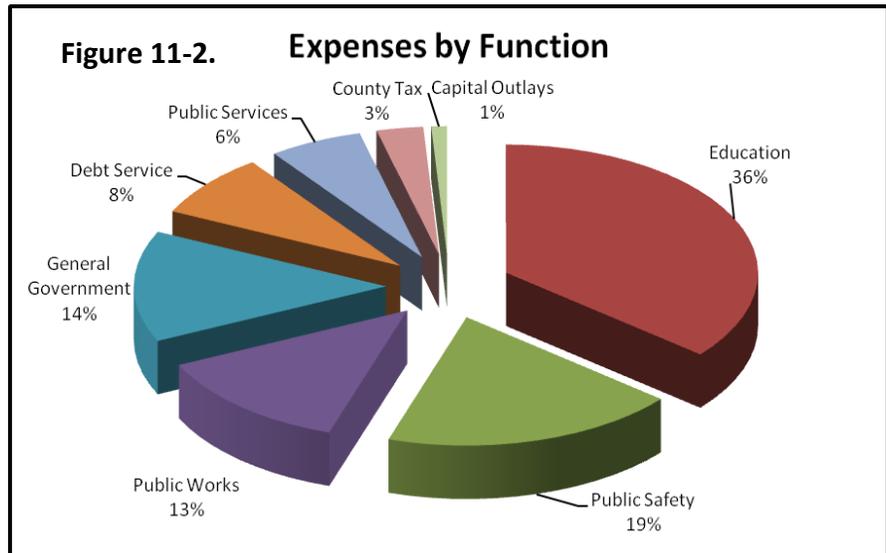
Intergovernmental revenue, including municipal revenue sharing, federal and state grants, and similar sources, accounted for about one-fifth of the revenues. See **Figure 11-1**.

About 36% of expenditures were for education, followed by 19% for public



safety, 14% for general government, 13% for public works, and 8% for debt service. See **Figure 11-2** for FY 2012 expenditures by major category.

Over the 10-year period from FY 2003 to FY 2012, property tax revenues increased by 38%, from \$6.9 million to \$9.6 million. Intergovernmental revenues dropped in FY 2009-10 when the Town joined RSU 26 and revenues that had previously flowed directly to the Town for



education aid shifted to the RSU. User fees, while a small part of the overall revenue picture, have increased significantly over the 10-year period, while investment income – a victim of the economic recession and very low interest rates – has fallen.

On the expense side, Public Works expenditures increased by 72% but have been flat since FY 2009. Similarly, Public Safety expenditures increased by 46% but have been flat since FY 2008. General Government expenses increased modestly, by 13% over the 10-year period. Debt service expenses have dropped by about 18%. See **Table 11-8** at the end of this chapter for a 10-year summary of annual revenues and expenditures.

At the end of FY 2012, the Town’s General Fund had a balance of about \$7.7 million. Of this, approximately 40%, or about \$3 million, was “unassigned” and thus available if needed by the Town. Best practices suggest maintaining an unassigned fund balance of at least one-twelfth (8.33%) of the annual budget; Orono’s unassigned balance at the end of FY 2012 was just over 20%.

C. Long-Term Debt

As of the end of FY 2012, Orono had long-term debt of \$8.4 million supported by the General Fund (including \$3.9 million supported in the first instance by lease fees paid to Orono Economic Development Corp. by NexxLinx) and of \$9.3 million supported by sewer system user fees. Of the \$8.4 million of General Fund debt, \$3.9 million was for a bond that supported the construction of a call center facility in the Maine Technology Park – originally for EnvisioNet and

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currently occupied by NexxLinx. Orono Economic Development Corp. owns the building, and leases paid by NexxLinx to OEDC are dedicated primarily to retiring the bond.

