

**ANNUAL REPORT
OF THE
CITY ENGINEER**

1992

CITY OF FREDERICTON

PUBLIC WORKS DEPARTMENT

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**TO HIS WORSHIP THE MAYOR AND COUNCILLORS
OF THE CITY OF FREDERICTON**

I submit herewith this report which is a statement of work done under the supervision of the City Engineer.

This report covers the period from 1992 01 01 to 1992 12 31 and is written for the purpose of maintaining an accurate record on file of the activities and costs associated with the various operations.

During the year, along with regular maintenance, City forces and Contractors constructed the following works:

Concrete Curb and Gutter	15.184	km
Sidewalk	5.947	km
New Street Construction	4.009	km
New Pavement - Type "B" Asphalt Concrete	6.235	km
Resurface - Type "D" Asphalt Concrete	8.440	km
Gravity Sanitary Sewer Mains	5.372	km
Sanitary Sewer Force main	0.331	km
Storm Sewer Mains	6.305	km
Water Mains	7.848	km

ALSO

- 216 Water services were installed
- 213 Sanitary sewer services were installed
- 2 Sprinkler lines were installed
- 8 Water services were renewed
- 274 New water meters were installed
- 4 Existing water service installations were extended
- 4 Existing sanitary sewer service installations were extended
- 46 Frozen services were thawed
- 175 Storm sewer services were installed

Contractors under contract with the Engineering Department of the City of Fredericton in 1992 supplied materials, completed construction or began construction, as follows:

- Regent Construction Ltd. - Construction of Building for Water Treatment Plant Expansion
- Gorman Paving Inc. - Supply of Asphalt Concrete for Patching
- Phillip R. Roach Limited - Installation of Trunk Water Main Along Canadian Atlantic Railway R.O.W. from Brookside Drive to Royal Road
- M.W. Price & Sons Ltd. - Supply and Delivery of Granular Material
- Donald Noble & Sons - Supply and Delivery of Bedding Sand
- Evans Brothers Ltd. - Supply and Delivery of Topsoil
- Hazen Thomas & Sons Contracting Ltd. - Installation of Water and Sewer Services Douglas Area Phase 3
- Supply and Delivery of Bedding Sand
- K. J. Construction Ltd. - Construction of Well House for Wilmot Park Well 7
- Masontech (A Division of Maritime Bricklayers) - Longwood South Reservoir - Internal Rehabilitation
- Bemrose & Kilburn Ltd. - Reconstruction of Waggoners Lane
- Charmac Construction Company Ltd. - Reconstruction of Burpee Street
- Upgrading of Garden Creek Sewage Lift Station
- R.C. Bird Construction Ltd. - Upgrading of Regent Street Between Priestman Street and the Trans Canada Highway
- Permanent Lafarge - Supply and Delivery of Concrete
- Hogan Paving Ltd. - Supply and Placement of Asphalt Concrete

- | | |
|--------------------------------------|---|
| Wendell Thomas & Sons Ltd. | - Supply and Delivery of Winter Sand |
| Akzo Salt Ltd. | - Supply and Delivery of Highway Salt |
| Laurentide Chemicals | - Supply of Traffic Lane Striping Paint |
| Trius Taxi Ltd. | - Garbage Collection Services |
| Gorman Paving Inc. | - Installation of Curb and Gutter and Sidewalk |
| Rainsford Contracting Ltd. | - Contract Services |
| MRB Contractors Ltd. | - Storm sewer outfall improvements - Odell Park Phase 1 |
| Monteith's Underground Services Ltd. | - Municipal Services and Street Upgrading Phase 1 - Lower St. Marys |

General Fund expenditures for the period 1992 01 01 to 1992 12 31 were as follows:

Item	Budget	Net Expenditure	Over	Under
COMMON SERVICES (Public Works)	\$ 3 815 727	\$ 3 734 854	-	\$ 80 873
ROAD TRANSPORT SERVICES				
Administration	312 266	315 716	3 450	-
Roadway Surfaces	1 085 980	1 127 490	41 510	-
Sidewalk Maintenance	535 500	589 136	53 636	-
Culverts, Ditching	40 800	68 144	27 344	-
Storm Sewer Maintenance	160 600	175 620	15 020	-
Street Cleaning	446 500	510 990	64 490	-
Spring Cleanup	44 300	50 414	6 144	-
Sanding & Salting & Snow Control	1 460 400	1 323 428	-	136 972
Street Lights	587 500	576 787	-	10 713
Traffic Services	497 560	514 154	16 594	-
ENVIRONMENTAL HEALTH SERVICES				
Garbage & Waste Disposal	366 500	398 880	32 380	-
Garbage & Waste Collection	529 600	523 356	-	6 244
Hazardous Waste	4 665	(1 510)	-	6 175
PUBLIC HEALTH SERVICES				
Old Burial Ground	15 150	9 778	-	5 372
Loyalist Burial Ground	357	2 682	2 325	-
PARKS & TREES SERVICES				
Wilmot Park	65 000	44 608	-	20 392
Odell Park	95 450	82 214	-	13 236
Carleton Park	11 620	7 124	-	4 496
Old Government House	26 000	10 246	-	15 754
Trees	375 760	419 972	44 212	-
Greens, Benches, other parks, etc.	193 000	216 593	23 593	-
TOTALS	\$ 10 670 235	\$ 10 700 676	\$ 330 668	\$ 300 227

