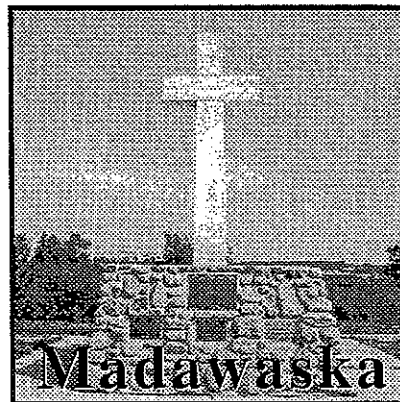
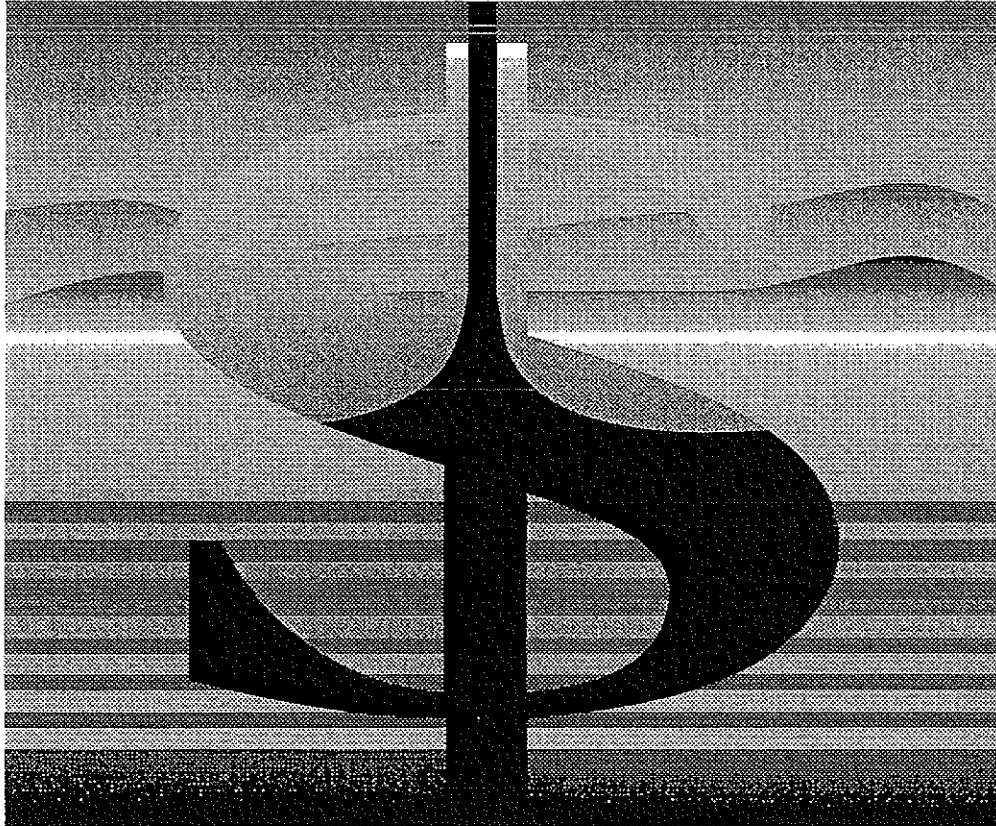


# Fiscal Capacity

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## Section 5 Municipal Finances

Although the population in Madawaska has decreased in the last decade, demands for improved and maintained services still exist. It is important that as the Town develops over the next five to ten years that the municipality will have the ability to continue financing the maintenance and improvement of roads, public facilities, capital improvements, public services, and administrative costs.

### Assessed Value

The basis of a municipality's fiscal health is its property valuation: the greater the valuation, the lower the tax rate needed to raise money. The local valuation reflects actual market values only in the years which a municipality conducts a re-valuation and upgrades values to 100% of the market value. The State's valuation is adjusted each year to better reflect true market value. Table 5-1 illustrates the historical local assessed values, state assessed values and tax rate trends along with changes in percentage between years. Madawaska's assessed value and tax rate has fluctuated throughout the past ten years. The tax rate was highest in 1987 (21.3), lowest in 1991 (15.00) and has remained at 16.10 for the past two years.

**Table 5-1**  
**Assessed Value and Tax Rate, 1983-1993**

	Local Assessed	State Assessed	Local % Change	State % Change	Tax Rate
1983	238,803,050	214,700,000	-	-	18.0
1984	244,947,595	227,450,000	2.57	5.93	18.4
1985	249,649,790	236,450,000	1.92	3.96	18.2
1986	245,064,705	231,050,000	-1.84	-2.28	19.6
1987	243,187,620	232,400,000	-0.43	0.58	21.3
1988	254,187,610	231,000,000	4.17	0.60	20.3
1989	262,334,730	233,750,000	3.21	1.19	20.8
1990	352,471,245	246,100,000	-34.40	5.28	16.0
1991	352,623,535	263,850,000	0.04	7.21	15.0
1992	350,528,535	320,400,000	-0.60	21.43	16.1
1993	355,701,385	318,800,000	1.48	-0.50	16.1

Source: Town Reports

### Comparative Valuation

Table 5-2 contains a summary of comparative tax information for Madawaska as well as for surrounding communities. Madawaska's 1992 State valuation (\$320.4 million), is the highest of these Northern Aroostook communities. The full value per capita figure (the amount of State valuation for each man, woman and child in Madawaska) is \$66,708.

**Table 5-2**  
**Comparative Valuation**

Municipality	1992 State Valuation	1990 Census	Full Value per Capita
Madawaska	\$320,400,000	4,803	\$ 66,708
Caribou	198,300,000	9,415	21,062
Fort Fairfield	129,450,000	4,376	29,582
Fort Kent	79,150,000	4,826	16,401
Presque Isle	273,200,000	11,172	24,454
Van Buren	46,150,000	3,557	12,974

Source: 1991 Municipal Valuation Return Statistical Summary

### Comparative Tax Information

Table 5-3 contains comparative tax assessment information for Madawaska and surrounding communities. Madawaska's 1991 total tax assessment (\$5,289,347) is comparable to Caribou and Presque Isle's. Madawaska's per capita tax spending was \$1,101, which was greater than any of the surrounding communities.

**Table 5-3**  
**Comparative Tax Information**

	1991 Tax Assessment	Tax Spending Capita	1991 Full Value Tax Rate per 1,000
Madawaska	\$ 5,289,347	\$ 1,101	15.00
Caribou	4,446,218	472	26.00
Fort Fairfield	2,736,765	625	27.00
Fort Kent	1,670,418	346	26.80
Presque Isle	6,648,727	595	32.80
Van Buren	1,248,181	351	25.40

Source: 1991 Municipal Valuation Return Statistical Report

### Revenues and Expenditures

A review of a municipality's revenues and expenditures will reveal the extent to which the community relies on local property taxes to fund municipal government. Table 5-4 illustrates Madawaska's revenues and expenditures by major categories. Between 1989 and 1993 revenues increased by 19%, while expenses increased by .01%.

**Table 5-4**  
**Revenues and Expenditures, 1989-1993**

	1989	1990	1991	1992	1993
<u>Revenues</u>					
Property Taxes	\$2,732,899	\$2,848,528	\$2,379,427	\$2,762,188	\$2,794,445
State Assistance	444,444	447,843	441,123	356,452	390,780
Education	3,876,364	4,439,134	4,844,354	4,860,664	5,487,906
Other Revenues	915,928	958,421	915,928	846,954	809,455
<b>Total</b>	<b>7,969,635</b>	<b>8,693,926</b>	<b>8,580,832</b>	<b>8,826,258</b>	<b>9,482,586</b>
<u>Expenditures</u>					
General Adm.	391,956	348,848	293,248	273,824	347,604
Public Safety	610,298	630,518	643,622	607,412	624,309
Public Works	1,312,746	1,335,360	1,027,865	798,448	803,560
Recreation	183,458	256,472	187,358	155,461	180,802
Education	2,677,781	2,787,312	2,834,347	2,873,212	2,926,084
County Tax	334,600	344,540	366,752	412,034	410,296
Other	120,466	102,287	86,450	92,445	109,179
Debt Service	453,481	414,000	293,500	339,750	284,750
Health/Welfare	149,450	151,306	169,457	249,378	290,255
Solid Waste	97,125	169,000	151,882	243,955	318,398
Insurances	373,588	434,170	458,442	465,366	449,935
Bldg. Maintenance	121,516	147,641	10,457	87,935	90,038
<b>Total</b>	<b>6,826,465</b>	<b>7,121,454</b>	<b>6,523,380</b>	<b>6,599,220</b>	<b>6,835,210</b>

Source: Town Reports

Madawaska's expenditures by category and year indicate spending for education is the Town's costliest expenditure, which experienced a 9% increase in funding between 1989 and 1993. Although public works represents the second most costly department, expenditures have decreased by 39% between 1989 and 1993.