All of the General Fund and User Fee-supported debt was in the form of general obligation bonds, which are backed by the full faith and credit of the Town’s property tax base. As of June 30, 2012, the G.O. bonds consisted of the issues shown in **Table 11-9**:

Year Issued & Purpose	Year Retires	Principal Outstanding	Remaining Interest	Supported By
1997, school repairs & capital improvements	2017	\$397,500	\$68,829	General Fund
2002, refinancing Municipal & Public Safety buildings	2017	1,120,000	166,883	General Fund
2008, five issues with USDA, primarily for sewer system improvements	2035	2,290,735 9,317,932	1,413,917 5,853,238	General Fund Sewer User Fees
2008, Public Library & infrastructure	2028	425,000	188,331	General Fund
2010, refinancing 2000 bond for EnvisioNet (NexxLinx) building	2020	3,885,000	1,079,947	General Fund (& NexxLinx lease)
2010, refinancing 2000 bond for EnvisioNet equipment	2015	260,000	19,906	General Fund (TIF District revenues)
TOTALS		\$8,378,235 \$9,317,932	\$2,937,813 \$5,853,238	General Fund (& NexxLinx lease) Sewer User Fees
GRAND TOTAL		\$17,696,167	\$8,791,051	

Source: Financial Statements, Town of Orono, June 30, 2012, Note F, pp 25-26; Town Manager’s Office

Orono’s outstanding debt supported by the General Fund, including principal and interest, was \$11.3 million, or 2.7% of its full taxable property value. Under state law, municipalities may incur debt, exclusive of school, sewer, and certain other purposes, up to 7.5% of its last full state valuation. The Town is well within this limit and, as a practical matter, strives to stay below 5%, a guideline often used by municipal finance agencies.

The outstanding debt for sewer system improvements, which included an extensive upgrade of the waste water pollution control plant and high priority replacement of sewer lines, was \$15.2 million, including principal and interest. This debt is supported through sewer user fees. Under state law, debt for waste water and storm sewer purposes is 7.5% of full valuation. Again, Orono is well within this limit at about 3.7%.

Moody's Investment Service in 2010 assigned an Aa3 bond rating to Orono, meaning its obligations are "judged to be of high quality and low risk," citing the Town's financial policies, healthy reserves, and its role as home to the University of Maine as reasons for this strong rating. Standard and Poor's issued a rating of A+, meaning "strong capacity to meet financial commitments, but somewhat susceptible to adverse economic conditions and changes in circumstances."

Further, the Town is paying down existing debt at a reasonable pace. Between FY 2013 and FY 2017, it will pay down \$4.9 million in principal; and from FY 2018 to FY 2022, another \$4.5 million. This, in combination with a return to growth in taxable property values as the economy recovers, should provide the Town with capacity to maintain and replace needed infrastructure over the term of this Comprehensive Plan.

D. Tax Increment Finance Districts

State law enables municipalities, at their option, to establish "development districts" for the purpose of "tax increment financing" to promote economic and affordable housing development. A TIF district can cover an individual property or a larger area, such as a business park or downtown. Once established, the property taxes generated from growth in taxable assessed value are "captured" for reinvestment in the district, according to an approved program. The reinvestment can be in the form of capital improvements, direct financial assistance to a business or affordable housing developer, support for public transportation, or building the economic development capacity of the Town.

With some exceptions, no more than 5% of a municipality's land area and 5% of its taxable property value can be placed in TIF districts. A district can have a life of up to 30 years, as may be decided by the municipality. The municipality may decide whether to capture all or only a portion of the growth in taxes to carry out the development program. During that time, the funds designated for the district can only be used in the district for the stated purposes. All proposed TIF districts, except for affordable housing, must be approved by the Maine Dept. of Economic and Community Development; affordable housing TIF districts must be approved by the Maine State Housing Authority.

Importantly, the growth in taxable assessed value of a TIF district is shielded from state revenue sharing, aid to education, and county tax formulas, allowing the municipality to keep all of the tax revenues resulting from the growth. (It is not unusual for a municipality, over a 20 – to 30-year period of growth in valuation, to give up 40% - 50% of taxes from the growth in the forms of higher county taxes and lower municipal revenue sharing and aid to education.)

As of FY 2013, Orono had five tax increment finance districts. Their dates, growth in taxable assessed value since being established, and purposes are summarized in **Table 11-10**.