OVER: \$ 30 441

Utility Fund expenditures for the period 1992 01 01 to 1992 12 31 were as follows:

Item	Budget	Net Expenditure	Over	Under
COMMON SERVICES				
General Equipment	\$ 465 500	\$ 494 084	\$ 28 584	\$ -
Safety & Benefits	264 100	239 293	-	24 807
Administration	148 300	157 347	9 047	-
WATER				
Purification & Treatment	325 100	224 970	-	100 130
Source of Supply	487 400	477 159	-	10 241
Power & Pumping	57 600	38 912	-	18 688
Maintenance of Equipment (Plant)	95 350	87 742	-	7 608
Transmission & Distribution (Oper)	361 900	280 667	-	81 233
Transmission & Distribution (Maint)	745 400	760 172	14 772	-
Billing & Collection	189 000	206 960	17 960	-
Meters	219 900	189 119	-	30 781
SANITARY SEWER				
Operation (Lift Stations)	150 500	84 143	-	66 357
Maintenance	438 000	476 861	38 861	-
Treatment & Disposal	1 648 700	1 356 250	-	292 450
TOTALS				
	\$ 5 596 750	\$ 5 073 679	\$ 109 224	\$ 632 295

UNDER: \$ 523 071

Following is a table giving total kilometrage (as of 92 12 31) of municipal roads and streets, provincial designated routes, and by-passes & ramps divided with respect to type of surface on the various streets.

LOCATION	MUNICIPAL ROADS & STREETS				DESIGNATED ROUTES			T.C.H. BY-PASSES & RAMPS
	Asphalt	Gravel	Chip Seal	TOTAL	Asphalt	Chip Seal	TOTAL	
Fredericton South	102.646	-	6.023	108.669	23.376	-	23.376	27.207
Fredericton North	20.242	0.029	0.578	20.849	10.122	-	10.122	3.436
Nashwaaksis	50.225	2.982	4.625	57.832	2.444	-	2.444	7.801
Marysville	18.715	0.304	3.626	22.645	7.379	-	7.379	3.400
Barker's Point	8.028	-	0.657	8.685	2.002	-	2.002	4.428
Silverwood	4.343	0.085	0.184	4.612	-	-	-	2.748
Garden Creek	13.642	1.101	2.693	17.436	-	-	-	2.482
Douglas	1.979	0.191	2.191	4.361	2.560	-	2.560	-
Lincoln	5.256	1.314	0.879	7.449	4.249	2.523	6.772	2.458
Lower St. Marys	1.138	-	0.832	1.970	-	-	-	2.681
TOTALS	226.214	6.006	22.288	254.508	52.132	2.523	54.655	56.641

TOTAL (Municipal and Designated Routes) = 309.163 km

Following in the body of this report is a detailed statement of the work done, associated expenditures and unit costs for the various operations. The report of any particular division may be found by referring to the index.

Respectfully submitted,

E.J. Bliss, P. Eng.
CITY ENGINEER

GENERAL FUND**COMMON SERVICES**

The total net expenditure under this heading was **\$ 3 734 854** made up as follows:

Administration	\$ 149 010
Engineering Services	566 883
General Equipment	1 725 126
Service Depots	405 852
Safety & Benefits	<u>887 983</u> \$ 3 734 854

ROAD TRANSPORT SERVICES

Road Transport Services is made up of the following items:

Administration	\$ 315 716
Roads & Streets	4 279 815
Street Lighting	589 465
Traffic Services	<u>514 154</u> \$ 5 699 151

- (a) **Administration:** The total net expenditure under this heading amounted to **\$ 315 716** for personnel costs, general services, etc.
- (b) **Roads & Streets:** The total net expenditure under this item was made up as follows:

(1)	Roadway Surfaces (maintenance)	\$ 1 562 083
(2)	Sidewalk Maintenance	589 136
(3)	Culverts & Ditching	68 144
(4)	Storm Sewer Maintenance	175 620
(5)	Street Cleaning (includes Spring Cleanup) ..	561 404
(6)	Winter Maintenance	<u>1 323 428</u> \$ 4 279 815

The expenditures for the above items, as well as a brief description of work done, are summarized as follows:

(1) Roadway Surfaces (maintenance)

The net expenditure of \$ 1 562 083 was made up as follows:

Paved Streets	\$ 1 234 800
Curb & Gutter Repair	129 560
Driveway Entrances	4 956
Right-of-way Maintenance	<u>192 767</u> \$ 1 562 083

Paved Streets this includes the patching and repairing of pavement and the asphalt concrete resurfacing program.