Increases are expected to grow in four areas; public works, sewer treatment, administration, and education. Costly infrastructure rehabilitation, engineering and machine/equipment replacement are expected to occur in the public works department as well as at the sewer treatment plant. After the combine sewer overflow study has been completed, one of two actions will be taken: 1) the sewer lines will be replaced, or 2) modifications will be made to the pollution control plant. Either one of these projects will necessitate expensive rehabilitation and engineering. The public works department is anticipating an increase in more difficult demands, which will necessitate an increase in the budget for employees and training. Rehabilitation of Madawaska's local roads will also cause an increase in the public works' budget.

Second, both administration at the Town and school level will experience increases in salaries due to longevity of the employees, their becoming highly trained, salary comparisons by position occurring every five years, cost of living increases, and increased costs for health insurance.

These increases, along with decreases in state funding, will cause an increase in local funding for education.

In an attempt to lessen the burden of future costs of rehabilitation and replacement, the Town is involved in a capital improvements plan. The public works department, police, ambulance and sewer treatment plant are participating in this effort to defer the costs of expensive rehabilitation and replacement through long-term financial planning. The capital improvement projects initiated by these departments go toward the replacement of emergency vehicles and/or other equipment.

### Long Term Debt

Table 5-5 contains a summary of the Town's long term debt, a projection of the principle, interest rate schedule, and the remaining balance as of fiscal year 1999. The debt service for the new elementary school is provided for the first year only, because funding formulas and circuit breaks are subject to change yearly. The Funding Law limits what a local community will pay for an approved debt service through a provision known as a circuit breaker. This year's circuit breaker is .51 mills, which is \$162,537 of the original \$330,481.55 debt service. The difference is paid by the State.

**Table 5-5**  
**Summary - Long Term Debt**

	Pollution Control Plant		Multi-Purpose Building Renovations		NARIF Transfer Station		New Elementary School	
	Interest Rate	Principal	Interest Rate	Principal	Interest Rate	Principal	Interest Rate	Principal
1994-95	6.25%	22,362	5.20%	40,000	6.50%	16,182	-	162,537
1995-96	6.40%	22,309	5.20%	40,000	6.50%	16,182	5.63%	*
1996-97	6.60%	22,288	5.20%	40,000	6.50%	16,182	5.63%	*
1997-98	6.75%	22,308	5.20%	40,000	6.50%	16,182	5.63%	*
1998-99	6.85%	22,365	5.20%	40,000	6.50%	16,182	5.63%	*
Remaining		288,692		None		32,365		
Total		320,828		200,000		113,275		5,973,340

Source: Chester M. Kearney - 1993 Audit Report

### Capital Improvements Program (CIP)

Madawaska, like many other Maine communities, has been struggling to keep property taxes stable while cuts are being made in Federal and State assistance to municipalities. The Federal Revenue Sharing Program at one time represented a federal-state-local partnership in which new policies were mandated and then largely funded by the federal government. The program

became defunct in 1986--however, the mandates are still in place, but the burden of funding them is now largely the responsibility of the Town. Another issue to consider is the reductions in school subsidies. Madawaska currently has its own school district. The Town could face rising education costs as the school district struggles with decreases in funding.

In spite of these economic challenges, Madawaska has met its mandated obligations, and continually maintains and upgrades its services and infrastructure. By building upon its accounts, the Town postpones its need to increase property taxes dramatically. As Madawaska considers recommendations to make future capital investments and/or upgrade public services during the years ahead, they must also consider their ability to finance these programs. To that end, the Town maintains and appropriates funding to in three ways; municipal bonds, user fees, and appropriations at Town Meeting. Currently the Town is paying on municipal bonds to cover the costs of the new K-5 school, pollution control plant, multi-purpose building renovations, and the NARIF transfer station. Funding for purchasing police cars, ambulance, and machinery and equipment for the pollution control plant comes from user fees. Town office capital improvements are financed through a \$10,000 annual conservation fund. Remaining expenses, primarily those of the public works, fire, and recreation departments are financed through a \$100,000 capital improvement fund appropriated Annually at the Town Meeting.

The capital facilities of the local government are essential to meeting the service needs of the community in an efficient and cost-effective manner. Madawaska has instituted a capital budgeting system for municipal facilities and equipment. This process is directed by the Town Manager and the Town Council. Madawaska has traditionally instituted cost effective financial management and has done well in planning for the future.

This Comprehensive Plan incorporates the capital needs for the municipal departments as developed by the responsible parties over a five year period. The Plan strongly supports the concept that Capital Investments Programming (CIP) is an essential part of the Town's annual budgeting process and is considered as part of the normal administrative process.

The CIP is designed to assist the Town in planning for the needed capital expenditures of the Town's departments on a rational and systematic basis. The program is designed to identify the needs of Madawaska for capital expenditures, to evaluate the relative priority of the various needs, and to structure a spending program for meeting the more important of these needs on an affordable basis.

Madawaska approaches capital spending on a rational, consistent basis as part of its regular budget process to meet the needs of the community. There is a temptation in other municipalities to defer needed spending on capital projects when the budget is tight and approve whatever is the current project when funds are available. This approach can result in scarce capital dollars being spent on projects that are not the greatest need of the community. Project-by-project budgeting can result in unexpected future costs for major projects that are essential or are mandated by state or federal requirements. A town must consider all projects when deciding which to appropriate funding. Madawaska has done well in considering all municipal projects when budgeting funding.

The following tables illustrate Madawaska's Capital Improvement Program (5-6) and Roadway Improvements (5-7) for the next five years.

**Table 5-6**  
**Madawaska Capital Improvements, 1996-2000**

Department	Item	Estimated Cost	Completion Date	1996	1997	1998	1999	2000
Pollution Control Plant	Shortbed Truck	50,000	1998			50,000		
	Pickup Truck	30,000	1999				30,000	
	Sewage Treatment Plant Expansion	2,750,000	1999			1,350,000	1,350,000	
Public Works Department	Plow Truck	83,000	1998			83,000		
	Grader	155,000	1997		155,000			
	Pickup Truck and Snow Plow	30,000	1998			30,000		
	Snow Rack	5,000	1997		5,000			
	Loader	125,000	1999				125,000	
	Plow Truck	80,000	2000					80,000
	Sidewalks, Maintenance	50,000	On-Going	10,000	10,000	10,000	10,000	10,000
Fire Department	Fire Truck	200,000	1999	50,000	50,000	50,000	50,000	
Ambulance Department	Ambulance	85,000	1999				85,000	
Police Department	Computerization of Operations	8,000	1997		8,000			
Education Department	Repairs and Renovations to Buildings-Band Room	30,000	1998			30,000		
Recreation Department	Maintenance Projects		1997 On-going		15,000	15,000	20,000	20,000
	Pickup Truck	30,000	1999				30,000	
Other	NARIF	476,730	On-Going	476,730	459,730	442,730	425,730	408,730