Table 11-10. Tax Increment Finance Development Districts in Orono As of 2013			
	Date Established- Date of Expiration	Growth to Date in Assessed Value for TIF Purposes	Primary Use of TIF Tax Dollars
Dirigo Pines Inn	2003-2033	\$4.4 million	Development finance
EnvisioNet	2000-2020	\$5.6 million	Support debt on facility;
Sensor Research & Development	2000-2015	\$1.8 million	Development finance; infrastructure; economic development planning
Downtown/Transit- Oriented Development	2010-2040	\$7.7 million	Infrastructure; transit; economic development support
Webster Point (affordable housing)	2011-2027	\$0 as of FY 13; construction underway	Development finance; infrastructure

E. Issues and Opportunities

Capital investment: Orono has a backlog of needs to upgrade and maintain its existing street, sidewalk and drainage systems, as well as expansion needs to support growth. The Town’s Capital Improvement Plan and Capital Improvement Budget are the mechanisms through which priorities are sorted out and the Town Council determines what can be afforded in any given year.

Managing debt and fund balance: Staying within prudent debt limits and maintaining a healthy, unassigned fund balance are challenges in light of capital improvement needs, the legacy of the EnvisioNet project, and the volatility of state funding for schools and municipal revenue sharing.

High tax rate: The Town’s tax rate is the highest in the region. The Town continually weighs the rate against the quality of services residents and businesses expect. Tools that can mitigate property tax burdens –growing the tax base, using tax increment financing to target particular needs in identified districts, securing grants, maintaining payments in lieu of taxes from major tax-exempt entities, refinancing of debt, cooperating with neighboring towns where it makes sense – are opportunities to be constantly explored.

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**Table 11-8. Annual Revenues and Expenditures, FY 2003-FY 2012, Orono
(Thousands of Dollars)**

	FY 2012	FY 2011	FY 2010	FY 2009	FY 2008	FY 2007	FY 2006	FY 2005	FY 2004	FY 2003
REVENUES										
Taxes	\$9,601	\$9,412	\$9,016	\$8,833	\$8,526	\$8,513	\$8,060	\$7,769	\$7,534	\$6,947
Intergovernmental	\$2,762	\$2,316	\$2,171	\$5,217	\$4,811	\$4,793	\$4,648	\$4,376	\$4,979	\$4,818
User Fees	\$332	\$162	\$92	\$115	\$60	\$71	\$199	\$89	\$46	\$56
Investment Income	\$214	\$373	\$409	\$561	\$560	\$629	\$581	\$524	\$497	\$509
Miscellaneous	\$918	\$941	\$903	\$2,417	\$2,563	\$2,358	\$2,401	\$2,408	\$2,008	\$1,832
Total Revenues	\$13,828	\$13,205	\$12,591	\$17,143	\$16,520	\$16,364	\$15,889	\$15,166	\$15,063	\$14,162
EXPENDITURES										
General Government	\$1,934	\$1,516	\$1,316	\$1,334	\$1,938	\$1,896	\$1,745	\$1,743	\$1,862	\$1,717
Public Services	\$755	\$668	\$691	\$700	\$773	\$673	\$665	\$601	\$620	\$604
Public Safety	\$2,765	\$2,589	\$2,638	\$2,496	\$2,817	\$2,093	\$2,017	\$1,958	\$2,009	\$1,884
Public Works	\$1,804	\$1,888	\$1,652	\$1,834	\$1,298	\$1,050	\$1,214	\$1,352	\$1,181	\$1,051
Education	\$5,032	\$4,907	\$4,733	\$8,124	\$8,148	\$7,784	\$7,260	\$7,230	\$6,791	\$6,502
County Tax	\$466	\$463	\$465	\$440	\$403	\$380	\$347	\$299	\$269	\$240
Miscellaneous	\$39	\$7	\$6	\$26	\$2	\$16	\$5	\$98		
Debt Service	\$1,093	\$1,161	\$1,259	\$1,071	\$969	\$1,070	\$1,326	\$1,343	\$1,355	\$1,336
Capital Outlays	\$133	\$92	\$135	\$130	\$765	\$2,602	\$250	\$179	\$97	\$110
Total Expenditures	\$14,022	\$13,292	\$12,894	\$16,155	\$17,115	\$17,565	\$14,828	\$14,801	\$14,182	\$13,442

Source: Financial Statements, Town of Orono; Finance Director, Town of Orono

Note: Totals may not add due to rounding

Both Intergovernmental Revenues and Education Expenditures dropped steeply from FY 2009 to FY 2010 upon the formation of RSU 26 and the transfer of K-12 education from the Town to RSU 26.