The following streets or portions of streets were resurfaced with Type "D" asphalt concrete in 1992.

Location	Length (metres)
Barton Crescent - Royal Road to Jenning Drive	174
Beaverbrook Street - University Avenue to Forest Hill Road	466
Canada Street (selected sections)	244
Claremont Drive	670
Davenport Street	148
Davis Street	201
Draco Road	417
Dunns Crossing Road - Biggs Street to the end	440
Eatman Avenue	270
Fairview Drive	680
Forest Hill Road - Biggs Street to Kimble Drive	148
Gesner Lane	143
Kimble Drive - Forest Hill Road to Wetmore Road	297
King Street - St. John Street to Regent Street	192
Lincoln Road (selected sections)	509
Pleasant Street	198
Queen Street - Underpass to Church Street	274
Queen Street - Regent Street to York Street	381
River Street (selected sections)	671
Saunders Street - Smythe Street to Odell Avenue	149

Location	Length (metres)
St. Andrews Drive	76
St. Marys Street - Dedham Street to near Maple	219
Sunbury Street	116
Waggoners Lane - Smythe Street to Rookwood Avenue ..	423
Wetmore Road - Kimble Drive to near Trites Court	100
Woodstock Road - Civic #967 to Angelview Court	365
York Street - Kings College Road to Montgomery Street ..	<u>469</u>
TOTAL	8440

8440 metres = 8.44 kilometres

(2) **Sidewalk Maintenance**

The net expenditure of **\$ 589 136** for sidewalk repairs was made up as follows:

Personnel Costs	\$ 108 974
Materials	69 463
General Services (use of equipment & special projects)	<u>410 699</u> \$ 589 136

(3) **Culverts and Ditching**

- the maintenance and installation of culverts and ditches

The next expenditure of **\$ 68 144** was made up as follows:

Personnel Costs	\$ 37 730
Materials	11 187
General Services (use of equipment)	<u>19 227</u> \$ 68 144

(4) **Storm Sewer Maintenance**

- the flushing of mains, cleaning and repair of catch basins and the repair of mains

The net expenditure of **\$ 175 620** was made up as follows:

Personnel Costs	\$ 99 143
Materials	15 187
General Services (use of equipment)	<u>61 290</u> \$ 175 620

(5) **Street Cleaning and Flushing**

The City of Fredericton used a number of sweepers, trackless units and a Vac-all unit for street cleaning purposes in 1992.

The net expenditure under this heading amounted to **\$ 561 404 *** and was made up as follows:

Personnel Costs	\$ 370 816
General Services (use of equipment & contract services)	163 978
Brooms - main & gutter	15 765
Brooms - hand	583
Anti-litter cans	96
Dust Control	<u>10 166</u>
	\$ 561 404

* Includes an amount of \$ 50 414 for Spring Cleanup.

(6) **Winter Maintenance**(a) **Sanding and Salting Streets and Sanding Sidewalks**

Storing sand and salt in winter storage piles and spreading same on slippery streets and sidewalks.

(b) **Snow Control**

Blowing, shovelling and hauling snow, plowing or scraping roads, cleaning gutters, thawing catch basins and any other means of snow control.

The City of Fredericton was responsible for plowing, sanding and salting 325.313 km of roads and streets in 1992 (153.462 km on the north side and 171.851 km on the south side). Included in these figures is the Westmorland Street Bridge along with adjacent highways and ramps which are maintained through an agreement with the Department of Transportation.