Source: Town Manager, 1996 and Town Department Heads, CIP Budgets

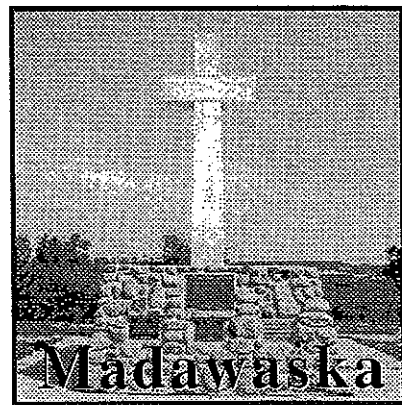
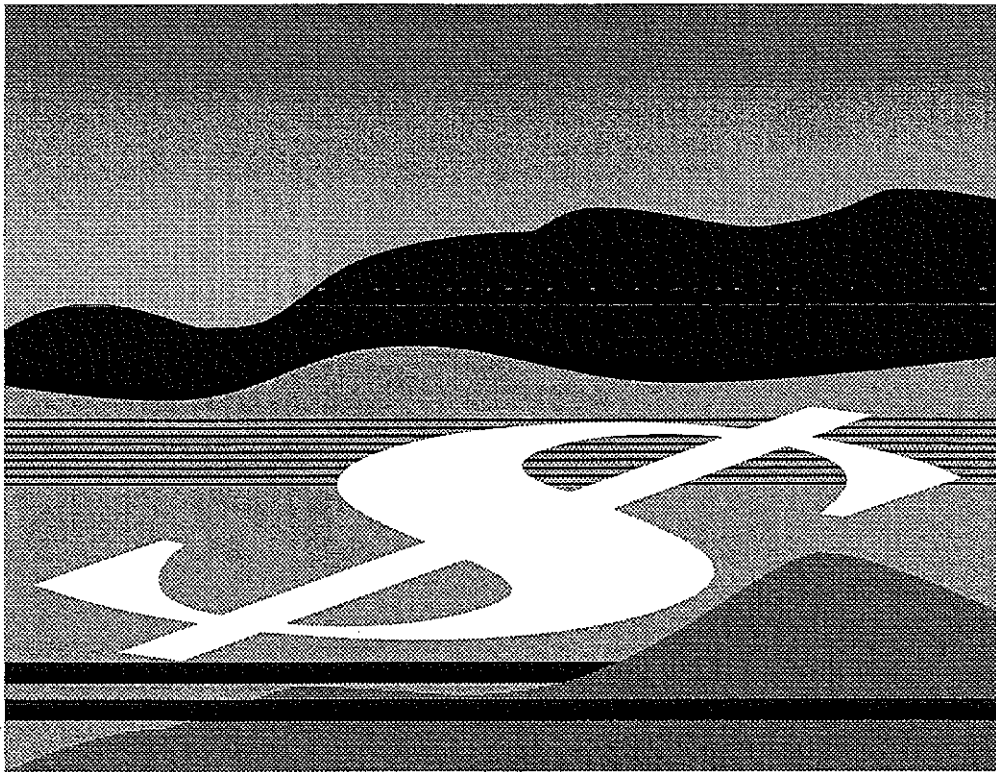
Updated 12/96

**Table 5-7**  
**Madawaska Roadway Improvements, 1996-2006**

Item	Estimated Cost	Completion Date	1996	1998	2000	2002	2004	2006
Four Roadways	500,000	2002				500,000		
Four Roadways	1,000,000	2004					1,000,000	
Seven Roadways	1,750,000	2006						1,750,000
Four Urban Roadways	765,000	1996	765,000					
Four Urban Roadways	505,000	1998		505,000				
Three Urban Roadways	700,000	2000			700,000			
Five Urban Roadways	1,000,000	2002				1,000,000		
Five Urban Roadways	200,000	2004					200,000	

Source: Town Manager, 1996

# Local Economy





## Section 6 Local Economy

NOTE: This section of the comprehensive plan was prepared by Vincent DiCara of Development Consulting Services.

### Economic History

#### Agriculture

Like most rural communities, the early economy of the Town of Madawaska was based on agriculture. In the earliest days of the Madawaska settlement, the obvious need for the townspeople to be self-sufficient and take care of their own food needs. After this was accomplished, the food supply increased and it became necessary to find markets for the surplus. The St. John River was the main means of transportation for farm products until the Temiscouata Railroad was completed in 1878. Gradually, farming became profitable enterprise and the amount of tillable land increased to meet this demand.

By the early 1900's, workhorses replaced oxen as farm work animals and by mid-century, the tractor had replaced both. The Bangor and Aroostook Railroad was extended to the St. John Valley in 1911 and became the principal mode of transport for agricultural products to New England and New York markets.

The Great Depression of the 1930's had a disastrous effect on agriculture. Many small farms virtually wiped out as a result of the precipitous decline in food prices. Many farms were foreclosed and had to be sold. The arrival of World War II had a tremendous impact on the national food supply. Farmers were asked to increase production to support the war effort and government support programs were established. Many enterprising individuals purchased farms, expended acreage and ended up owning large tracts of land. The family farm was disappearing.

Today, the town of Madawaska has approximately 13-14 active farms, almost all of which concentrate on the growing of potatoes. The Maine Department of Agriculture has estimated that approximately 2,400 acres of land are currently in production. The Department of agriculture also estimates that about \$500,000 in wages annually are earned by about 150 non-family employees in these enterprises.

#### Early Industry

Despite its predominantly early Agricultural economy, Madawaska was also the location for a number of other business enterprises, including a number of grain mills and sawmills. Some of the larger employers included the Belonie Hebert and Sons Sawmill, which employed 21 men; the Levesque Sawmill, which was operated by four generations of that family; and the Gagnon Grist and Sawmill, which operated between 1914 and 1943, and employed 12 men.

The Madawaska Woolen Mill was the only mill of its kind North of Old Town, Maine. Originally established in 1895 by Pea Martin, the mill was reconstructed at a new location in 1921, after the original mill was destroyed by fire in 1920. The new mill was run by electricity and had equipment that carded, spun, and twisted raw wool into yarn in shades of white and gray that were ready to knit. The Woolen Mill thrived during the great Depression but in 1939, a duty

was imposed on the raw wool going back to Canada, and it was forced to dissolve its assets. The mill's machinery was dismantled and sold for scrap metal to a Japanese firm in the summer of 1940.

### Fraser Paper Company

The most important economic development to take place in the history of the Town of Madawaska was the construction of Fraser Paper Company in 1925. The building of Fraser Paper converted Madawaska from a rural farm community into a manufacturing center of Aroostook County.

In March of 1925, Fraser Paper Limited was incorporated as a wholly owned subsidiary of Fraser Companies, Limited. Construction of a mill to house two bond machines began in May. On October 25, 1925, the Number 2 Paper machine was completed and began producing bond paper. Four months later, the Number 1 machine came on line. Fraser's expansion continued. By April of 1928, two additional machines were constructed and the population of the town had reached 2,000. In November of 1928 and February of 1930, two more machines were constructed at a total cost of \$3 million. Expansion and modernization had continued throughout the years. Today the Fraser complex houses five bond and three groundwood machines, two supercalendars and two off-machine blade coaters. The company has grown from an initial operation of 200 employees with an annual production of 20,000 tons of paper to an employer of 1,110 to 1,200 with an annual production of over 400,000 tons of paper annually.

The construction of Fraser Paper Company had many enormous implications for the economy of Madawaska. Fraser Paper's needs and the needs of its employees contributed to significant growth in the development of other businesses that were required to service the company and its workers. From local contractors who built homes to local retailers who supplied the needs of Fraser's employees, the entire economy of the town was transformed.

The impact of Fraser can be looked at from a number of perspectives. The impact on the community's population is obvious. In 1900, Madawaska's population was 1,698. This increases to 1,831 in 1910, and 1,933 in 1920. In 1930, however, Madawaska's population has increased to 3,533 and by 1940 to 4,477 to 1950 to 4,900. This population increase of approximately 3,000 persons in thirty years (an increase of 153%) was directly related to the establishment and growth of Fraser Paper Company.

### Other Developments

In addition to the development identified above, Madawaska has also been the site of a variety of other business activities. These include the St. John Valley Creamery and Northern Trading Company.

The Creamery was established to provide an outlet for the produce of dairy farmers in Northern Aroostook County. Before closing in the early 1980's, the St. John Valley creamery has operated for over forty years and had diversified into producing carbonated beverages under the trade name of Brunswick Beverages. The beverage company operated out of the same Main Street building in Madawaska for almost thirty-five years.

Northern Trading Company is currently the Town of Madawaska's second largest manufacturer. Founded in 1962 by Jack Vollam, the company had evolved into a major supplier of perfumes and other fragrances throughout the world. Most of the world's major suppliers of perfumes rely on Northern Trading Company to bottle and distribute their products. Northern Trading Company is also the administrator for the town of Madawaska's Free Trade Zone. The Free Trade Zone provides the Town of Madawaska with an opportunity to attract manufactures and other businesses that are importing products from other countries.

## **Madawaska as an Employment Center**

### Commuting Patterns

Commuting patterns are an important indicator of economic activity centers. When an area has more individuals working in the community than it has resident workers, this usually indicates the existence of one or more major employers. In addition, any inflow of workers to a community also represents a potential generator of economic activity. The first set of statistics show the place of work and place of residence for workers in the Madawaska Labor Market Area. The second set of statistics compares Madawaska to other major communities in Aroostook County.

**Table 6-1**  
**Commuting Patterns: Madawaska Labor Market Area**

	Number of Workers	Number of Resident Workers	Ratio of Workers to Resident Workers
Madawaska	2,612	2,081	1.26
Grand Isle	76	203	.37
Frenchville	342	582	.59
St. Agatha	264	415	.64
Totals	3,294	3,281	1.00

Source: U.S. Department of Commerce, Bureau of the Census

**Table 6-2**  
**Commuting Patterns in Major Aroostook County Communities**

	Number of Workers	Number of Resident Workers	Ratio to Workers To Resident Workers
Madawaska	2,612	2,081	1.26
Houlton	3,980	2,555	1.56
Caribou	4,486	4,224	1.06
Presque Isle	7,599	5,053	1.50
Fort Kent	2,151	1,878	1.15
Limestone	6,694	5,905	1.13
Totals	27,522	21,696	1.27

Source: U.S. Department of Commerce, Bureau of the Census

Please Note: The statistics above are for American Citizens only. In addition to the 2,612 United States citizens that work in Madawaska, there were an additional 70 Canadian citizens who reside in Canada and worked in Maine, according to the Canadian Census in 1991. According to Fraser Paper Company, 42 of those Canadians worked for that company.

### Analysis

Madawaska is one of Aroostook County's major employment centers. According to the 1990 Census, 2,612 workers reported Madawaska as their place of work. This represents 531 more workers than the number of resident workers who lived in the town at that same time. This inflow of workers comes from a variety of communities in Aroostook County. The largest sources of workers are Madawaska (1,852); Frenchville (270); St. Agatha (152), and Van Buren (40).

Citizens of Madawaska make up a large majority of those working in the community (71%). It is also clear from these Census data statistics the predominance of Madawaska as a work location for citizens of Madawaska. In 1990, 89% of all of the town's workers worked in the town. The only other employers with more than 50 employees are the Town of Madawaska and Northern Trading Company.

### **Non-Farm Wage and Salary Employment**

#### Madawaska LMA and State of Maine

**Table 6-3**  
**Annual Averages, 1981**

	Madawaska LMA		State of Maine	
Total	3,320	100.0%	418,710	100.0%
Total Manufacturing	1,340	40.0	113,390	27.1
-Durable	130	3.9	41,370	9.9
-Non-durable	1,210	36.5	72,010	17.2
Total Non-Manufacturing	1,980	59.6	305,320	72.9
-Construction	70	2.1	17,560	4.2
-Transportation/Utilities	50	1.5	18,680	4.5
-Wholesale & Retail Trade	740	22.3	89,800	21.3
-Finance/Ins./Real Estate	70	2.1	17,020	4.1
-Services and Mining	470	14.2	81,020	19.4
-Government	580	17.5	81,240	19.4

Source: ME Department of Labor, Economic Analysis & Research

**Table 6-4**  
**Annual Averages, 1986**

	Madawaska LMA		State of Maine	
Total	3,610	100.0%	479,210	100.0%
Total Manufacturing	1,250	37.4	92,460	18.0
-Durable	120	3.7	45,850	9.5
-Non-durable	1,130	35.0	58,470	12.2
Total Non-Manufacturing	2,010	62.2	375,360	78.3
-Construction	120	3.7	26,960	5.6
-Transportation/Utilities	60	1.9	9,580	4.1
-Wholesale & Retail Trade	700	21.7	116,120	24.2
-Finance/Ins./Real Estate	70	2.2	22,430	4.7
-Services and Mining	500	15.5	103,420	21.6
-Government	560	17.3	86,850	

Source: ME Department of Labor, Economics Analysis & Research

**Table 6-5**  
**Annual Averages, 1992**

	Madawaska LMA		State of Maine	
Total	3,610	100.0%	513,570	100.0%
Total Manufacturing	1,250	37.4	92,460	18.0
-Durable	120	2.5	41,920	8.2
-Non-durable	1,260	34.9	50,540	9.8
Total Non-Manufacturing	2,260	62.6	421,000	82.0
-Construction	150	4.2	21,110	4.1
-Transportation/Utilities	160	4.4	21,500	4.2
-Wholesale & Retail Trade	850	23.1	127,340	24.7
-Finance/Ins./Real Estate	60	1.7	23,930	4.7
-Services and Mining	560	15.5	131,340	25.6
-Government	480	13.3	95,880	18.7

Source: ME Department of Labor, Economic Analysis & Research

Please Note: The Madawaska Labor Market Area that is cited in the above tables includes the Towns of Madawaska, Van Buren, and Grand Isle. It does not reflect the reclassification of the Labor Market Area that occurred in late 1993.

### Location Quotient Analysis

One method of determining an area's dependency on particular employment sectors is called Location Analysis. In the table below, the employment sectors in the Madawaska LMA are compared to statewide employment breakdowns for the years 1981, 1986, and 1992. In those cases where the Location Quotient is greater than 1.00, the LMA is more dependent on that particular employment sector than the state of Maine, as a whole. If the Location Quotient is less than 1.00, the area is less dependent. The use of this technique confirms the following:

1. Madawaska is extremely dependent upon its manufacturing base as a source of employment.

2. The service sector in the Madawaska LMA did not increase at the same rate as the state, as a whole, during the 1980's.
3. Retail employment in Madawaska is greater than statewide.
4. Wholesale trade is significantly smaller than in the state, as a whole;
5. The Town's dependence upon government as a source of employment has historically been similar to the state's; however, this dependence decreased significantly between 1986 and 1992; and
6. The Madawaska LMA is dependent upon other employment sectors (i.e. construction and utilities and transportation) at about the same rate throughout the state.

**Table 6-6**

**Location Quotient Analysis/Madawaska Labor Area, 1981, 1986, 1992**

Sector	1981	1986	1991
Total Manufacturing	1.49	1.83	2.08
-Durable	.39	.39	.30
-Non-durable	2.12	2.87	3.56
Total Non-Manufacturing	.82	.79	.76
-Construction	.50	.66	1.02
-Transportation/Utilities	.33	.46	1.05
-Wholesale Trade	NA	NA	.02
-Retail Trade	NA	NA	1.13
-Finance/Ins./Real Estate	.51	.47	.36
-Services and Mining	.73	.72	.60
-Government	.90	.96	.71

### Analysis

The Madawaska Labor Market Area is characterized principally by a significant percentage of its workforce still engaged in the manufacturing of goods. Since 1981, the state of Maine's reliance on manufacturing has decreased substantially. In 1981, over 27% of the state's non-farm wage and salary employment worked in the manufacturing filed. This had decreased to 21.2% by 1986 and further to 18% by 1992. During this time period, Maine actually lost almost 21,000 manufacturing jobs.

On the other hand, the Madawaska LMA was able to maintain its manufacturing employment base, which totaled an annual average of 1,340 in 1981 and 1,350 in 1992. As a percentage of total employment, the Madawaska LMA relied on manufacturing jobs for 40.4% of its employment base in 1981, 38.7% in 1986, and 37.4% in 1992. In 1992, this was more than double the state's reliance on reliance on manufacturing jobs. Clearly, Fraser Paper Company is responsible for this continuing reliance on other Labor Market Area's that are dominated by single employers, Madawaska did not face the same types of job losses that others did in the late 1980's and early 199's.

Over the period of the last ten-fifteen years, the Madawaska LMA has experienced few changes. Employment sectors that were strong in 1981 have remained strong. Those that were weak have remained weak.

Table 6-7 illustrates two separate Madawaska Labor Market Areas for 1992 resulting from a change in definition in that LMA as a result of the 1990 Census. Madawaska LMA (1) corresponds to the LMAs of 1981 and 1986 and includes the towns of Madawaska, Van Buren, Grand Isle, and Hamlin and Cyr Plantations. Madawaska LMA (2) includes the towns of Madawaska, Grand Isle, Frenchville, and St. Agatha which was established in 1993.

**Table 6-7**

**Employment & Unemployment Annual Averages**

**Madawaska, Madawaska LMA, & State of Maine, 1981, 1986, and 1992**

1981

Location	Number Employed	Number Unemployed	% Employed
Madawaska	2,153	186	7.9
Madawaska LMA	4,090	410	9.1
State of Maine	472,000	37,000	7.2

1986

Location	Number Employed	Number Unemployed	% Employed
Madawaska	1,888	153	7.5
Madawaska LMA	3,260	370	10.2
State of Maine	531,000	30,000	5.3

1992

Location	Number Employed	Number Unemployed	% Employed
Madawaska	2,398	204	7.8
Madawaska LMA (1)	4,087	426	9.4
Madawaska LMA (2)	3,980	330	7.6
State of Maine	604,000	46,000	7.1

Source: Maine Department of Labor, Bureau of Employment Security, Division of Economics Analysis and Research

**Madawaska as a Retail Center**

For purposes of calculation retail sales activity in Maine, the State is divided into forty-three Economic Summary Areas (ESA). Madawaska is part of the ESA that includes Cyr and Hamlin Plantations, Grand Isle, and Van Buren. Madawaska's 1990 population of 4,803 represents 55% of the ESA's total population of 8,752. The table below charts the taxable retail sales data in the Town of Madawaska, the Madawaska ESA, and the State of Maine for a variety of time periods. The periods below were chosen for a number of years and highlight some particular intricacies of Madawaska's local economy.

Taxable retail sales are a commonly used measure to assess the strength of weaknesses of economies. The information and analysis presented in this section point out the trends that have occurred in the Madawaska retail economy over a period of years.