During the winter months of 1992, 169.496 km of sidewalk were plowed and sanded. (60.595 km on the north side and 108.901 km on the south side)

Streets:

The total net cost for plowing streets amounted to **\$ 679 016** and was made up as follows:

Personnel Costs	\$ 459 565
General Services (use & maintenance of equipment)	203 430
Goods	698
Fixed Assets (new equipment)	<u>15 323</u> \$ 679 016

The total net cost of sanding and salting streets amounted to **\$ 450 627** and was made up as follows:

Personnel Costs	\$ 156 566
General Services (use & maintenance of equipment)	85 982
Materials (salt and sand)	199 269
Fixed Assets (new equipment)	<u>8 810</u> \$ 450 627

The overall net expenditure of **\$ 1 129 643** for plowing, sanding, and salting City roads and streets was made up as follows:

Personnel Costs	\$ 616 131
General Services (use & maintenance of equipment)	289 412
Fixed Assets (new equipment)	24 133
Materials (salt & sand)	199 269
Goods	<u>698</u> (1) \$ 1 129 643

Sidewalks:

The total net expenditure for plowing sidewalks amounted to **\$ 132 739** and was made up as follows:

Personnel Costs	\$ 91 913
General Services (use & maintenance of equipment)	40 686
Goods	<u>140</u> \$ 132 739

The total net expenditure for sanding sidewalks amounted to \$ 61 046 and was made up as follows:

Personnel Costs	\$ 31 313
General Services (use & maintenance of equipment)	17 196
Materials (sand)	12 537 \$ 61 046

The overall net expenditure for snow plowing and sanding of sidewalks was \$ 193 785 and was made up as follows:

Personnel Costs	\$ 123 226
General Services (use & maintenance of equipment)	57 882
Materials (sand)	12 537 (2)
Goods	<u>140</u> \$ 193 785

TOTAL NET COST OF WINTER MAINTENANCE - ADD (1) & (2) \$ 1 323 428

Snowfall in Fredericton for the last five years was as follows:

1988	Airport Weather Office	227.6 cm
1989	Airport Weather Office	350.8 cm
1990	Airport Weather Office	290.4 cm
1991	Airport Weather Office	290.4 cm
1992	Airport Weather Office	205.7 cm

(c) **Street Lighting**

The multiple lighting system for the City of Fredericton as of 1992 12 31 consisted of:

14	-	100 Watt H.P.S.	@ 151.60	per light per year	+	GST
67	-	150 Watt H.P.S.	@ 202.12	per light per year	+	GST
491	-	100 Watt H.P.S.	@ 117.76	per light per year	+	GST
1	-	180 Watt L.P.S.	@ 228.46	per light per year	+	GST
34	-	400 Watt L.P.S.	@ 269.73	per light per year	+	GST
10	-	125 Watt M.V.	@ 126.33	per light per year	+	GST
2	-	175 Watt M.V.	@ 179.32	per light per year	+	GST
203	-	175 Watt M.V.	@ 151.60	per light per year	+	GST
150	-	175 Watt Ref. M.V.	@ 117.76	per light per year	+	GST
12	-	250 Watt M.V.	@ 225.42	per light per year	+	GST
4	-	250 Watt M.V.	@ 197.70	per light per year	+	GST
752	-	250 Watt M.V.	@ 163.86	per light per year	+	GST
320	-	400 Watt Ref. M.V.	@ 229.44	per light per year	+	GST
1	-	500 Watt Ref. M.V.	@ 198.37	per light per year	+	GST
2	-	400 Watt Flood Lights	@ 0.70	per watt per year	+	GST
936	-	150 Watt H.P.S.	@ 168.28	per light per year	+	GST
286	-	200 Watt H.P.S.	@ 201.68	per light per year	+	GST

The total street lighting costs for 1992 were as follows:

Salaries & Benefits	\$ 3 281
Municipal Lighting System Contract	582 110
General Services - Maintenance of Equipment	387
Government Services (Power to City Owned Lights)	1 193
New Poles	772
New Bulbs	<u>1 722</u> \$ 589 465

(d) **Traffic Services**

The expenditure under this heading is made up as follows:

- (1) Street Signs
- (2) Paint Department
- (3) Traffic Signals
- (4) Railway Crossings

(1) **Street Signs**

Purchasing, repairing and installing street signs on City streets.

The net expenditure under this heading amounted to **\$92 876** made up as follows:

Personnel Costs	\$ 34 632
General Services (use of equipment)	11 837
Goods (posts, street sign purchases, etc.)	<u>46 407</u> \$ 92 876

(2) **Paint Department**

The net expenditure under this heading was **\$ 127 093** made up as follows:

Personnel Costs	\$ 63 923
General Services (use & maintenance of equipment)	16 491
Goods (paint, misc. supplies, signs)	<u>46 679</u> \$ 127 093

(3) **Traffic Signals**

The net expenditure under this heading was **\$ 213 769** made up as follows:

Personnel Costs	\$ 87 609
General Services (use of equipment)	22 945
Government Services (electric power)	53 670
Goods (materials)	17 405
Fixed Assets (new equipment)	<u>32 140</u> \$ 213 769

(4) **Railway Crossings**

The net expenditure under this heading was **\$ 80 416** for maintenance done by railway companies.