**Table 6-8****Retail Taxable Sales for Madawaska, Madawaska ESA, and Maine, 1986, 1990, 1992, and 1993**

(in \$ 000)

	1986			1990			1992			1993		
	MAD	ESA	ME	MAD	ESA	ME	MAD	ESA	ME	MAD	ESA	ME
Building Supply	5,168	7,085	1,024.1	7,035	10,380	1,080.0	7,550	10,004	1,002.9	7,063	9,528	1,049.7
Food Stores	2,368	3,686	656.9	6,604	8,898	891.5	14,708	18,842	1,101.4	10,705	13,286	1,087.7
General Merchandise	6,215	7,295	1,276.5	6,758	7,957	1,521.3	7,849	9,402	1,680.9	7,298	8,332	1,836.5
Other Retail	1,921	3,092	679.1	2,659	4,408	948.2	3,636	5,283	1,001.3	4,936	6,303	1,006.7
Auto/Transportation	3,816	5,565	1,800.0	3,882	7,067	1,765.4	3,820	4,809	1,779.0	4,704	5,482	2,001.6
Restaurant/Lodging	1,413	2,629	925.5	2,347	3,848	1,256.4	2,441	3,904	1,347.1	2,774	4,275	1,389.5
Business Operating	19,273	19,724	1,122.9	26,779	28,019	1,446.9	28,669	31,235	1,424.1	19,901	22,298	1,495.6
Total	40,174	49,076	7,485.0	56,064	70,577	8,909.7	68,673	83,479	9,336.7	57,381	69,504	9,867.3

Source: Maine Retail Sales-annual Reports/Maine Planning Office/ Maine Bureaus of Taxation/ Sales Tax Division

**Table 6-9****Per Capita Retail Sales by Expenditure Category - Madawaska and State of Maine, 1993**

	Madawaska	State of ME	Madawaska Sales as % of ME
Building Supply	\$1,463	\$849	1.72
Food Stores	2,217	880	2.52
General Merchandise	1,512	1,485	1.02
Other Retail	1,022	814	1.26
Auto/Transportation	974	1,619	.60
Restaurant/Lodging	574	1,124	.51
Business Operating	4,122	1,210	3.41

Source: Maine Retail Sales-Annual Reports/ Maine Planning Office/ Maine Bureau of Taxation/ Sales Tax Division

**Analysis**

Taxable retail sales in Maine, as measured by the State Bureau of Taxation, grew consistently through 1988. Following this peak, the state experienced three successive years of declining sales. This trend did not reverse itself until 1992. In that year, the state's taxable sales increased by 7% when compared to 1991. In 1993, there was another increase in taxable sales. Sales increased by 5.7%, when compared to 1992.

The town of Madawaska and the Madawaska ESA have been impacted by a different set of factors than the state, as a result, the pattern that was experienced in Maine during the late 1980's to the present, has not been duplicated in Madawaska. For example, while the state of Maine was experiencing three successive years of decline in Taxable Retail Sales in 1989-91, the Madawaska ESA experienced annual increases during those same years. From 1988 to 1991, Taxable Retail Sales decreased in Maine by over 4.6%. In the Madawaska ESA, these same sales increased by 42.6% and in the Town of Madawaska, by over 54%. In the late 1980's and 1990's, the state of Maine was experiencing a severe recession that caused a significant decrease in spending throughout most regions of the state. At this same time, the Town of Madawaska and the Madawaska ESA were benefiting from a relatively strong Canadian dollar which



provided an encouragement to Canadian consumers to shop in the United States. In 1992 and 1993, Maine recovered from the 1980's recession, and retail sales made a strong comeback. At this same time, however, a number of factors emerged to hurt the economy in Madawaska. Specifically, the Canadian dollar weakened considerable; the collection of Canada's GST and PST taxes was conducted more aggressively at the U.S./Canadian border; and the construction of a major mall in Presque Isle, along with a sizable Wal-Mart store, drew additional retail dollars away from Madawaska.

The statistic above also show that the Town of Madawaska is undoubtedly the major commercial center in the Madawaska ESA. Although Madawaska, in the 1990 census, only represented 55% of the ESA's total population, sales for the area. Another factor that should be mentioned is the significant amount of expenditures in the Madawaska ESA ( and the Town of Madawaska) in the Business Operating Category, which includes certain sales and rentals to businesses. This category accounted for 35% to 48% to total sales in the Town of Madawaska during the reporting cited above. In the ESA, Business Operating Sales accounted for between 35% and 40% of all sales. However, for the state, as a whole, sales in the Business Operating category represent only 14.7% to 16% of all sales. Although specific information of business sales is not available, the Town of Madawaska has experienced a significant amount of Business Operating Sales. This is an excellent indicator of the importance of Fraser to the local economy.

#### Analysis

By comparing per capita taxable retail sales in Madawaska to those in the State of Maine, areas of retail strength and weakness can be identified. The table above shows that the Town of Madawaska demonstrates strength in the categories of Building Supplies, Food Stores, Business Operating, and Other Retail. Weakness is shown in the categories of Auto Transportation and Restaurant and Lodging. In those categories in which Madawaska's per capita sales exceed more than 100% of the State of Maine's sales, the Town's retail establishments are attracting purchasers from outside the town. In those areas where the town's sales are lower the 1.00%, there is leakage from Madawaska into other geographical areas.

**Table 6-10**

**Per Capita Sales Expenditures - Madawaska, Madawaska ESA & State of Maine, 1986, 1990, 1992, 1993**

#### 1986

Location	Population	Total Sales \$	Sales/ Capita \$
Madawaska	5,282	40,175,000	7,606
Madawaska	10,045	49,076,000	4,886
State of Maine	1,124,660	7,484,987,000	6,655

## 1990

Location	Population	Total Sales \$	Sales/ Capita \$
Madawaska	4,803	56,065,800	11,673
Madawaska ESA	8,752	70,581,000	8,065
State of Maine	1,227,928	8,930,108,000	7,273

## 1992

Location	Population	Total Sales \$	Sales/ Capita \$
Madawaska	4,880	68,672,000	14,072
Madawaska ESA	8,840	83,478,000	9,443
State of Maine	1,236,348	9,336,656,000	7,552

## 1993

Location	Population	Total Sales \$	Sales/ Capita \$
Madawaska	4,880	57,381,000	11,758
Madawaska ESA	8,840	69,504,000	7,862
State of Maine	1,236,348	9,867,189,000	7,980

## Analysis

The information above compares 1986, 1990, 1992, and 1993 per capita retail sales in the Town of Madawaska to sales in the Town of Madawaska to sales in the state as a whole and to the Madawaska ESA. The use of per capita sales data can demonstrate the relative market strength of a particular geographical area in comparison to other areas. the data provided above confirms the significance of the Town of Madawaska as a retail center. In 1986, Madawaska's per capita retail sales were 1.14 times per capita sales in the state as a whole and 1.56 time per capita sales in the Madawaska ESA. In 1990, sales in the town has increased to 1.60 times the state average and 1.45 times the ESA average; and in 1992, to 1.86 times the state average and 1.49 time the ESA average. This trend reversed itself in 1993, when per capita sales in the Town of Madawaska decreased to 1.47 times the sales in the state and 1.50 times the sales in the ESA. (This downward trend has continued into 1994, since taxable retail sales in the Madawaska ESA decreased by 21% when compared to the first three months of 1993. During this same period of time, total Taxable Retail Sales in the state increased by 2%, when compared to the first three months of 1993.)

Madawaska's retail economy in the State of Maine. Some major factors affect Madawaska's economy are not present in most other areas of the state. When most of Maine was suffering from the worst recession in decades during the late 1980's, the Town of Madawaska was enjoying an unprecedented surge in retail sales. Then, when Maine's economy started to recover, Madawaska was once again impacted by forces (in this case, negative) related to its geographical location next to Canada. The town and citizens of Madawaska have little, if any, control over the international factors that either encourage or discourage Canadian business.