ENVIRONMENTAL HEALTH SERVICES

The following items are included under the above heading.

- (1) Garbage and Waste Collection
- (2) Garbage and Waste Disposal
- (3) Hazardous Waste

(1) Garbage and Waste Collection

In 1992, the net amount paid for the garbage and waste collection operation was \$ 523 356 made up as follows:

General Services - (Garbage Collection Contract)	\$ 337 429
General Services - (Advertising)	637
General Services - (Recycling Collection Contract)	<u>185 290</u> \$ 523 356

(2) Garbage and Waste Disposal

The net expenditure under this section was \$ 398 880 made up as follows:

General Services (recycling boxes & advertising Solid Waste Commission payments, and land rental) Government Services (taxes)	\$ 397 394 <u>1 486</u> \$ 398 880
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(3) Hazardous Waste

Cleanup of oil spills from accidents, etc.

This account shows a net credit by reason of recovery in 1992 of funds expended in 1991.

Personnel	\$ (974)
General Services (use of equipment & contract services)	(2147)
Goods (materials)	<u>1611</u> \$ (1510)

PUBLIC HEALTH SERVICES

The following items are included under the above heading:

- (1) Old Burial Ground
- (2) Loyalist Burial Ground

(1) **Old Burial Ground**

The net expenditure under this section was **\$ 9 778** made up as follows:

Personnel Costs	\$ 7 329
General Services (use of equipment)	350
Government Services (lighting)	580
Goods (materials)	<u>1519</u>
	\$ 9 778

(2) **Loyalist Burial Ground**

The net expenditure under this section was **\$ 2682** made up as follows:

Personnel Costs	\$ 2 485
General Services (use of equipment)	<u>197</u>
	\$ 2 682

PARKS AND TREES SERVICES

The following items are included under the above heading:

- (1) Wilmot Park
- (2) Odell Park
- (3) Carleton Park
- (4) Old Government House
- (5) Trees
- (6) Greens, Benches & Other Parks

(1) Wilmot Park

The net expenditure for this item was **\$ 44 608** made up as follows:

Personnel Costs	\$ 40 739
General Services (use & maintenance of equipment, building repairs)	2 553
Government Services (water & sewer rates, light & power)	2 514
Goods (materials; fuels & lubricants)	<u>(1198)</u> \$ 44 608

(2) Odell Park

The net expenditure for this item was **\$ 82 214** made up as follows:

Personnel Costs	\$ 60 541
General Services (use & maintenance of equipment, communications; building repairs)	3 947
Government Services (water & sewer rates, lights & power)	1 308
Goods (materials; fuels & lubricants)	<u>16 418</u> \$ 82 214

(3) Carleton Park

The net expenditure for this item was **\$ 7 124** made up as follows:

Personnel Costs	\$ 3 352
General Services (use of equipment & land rental) ..	2 215
Goods (materials)	<u>1 557</u> \$ 7 124

(4) **Old Government House**

The net expenditure for this item was **\$ 10 246** made up as follows:

Personnel Costs	\$ 973
Goods (Materials)	<u>9 273</u>
	\$ 10 246

(5) **Trees**

The net expenditure for this item was **\$ 419 972** made up as follows:

Personnel Costs	\$ 324 256
General Services (use & maintenance of equipment)	50 683
Goods (fuels & lubricants, materials, new trees, small tools & equipment)	<u>45 033</u>
	\$ 419 972

In 1992, 183 trees were removed. These trees were either in a decadent condition, a menace to public safety or possible breeding places for the Elm Bark Beetle.

Following is a list of trees removed in 1992:

Species	Number Removed
Elm	68
Maple	50
Linden	14
Poplar	10
Ash	1
Pine	4
Cedar	18
Other Species	<u>18</u>
TOTAL	183

In 1992, 52 trees were removed because of Dutch Elm Disease.

Following is a summary of Elm trees removed from 1964 to 1992:

Year	No. Lost (% Lost) To Dutch Elm Disease	No. Removed For Other Reasons	Total No. Removed
1964	14 (29)	34	48
1965	8 (24)	25	33
1966	12 (21)	44	56
1967	18 (20)	73	91
1968	33 (16)	174	207
1969	30 (21)	108	138
1970	49 (39)	78	127
1971	57 (42)	77	134
1972	61 (42)	84	145
1973	92 (46)	108	200
1974	132 (33)	266	398
1975	75 (19.6)	307	382
1976	118 (28.2)	300	418
1977	681 (91.6)	62	743
1978	680 (92)	56	736
1979	937 (91.8)	84	1021
1980	1146 (95.7)	51	1197
1981	500 (59.7)	327	827
1982	487 (90.7)	50	537
1983	133 (36.5)	231	364
1984	121 (63.4)	70	191
1985	77 (80.2)	19	96
1986	45 (60.8)	29	74
1987	49 (53.8)	42	91
1988	43 (54.4)	36	79
1989	47 (48.0)	51	98
1990	55 (79.7)	14	69
1991	42 (89.4)	5	47
1992	52 (76.5)	16	68
TOTALS		5794 (67.3)	2821
			8615

Trees were planted (first planting) at the following locations in 1992:

LOCATION	NUMBER OF TREES
Adams Street (#107)	2
Autumn Street	1
Baxter Court	16
Baxter Street	10
Botanic Garden	3
Broad Street	12
Carrington Lane	54
Cathedral	1
Connaught Street	3
Cowperthwaite Street	8
Crockett Street	2
Derby Court	1
Fulton Avenue	32
Gibson Street	2
Hearne Street	42
Kingswood Drive	2
Lily Street	1
Mainstreet Program (Carleton, Queen, King)	16
Malibu Street	5
Marysville School	2
Mason Avenue	24
McInnis Court	4
Miles Street	2
Odell Park	4
Piercy Crescent	2
Reading Street	1
Regent Street	45
Riverfront South Green Plan	84
Sutton Street	14
Talisman Crescent	4
Thorburn Court	10
Thorndale Court	24
Water Dept. (Well #6 & Rainsford Lane Booster Station)	4
Westmorland Street	1
Wilmot Park	54
Woodbridge Street	1
Woodstock Road (Old Government House)	3
TOTAL	496

234 trees were planted at various locations to replace losses due to dry weather and vandalism.

Shrubs planted on City properties and park land - approximately 318

(6) **Greens, Benches & Other Parks**

The net expenditure for this item was **\$ 216 593** made up as follows:

Personnel Costs	\$ 120 410
General Services (use & maintenance of equipment and special projects)	46 324
Goods (fuels & lubricants materials, small tools & equipment & new trees)	31 238
Fixed Assets (new equipment)	<u>18 621</u> \$ 216 593

UTILITY FUND

The above item is made up of the following headings:

- (1) Common Services
- (2) Sanitary Sewer
- (3) Water

(1) COMMON SERVICES

In 1992 the net expenditure for this item was **\$ 890 724** made up as follows:

General Equipment	\$ 494 084
Safety & Benefits	239 293
Administration	<u>157 347</u>
	\$ 890 724

(2) SANITARY SEWER

In 1992 the net expenditure for this item was **\$ 2 158 768** made up as follows:

Operating: Lift Stations

Personnel Costs	\$ 46 351
General Services (use & maintenance of equipment)	22 399
Government Services (light & power)	13 217
Goods (materials)	<u>2 176</u>
	\$ 84 143

Maintenance:

Personnel Costs	\$ 252 576
General Services (use & maintenance of equipment)	90 896
Goods (repair parts & tools)	<u>133 389</u>

Sewage Treatment & Disposal:

Personnel Costs	\$ 16 863
General Services -use & maintenance of equipment	8 480
- treatment (F.A.P.C.C.)	359 706
Government Services: Water & Sewer Rates	508
Lights & Power	35 283
Goods (Miscellaneous Supplies)	<u>301</u> \$ 1 421 141

Debt Charges:

Principal	\$ 146 023
Interest	<u>30 600</u> \$ 176 623
TOTAL	\$ 2 158 768

The Fredericton sanitary sewer system consists of approximately **274** kilometres of mains made up as follows:

SIZE	SILVERWOOD GARDEN CREEK	NASHWAAKSIS DOUGLAS	MARYSVILLE	LR. ST. MARY'S BARKER'S PT.	FREDERICTON	TOTAL
100 mm	-	0.158	-	-	-	0.158
100 mm F.M.	0.013	-	-	-	1.103	1.116
150 mm	-	1.433	0.314	-	0.253	2.000
150 mm F.M.	0.031	0.417	0.539	0.399	3.008	4.394
200 mm	16.045	39.728	18.062	7.998	116.088	197.921
200 mm F.M.	0.254	0.463	0.314	-	0.064	1.095
250 mm	1.959	3.158	0.955	0.298	9.430	15.800
250 mm F.M.	1.178	-	-	-	-	1.178
300 mm	1.267	3.953	1.006	1.868	17.858	25.952
300 mm F.M.	0.420	0.457	-	-	0.739	1.616
350 mm	0.287	0.719	-	-	0.713	1.719
350 mm F.M.	-	-	0.528	-	0.254	0.782
375 mm	1.138	2.184	0.500	0.174	2.816	6.812
400 mm	0.018	0.076	-	-	0.210	0.304
450 mm	1.039	0.031	1.350	-	2.877	5.297
500 mm	2.979	-	-	-	-	2.979
600 mm	0.156	-	-	-	2.485	2.641
750 mm	-	-	-	-	0.322	0.322
900 mm	-	-	-	-	1.432	1.432
TOTALS	26.784	52.777	23.568	10.737	159.652	273.518

NOTE: Fredericton includes the Lincoln area.