**Table 6-11****Taxable Sales Per Capita For Selected Maine Communities, 1986, 1990, 1992, and 1993**1986

Community	Population	Sales \$	Sales Per Capita \$	% of ME Average
State of Maine	1,124,660	7,484,987,000	6,655	NA
Madawaska	5,282	40,175,000	7,606	114
Fort Kent	4,826	21,001,900	4,352	65
Van Buren	3,557	7,688,400	2,161	32
Fort Fairfield	4,376	7,272,400	1,662	25
Presque Isle	11,172	100,113,500	8,961	135
Caribou	9,916	75,835,900	7,647	115
Houlton	6,766	60,800,800	8,986	135
Lincoln	5,066	49,169,600	9,706	146
Millinocket	7,567	59,581,800	7,874	118

1990

Community	Population	Sales \$	Sales Per Capita \$	% of ME Average
State of Maine	1,227,928	8,930,108,000	7,273	NA
Madawaska	4,803	56,065,800	11,673	161
Fort Kent	4,268	30,602,400	7,170	99
Van Buren	3,045	13,382,400	4,395	60
Fort Fairfield	3,998	10,166,800	2,543	35
Presque Isle	10,550	112,384,900	10,653	146
Caribou	9,415	92,495,500	9,824	135
Houlton	6,613	76,154,000	11,516	158
Lincoln	5,587	57,374,100	10,269	141
Millinocket	6,956	78,466,000	11,280	155

1992

Community	Population	Sales \$	Sales Per Capita \$	% of ME Average
State Of Maine	1,236,348	9,336,656,000	7,552	NA
Madawaska	4,880	68,671,700	14,072	186
Fort Kent	4,360	31,856,700	7,307	97
Van Buren	3,013	13,369,700	4,437	59
Fort Fairfield	4,172	10,985,000	2,633	35
Presque Isle	10,452	116,250,800	11,122	147
Caribou	9,528	93,928,600	9,858	131
Houlton	6,717	82,282,000	12,250	162
Lincoln	5,761	60,288,000	10,465	139
Millinocket	6,898	74,731,000	10,834	143

1993

Community	Population	Sales \$	Sales Per Capita \$	% of ME Average
State of Maine	1,236,348	9,867,189,000	7,980	NA
Madawaska	4,880	57,380,800	11,758	147
Fort Kent	4,360	33,210,000	7,617	95
Van Buren	3,013	11,381,000	3,777	47
Fort Fairfield	4,172	10,605,300	2,542	32
Presque Isle	10,452	131,134,900	12,546	157
Caribou	9,528	87,016,400	9,133	114
Houlton	6,717	79,154,200	11,784	148
Lincoln	5,761	66,539,500	11,550	145
Millinocket	6,898	65,503,100	9,496	119

Sources: Maine Retail Sales-Annual Reports/ Maine State Planning Office, Maine Bureau of Taxation/ Sales Tax Division

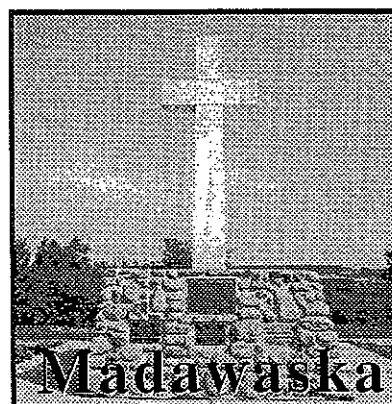
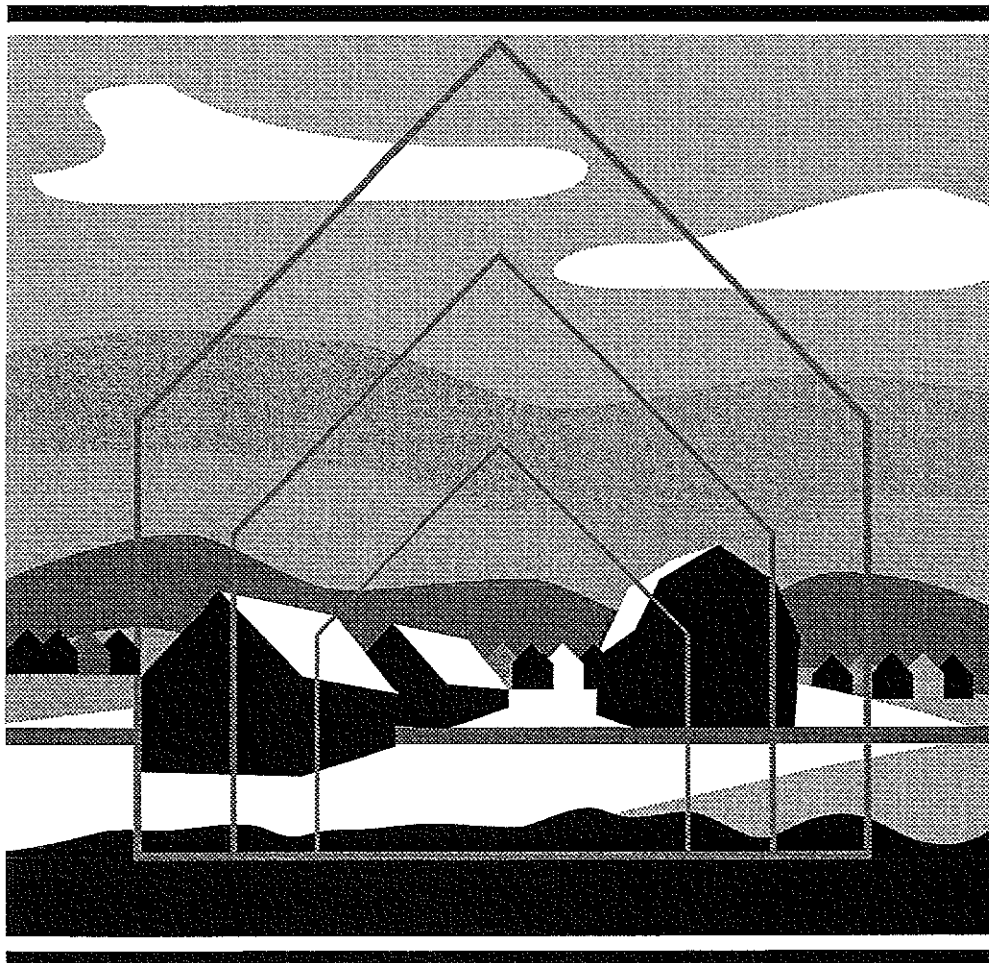
Please Note that the population statistics used in this section of the report come from two sources. The statistics for 1986 and 1990 are based on the 1980 and 1990 U.S. Censuses, respectively. The population statistics for 1992 and 1993 are based on the latest estimates from the Department of Human Services of Data, Research, and Vital Statistics.

### Analysis

The Town of Madawaska is one of Aroostook County's retail hubs. It has historically ranked fourth among all Aroostook County communities in its total taxable retail sales. It is undoubtedly the retail center of Northern Aroostook County, its sales for exceeding sales in Fort Kent and Van Buren. On a per capita sales basis, since 1986, Madawaska has ranked among Aroostook County's top four communities, as well. In the four years presented above, Madawaska ranked first in per capita sales in 1990 and 1992 among Aroostook County communities, third in 1993, and fourth in 1986. the decline in per capita sales in 1993 can be attributed to the factors mentioned previously in this analysis, i. e. the weakness of the Canadian dollar and the aggressive collection of Canadian taxes at boarder crossings. the construction of the Wal-Mart and Aroostook Centre Mall in Presque Isle in the fall of 1993 have also contributed to that community's increase in sales, which has taken place at the expense of other Aroostook County communities such as Caribou, Madawaska, and Houlton.

Retail sales data for the towns of Lincoln and Millinocket have been included of their similarities to Madawaska as communities with a major paper company as the foundation of their economic base. As the above figures indicate, per capita sales for these three communities have all exceeded the State's average for the four periods that have been cited. There have been some fairly significant variations in sales in these communities during the four years studied. these variations are attributed to local events (sometimes directly related to the health of the paper mill) as well as the factors that have been mentioned previously.

# Housing



## Section 7 Housing

The US Census defines a household as all the persons who occupy a housing unit. A housing unit is a house, an apartment, a mobile home, a group of rooms, or a single room that is occupied as separate living quarters. The US Census defines family as a householder and one or more other persons living in the same household who are related to the householder by birth, marriage, or adoption.

The following information summarizes existing data on housing in the region and Madawaska. This section attempts to address, as completely as possible, the current availability of housing, and the costs associated with obtaining decent, safe, and sanitary dwelling units. The main emphasis of the comprehensive planning process related to housing is an assessment of the affordability of the housing within the community. An important component of the process is to identify the segment of the population most significantly affected by the costs of housing, their income ranges, what type of housing stock is needed (if any), and the geographical areas which are a priority. Ultimately, the community should be able to make projections on the future housing needs of the residents and base policy and strategy decisions upon those findings. The inventory and analysis, with the current 1990 US Census data provides the informational framework for considering the actions to be taken by the community to ensure affordable housing for all the residents.

### Change in Housing Stock

The following table compares the total housing stock of surrounding communities between 1980 and 1990. Only one community, Van Buren, experienced a decrease in housing stock. Madawaska's housing stock increased by 20.35%, the third highest after Caribou (22.83%), and Presque Isle (20.52%). Comparisons are also provided for Aroostook County and the State of Maine.