The above figures do not include mains at the Fredericton Exhibition Grounds, U.N.B. and St. Anne's Point on the Woodstock Road or the Fredericton Area Pollution Control Commission sewer system which has approximately 11.4 kilometres of main.

(3) **WATER**

There are, at year's end, 14 separately monitored water systems, comprising 21 wells (11 active), 17 reservoirs, 6 active booster stations and the Water Treatment Plant.

The Water Treatment Plant treats the water from the 6 Wilmot Park wells, which provide over 95% of the City's water. The following describes the 14 water systems and their normal sources.

SYSTEM	SOURCE	STORAGE
South Low	6 wells via W.T.P. 1 emergency standby well	18200 kL
North Low	South Low via River Crossing (same pressures) 5 emergency wells	8540 kL
South Intermediate	South Low via Booster	9090 kL
South High	South Interim. via Booster	4550 kL
Golf Club Road	South High via Pressure Reducing Valve	0 kL
Rosewood	South Low via Booster	0 kL
Lincoln	South Low via Booster	3750 kL
Vanier South Intermediate	South High via Pressure Reducing Valve	0 kL
Hanwell	South High via Pressure Reducing Valve	460 kL
Silverwood	2 Wells Direct	245 kL
Rainsford	Golf Club Road via Booster	0 kL
Killarney	South Low via Booster 2 Emergency Standby Wells	3750 kL
Marysville	2 Wells Direct 1 Emergency Standby Well	6580 kL
Canterbury	South High via Altitude Valve	1070 kL

The water account includes all expenditures other than capital expenditures for water.

Water costs for the City of Fredericton were made up as follows:

(1)	Water Administration (Billing & Collection)	\$ 206 960
(2)	Water Ordinary (including meters)	1 233 532
(3)	Water Treatment Facility & Well Production Costs	828 783
(4)	Debt Charges - Principal	285 411
(5)	Debt Charges - Interest	<u>42 226</u> \$ 2 596 912

(1) WATER ADMINISTRATION (BILLING & COLLECTION)

The net expenditure of \$ 206 960 was made up as follows:

Office salaries & benefits	\$ 133 458
Postage	26 762
Machinery Rental	13 545
Professional Services	11 389
Materials	15 206
Office Equipment	3 050
Computer Equipment	<u>3 550</u> \$ 206 960

(2) WATER ORDINARY (INCLUDING METERS)

The net expenditure of \$ 1 229 958 was made up as follows:

Transmission & Distribution (Operation)

Personnel Costs	\$ 45 135
General Services (use & maintenance of equipment) ..	123 871
Government Services (light & power, provincial taxes)	102 805
Goods (materials)	<u>8 856</u> \$ 280 667

Transmission & Distribution (Maintenance)

Personnel Costs	\$ 479 722
General Services (use & maintenance of equipment & hydrants)	107 494
Goods (fuels & lubricants, tools, materials, parts)	172 585
Fixed Assets (new equipment)	<u>371</u>
	\$ 760 172

Meters

Personnel Costs	\$ 102 409
Meter Parts, miscellaneous supplies, & tools	9 953
Use of Equipment	24 975
Fixed Assets (new meters)	<u>51 782</u>
	<u>\$ 189 119</u>
TOTAL	\$ 1 229 958

On 1992 12 31 there were 12 603 water services on meter and 205 on flat rate, making a total of **12 808**.

274 new meters were installed in 1992, 53 regular register meters changed to remote reading type, and 245 automatic reading and billing meters changed to remote reading type. 11 flat rate services were metered.

In 1992, 13 discontinued services were excavated and shut off at the main, 279 stopped meters were replaced and 29 frozen meters were replaced.