**Table 7-1**  
**Change in Housing Stock, 1980-1990**

	Total Housing Stock 1980	Total Housing Stock 1990	% Change 80-90
Madawaska	1,838	2,212	20.35
Caribou	3,329	4,089	22.83
Fort Fairfield	1,599	1,648	3.06
Fort Kent	1,572	1,634	3.94
Presque Isle	3,660	4,411	20.52
Van Buren	1,261	1,247	- 1.11
Aroostook Cty.	35,920	38,421	6.96
State of Maine	501,093	587,045	17.15

Source: 1980 and 1990 US Census

## Characteristics of Housing Stock

Table 7-2 provides a breakdown and comparison by single family, multi-family, mobile home and other of Madawaska's and local communities' housing stock. As indicated, of Madawaska's total housing stock, 59.95% is single-family, 29.52% multi-family, 9.27% mobile homes and 1.26% falls in the other category.

**Table 7-2**  
**Characteristics of Housing Stock, 1990**

	Single-Family Dwellings		Multi-Family Dwellings		Mobile Homes		Other	
	#	%	#	%	#	%	#	%
Madawaska	1326	59.95	653	29.52	205	9.27	28	1.26
Caribou	2321	56.77	1186	29.00	548	13.40	34	.83
Fort Fairfield	1085	65.84	349	21.18	179	10.86	35	2.12
Fort Kent	1054	64.50	376	23.01	165	10.10	39	2.39
Presque Isle	2616	59.31	1296	29.38	463	10.50	36	.81
Van Buren	732	58.70	397	31.84	98	7.86	20	1.60

Source: 1990 US Census

## Age of Housing Stock

Table 7-3 illustrates the age of Madawaska's housing stock from the pre-1930's to March of 1990. As indicated, 67.13% of Madawaska's housing stock is 20 years old or older. 27.30% of the stock was built between 1940-1959, 30.02% between 1960-1979, and 18.67% of the stock was built between 1980-March 1990.

**Table 7-3**  
**Age of Madawaska's Housing Stock, 1990**

Year Structure Built	Number of Units	% of Total
1989-March 1990	64	2.89
1985-1988	132	5.97
1980-1984	217	9.81
1970-1979	314	14.20
1960-1969	350	15.82
1950-1959	272	12.30
1940-1949	332	15.00
1939 or earlier	531	24.01

Source: 1990 US Census

## Condition of Housing Stock

In an attempt to identify the condition of Madawaska's housing stock, two tables are used. The first table uses 1990 US Census information to identify housing units lacking complete plumbing facilities and those lacking complete kitchen facilities (meaning a unit with a sink with piped water, a range and a refrigerator). The table also indicates which housing units have public or private water services and those units with public sewer services. 66.9% of Madawaska's housing units receive the services of the Madawaska Water District and 73.80% housing units are serviced by the Madawaska Water Pollution Control Plant. Only 1.30% are lacking complete plumbing facilities while .40% of the housing units are lacking kitchen facilities.

**Table 7-4**  
**Condition of Housing Stock, 1990**

	Lacking Complete Plumbing  %	Lacking Complete Kitchen  %	Private/ Public Water  %	Public Sewer  %
Madawaska	1.30	0.40	66.90	73.80
Caribou	0.60	0.40	59.40	64.80
Fort Fairfield	2.90	1.70	58.30	57.10
Fort Kent	1.40	-	48.40	68.30
Presque Isle	1.00	1.10	76.60	78.40
Van Buren	0.90	-	94.20	94.20

Source: 1990 US Census

The second table uses the property cards and assessor's CDU (condition, desirability and use) rating to determine the overall condition. The housing in Madawaska is ranked on an A+20 to E scale, the prior being the highest obtainable rank and the E a rank of substandard housing. 86.5% of the Town's housing received a rank of C (ranging from C+20 to C-30) and D (ranging from D+10 to D-30). Only .54% of the housing received an A rank.



**Table 7-5**  
**Condition of Housing Stock, Madawaska Property Cards and Assessor's Rating**

Rating	Range	% of Housing Stock
A	A+20 TO A- 5	0.54
B	B+15 TO B-10	11.80
C	C+20 TO C-30	49.25
D	D+10 TO D-30	37.25
E	---	1.16

Source: Town of Madawaska property cards and assessor's rating.

### Occupancy and Tenure

Occupancy and tenure are important tools for the analysis of housing needs. Occupancy rates can determine if new development is necessary, and therefore make the appropriate land use decisions. Tenure can help to determine what type of new housing is needed, mainly whether the trend is to own or rent a home. Table 7-6 illustrates Madawaska's as well as other local communities' occupancy and tenure levels. As reported in the 1990 US Census, 89.63% of the Town's housing stock was occupied, 69.19% owner occupied and 30.81% renter occupied. The 1980 US Census reported that 94.56 % of housing stock was occupied, 70.37% owner occupied and 29.63% renter occupied.

**Table 7-6**  
**Occupancy and Tenure**

	Occupied Housing		Owner Occupied		Renter Occupied	
	% 1980	% 1990	% 1980	% 1990	% 1980	% 1990
Madawaska	94.56	89.63	70.37	69.19	29.63	30.81
Caribou	91.55	90.90	71.30	66.95	28.70	33.05
Fort Fairfield	91.31	91.02	74.25	71.67	25.75	28.33
Fort Kent	93.64	95.35	73.44	70.47	26.56	29.53
Presque Isle	91.37	93.49	65.11	59.38	34.89	40.62
Van Buren	92.39	94.62	65.58	62.03	34.42	37.97

Source: 1980-1990 US Census

## Affordable Housing

The following section is dedicated to the affordability of Madawaska's housing stock. While it is important to analyze the amount, condition, physical characteristics and age of the Town's housing, it is equally important to study whether or not the Town's people can afford to live in Madawaska.

### Median Household Income, Home Sales and Rent

Table 7-7 shows the growth of median household income, home sales and rent for the years 1980 and 1990. The objective of the table is to show the affordability of Madawaska's housing (homes and rents) in light of the Town's median household income. As indicated, it is encouraging to note that while home sales and rents have increased by 38.67% and 51% respectively, the median household income has also risen by 71.24%. The table also provides information for surrounding communities.

**Table 7-7**  
**Median Household Income, Home Sales and Rent, 1980-1990**

	Median Household Income			Median Home Sales			Median Rent		
	1980	1990	Percent Change	1980	1990	Percent Change	1980	1990	Percent Change
Madawaska	17,007	29,122	71.24	37,500	52,600	40.26	157	237	51.00
Caribou	12,795	22,166	73.23	33,300	50,000	50.15	159	219	37.74
Fort Fairfield	11,773	21,429	82.02	29,000	43,800	51.03	125	211	68.80
Fort Kent	12,781	24,075	88.37	35,700	50,300	40.90	153	251	64.05
Presque Isle	13,639	23,053	69.02	33,900	51,600	52.22	162	313	93.21
Van Buren	10,857	15,250	40.46	25,500	34,400	34.90	105	156	48.57

Sources: 1980-1990 US Census

### Average Sale Price of Homes

Through data from the Maine State Real Estate Transfer Tax 1991 report, Table 7-8 compares the average sales price of homes sold in 1986 to those sold in 1990. Between 1986 and 1990, the average sales price of a home in Madawaska increased by 9.90%.

**Table 7-8**  
**Average Sales Price of Homes, 1986 and 1990**

	1986	1990	Percent Change
Madawaska	42,437.38	46,639.66	9.90
Caribou	37,515.05	50,658.71	35.04
Fort Fairfield	33,345.59	38,019.05	14.02
Fort Kent	33,680.00	44,457.89	32.00
Presque Isle	40,886.09	58,497.87	43.08
Van Buren	26,264.65	33,980.77	29.38

Source: Maine State Real Estate Transfer Tax

### Assisted Housing

In an attempt to provide affordable housing to the elderly and low income families, several assisted housing projects are located in Madawaska. As reported in the Maine State Housing Authority's 1991 report, the Town has three elderly housing projects and seven scattered sites providing housing for low-income families as well as for the elderly. In total, Madawaska has 147 units of elderly housing and 14 units of lower income housing.

**Table 7-9**  
**Assisted Housing in Madawaska, 1991**

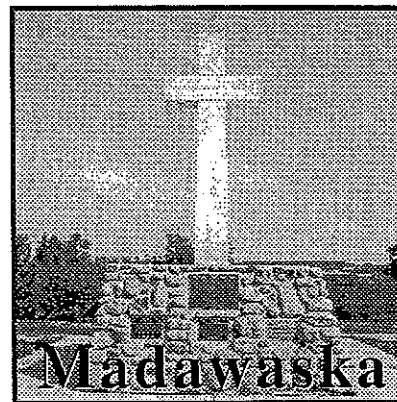
Project Name	Sponsor	Total Units	
		Elderly	Family
Perramond Estates	FmHA	25	-
Progressive Properties	HUD/FmHA	-	6
Elderly Homes Inc.	HUD	48	-
La Maison Acadienne	HUD	62	-
Scattered Sites	HUD/MSHA	12	8

Key: FmHA - Farmers Home Administration HUD - Housing and Urban Development MSHA - Maine State Housing Authority

Source: Maine State Housing Authority

# Natural Resources

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Madawaska

## Section 8 Natural Resources

The land and water, which include topography, soils, wetlands, water bodies and floodplains, provide the physical base on which a community grows and develops. Their irreplaceability necessitates that the characteristics of land and water resources be examined and understood for proper land-use development. Through understanding of the limitations of physical resources, costly development mistakes can be prevented and our natural resources be preserved.

### Topography

Madawaska is approximately 35,840 acres (72 square miles), and is bound on the North by the St. John River which forms the American-Canadian border. Townships of Grand Isle, St. Agatha and Frenchville form its Eastern, Southern and Western boundaries respectively. Typical of the St. John Valley, the Town's hilly topography severely constrains development. The local relief (elevation above sea level) in Madawaska ranges from 200 to 500 feet, and the elevation of the hills ranges from 900 feet above sea level at Lake Mountain to 1160 feet at Cyr Mountain. These two mountains cap a series of smaller hills or ridges and bisect the Town in an east to west direction.

### Soils

Soils are identified by a three lettered series, such as MbB. The first two letters identify the soil type; Mb = Madawaska fine sandy loam, while the last letter indicates the slope of the land; B = 3-8%. Table 8-1 illustrates the slope by its steepness, description, and effect on construction.

**Table 8-1**  
**Description of Slopes**

Slope	Steepness	Description	Effect on Construction
A	0- 3%	Level or nearly level	Suitable for almost all types of construction, especially larger buildings .
B	3- 8%	Gently Sloping	Suitable for single family homes on small and medium lots, multifamily housing, secondary and minor roads, and smaller commercial and industrial buildings.
C	8-15%	Moderately Sloping	Suitable for single family homes on large lots, as well as, low density multifamily housing. Where necessary, terracing, retention ponds, retaining walls and other engineering techniques will be required to prevent runoff and erosion.
D	15-25%	Strongly Sloping	Construction becomes very costly on these slopes. In addition, rapid runoff and erosion problems are likely. These slopes are unsuitable for most on-site sewage disposal systems.
E	Over 25%	Steep	All construction should be avoided on these slopes because of high construction costs and likelihood of environmental damage.

Sources: Soil Conservation Services, USDA

## Soil Types

The major soil types found in Madawaska were developed from glacial till material. Extensive bottomland along the St. John River has been identified as belonging to the Hadely Series. Upland soils below the shallow to the bedrock ridge are predominantly of the Thorndike and Plaisted Series having Monorda-Burnham and Howland soil types occupying many low lying drainage ways throughout the upper regions. Table 8-2 identifies the soils found in Madawaska by initials, name, brief description, and suitability for topsoil, gravel, road-fill, and septic systems.

**Table 8-2**  
**Soils Found in Madawaska**

Initial	Name	Description	SUITABILITY			
			Topsoil	Gravel	Roadfill	Septic
Ag	Allagash fine sandy loam	Soils are deep, well drained sandy soils having 1.5 to 3 feet of fine sandy loam over loamy sand or sands containing some gravel. They are on nearly level to gently sloping outwash plains and terraces that lie above the flood zone.	G	F	P	F
Cd	Canandaigua silt loam	These are deep, poorly drained silty silt formed in nearly level windblown or lake laid deposits.	P	P	P	P
Ha	Hadley silt loam	These are deep, well drained silty soils developed in floodplains and low terraces along major streams.	G	P	P	P
Ho	Howland gravelly loam	Soils are moderately well drained loamy soils developed in a very firm loamy glacial till.	F	P	G	P
Ma	Machias gravelly loam	These are deep, moderately well drained gravelly fine sandy loam or loam soils developed in glacial outwash material composed mainly of granite, quartzite and schist, but some areas may include dark colored materials of shale, slate, and phyllites.	F	G	G	P

Initial	Name	Description	SUITABILITY			
			Topsoil	Gravel	Roadfill	Septic
Mb	Madawaska fine sandy loam	Soils are moderately well drained fine sandy soils developed in fine non-gravelly glacial outwash materials.	G	P	P	P
Mn	Mixed Alluvial Soils	These are bottom land soils located very near water level along nearly all streams and rivers in the State.	P	P	P	P
Mo	Monarda and Burnham silt loam	The poorly drained Monarda soils and the very poorly drained Burnham soils are combined because the wetness characteristics of both soils outweighs all other soil factors for determining use.	P	P	F	P
Mr	Monarda and Burnham very stony silt loams	These soils have stones 10 to 24 inches or larger in diameter scattered over the surface at intervals of 25 to 30 feet. Coarse fragments comprise from 3 to 35% of the soils.	P	P	F	P
Nc	Nicholville silt loam	Soils are moderately well drained silts or very fine sands underlain by fine sands. They are developed in wind or water deposited silts or very fine sands on nearly level to sloping areas of river, stream and fine outwash terraces.	F	P	P	P
Pa	Peat and Muck	These are organic materials 1.5 feet or more to inorganic sandy, clayey or loamy soil materials or, in places bedrock, usually very poorly drained.	P	P	P	P
Pg	Plaisted gravelly loam	These are deep, well drained loamy soils developed in a very firm glacial till of mixed granite, slate and shale materials.	F	P	F	P
Pu	Plaisted and Howland very stony loams	Plaisted soils are deep, well drained loamy soils developed in very compact glacial till. Howland soils are moderately, well drained loamy soils developed in very compact till similar to that of the Plaisted soils.	P	P	G	P

Initial	Name	Description	SUITABILITY			
			Topsoil	Gravel	Roadfill	Septic
Ra	Red Hook and Atherton silt loam	These are poorly and very poorly drained soils respectively, developed in the depressions and lowest areas in glacial outwash materials.	F	P	P	P
Sa	Salmon silt loam	These are well drained silty and fine sandy soils developed on nearly level to moderately steep land from wind- and water- deposited material.	G	P	P	P
Sg	Stetson gravelly loam	These are deep, well drained sandy soils developed in glacial outwash material composed of shale, slate, quartzite and granite.	F	G	G	F
Th	Thorndike shaly silt loam	These are shallow, well drained to somewhat excessively drained soils that have formed in slaty glacial till derived from bedrock of mostly slate, shale, phyllite and some calcareous quartite.	P	P	P	P
Tk	Thorndike very rocky silt loam	These are shallow, well drained soils that have formed in glacial till derived from interbedded dark gray, fine grained shale, slate, and quartite with some local inclusions of fine grained granite rocks.	P	P	P	P
Ts	Thorndike and Howland	The Thorndike soils are a silt loam with 10 to 35 percent of the material coarse shale fragments. The Howland soils are gravelly loam.	F	P	P	P
Wn	Winooski silt loam	These are deep, moderately well drained silty soils developed in floodplains along the major streams.	G	P	P	P

**KEY:** G - Good; F - Fair; P - Poor

Source: St John Valley Soil and Water Conservation District: Supplemental Soil Survey Report.

### Suitability for Topsoil

Topsoil refers to soil material, preferably rich in organic matter, that is used to topdress road banks, lawns, gardens and similar non- farm uses. The soil and site factors involved in the rating are texture, stoniness and coarse fragment content, wetness, thickness of the surface, thickness and texture of the subsoil, and organic matter content.



### Suitability for Gravel

This rating is given for material to a depth of 5 feet if the soil extends to that depth. It is a rating that involves only quantity.

### Suitability for Roadfill

Ratings are based on performance of soil materials when used for barrow in addition to quantity of material available and the problems of obtaining it. Performance is based upon ease of compactness to required density. Other factors used in this rating are depth to bedrock, depth to water table, content of large stone, cobbles or coarse fragments 2mm to 10 inches in diameter, grading, and organic matter content.

### Suitability for Septic Systems

It is a subsurface septic effluent distribution system laid in such a way that the liquid is distributed with reasonable uniformity into the prepared soil. The factors that influence the suitability of an area for this use are: 1) slope, 2) texture of subsoil and substratum, 3) drainage or general wetness, 4) water table, 5) depth to bedrock, 6) flooding, 7) stoniness and rock outcrop, and 7) stability of substratum.