The following sprinkler was installed in 1992:

170 Doak Road (Co-op expansion)	1
---------------------------------------	---

There are in the City, as of 1992 12 31, 1646 hydrants situated in the following areas:

Fredericton South	768
Fredericton North	162
Nashwaaksis	315
Marysville	151
Barker's Point	72
Silverwood	<u>27</u>
 SUB TOTAL	1495
 LOCATED ON PRIVATE PROPERTY	<u>151</u>
 TOTAL	1646

Hydrants were installed at the following locations in 1992:

Location	Number
Alderwood Drive	2
Avonlea Court	3
Bailey Avenue	2
Bishop Drive	1
Claudie Road	3
Douglas Avenue	7
Evans Street	1
Giles Street	2
James Street	2
Lian Street	2
McAdam Avenue	2
Murray Avenue	1
Queen near Northumberland Street	1
Rose Court	2
Royal Road	1
Selkirk Crescent	2
Sparrow Lane	1
Stafford Drive	1
Timber Lane	2
Waggoners Lane	1
Wiggins Drive	2
Windsor Street	<u>2</u>
 TOTAL	43

The Fredericton distribution system consists of approximately **302** kilometres of water main, made up as follows:

SIZE	MARYSVILLE	NASHWAAKSIS DOUGLAS	LR. ST. MARY'S BARKER'S POINT	SILVERWOOD GARDEN CREEK	FREDERICTON	TOTAL
32 mm	-	0.153	-	-	-	0.153
38 mm	-	0.072	-	-	0.234	0.306
50 mm	-	-	-	0.154	-	0.154
75 mm	-	-	-	-	0.435	0.435
100 mm	0.753	2.232	-	2.508	10.427	15.920
150 mm	12.573	21.040	3.987	4.835	57.392	99.827
200 mm	6.681	24.073	1.043	7.812	44.427	84.036
250 mm	3.071	7.666	5.166	0.966	21.902	38.771
300 mm	1.050	4.182	0.507	7.776	29.566	43.081
350 mm	-	0.220	-	-	5.190	5.410
400 mm	-	1.904	-	-	7.127	9.031
450 mm	-	-	-	-	1.965	1.965
500 mm	-	-	-	-	2.180	2.180
600 mm	-	-	-	-	0.427	0.427
Unknown	0.146	-	-	-	-	0.146
TOTALS	24.274	61.542	10.703	24.051	181.272	301.842

Figures for Marysville, Nashwaaksis, Barker's Point, and Silverwood are approximate only, due to measurement from maps in some instances.

The above figures do not include water mains installed at the Exhibition Grounds; the University of New Brunswick; St. Anne's Point Barracks on the Woodstock Road and the low rental housing development in Fredericton North.

(3) **WATER PRODUCTION COSTS**

The net expenditure of \$ 828 783 was made up as follows:

Source of Supply

Personnel Costs	\$ 160 918
Use of Equipment	15 130
Maintenance - Wells	74 182
Communications	12 628
Power - Wells	212 234
Materials - Wells	<u>2 067</u> \$ 477 159

Power & Pumping (Plant)

Personnel Costs	\$ 29 581
Light & Power	7 348
Supplies	<u>1 983</u> \$ 38 912

Water Treatment Plant

Personnel Costs	\$ 124 818
Insurance	28 151
Maintenance	49 808
Power	13 284
Taxes	32 836
Materials	13 927
Goods (Chlorine, Soda Ash, Lime, etc.)	<u>49 888</u> \$ 312 712

TOTAL	\$ 828 783
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The total amount of water pumped into the City's distribution systems from 1992 01 01 to 1992 12 31 for the entire City was 8570 megalitres. The amount of water produced by the Water Treatment Plant in 1992 was 8130 megalitres or 95% of the total City demand. The average daily demand for the City is 23 megalitres.

The following table gives a comparison of water production costs for the last ten years:

WATER PRODUCTION COSTS

YEAR	MEGALITRES PRODUCED	PRODUCTION EXPENDITURE	PRODUCTION COST PER MEGALITRE
1983	7225	\$ 435 929	\$ 60
1984	7368	523 393	71
1985	7880	646 991	82
1986	7781	732 141	94
1987	8177	712 102	87
1988	8740	743 604	85
1989	8440	734 658	87
1990	8600	679 440	79
1991	8450	823 353	97
1992	8570	828 783	97

The total net expenditure for transmission and distribution of water for the City from 1992 01 01 to 1992 12 31 was determined from the following:

Transmission & Distribution:

Operation	\$ 280 667	
Maintenance	<u>760 172</u>	\$ 1 040 839

Therefore, the net expenditure for transmission and distribution of one megalitre of water from 1992 01 01 to 1992 12 31 was:

$$\frac{\$ 1\,040\,839}{8570} = \$ 121$$

The following table gives a comparison of net expenditures for transmission and distribution of one megalitre of water for the last ten years:

TRANSMISSION AND DISTRIBUTION COSTS

YEAR	NET EXPENDITURE PER MEGLITRE
1983	\$ 87
1984	92
1985	99
1986	88
1987	89
1988	93
1989	126
1990	106
1991	117
1992	121

The total net expenditure for administration costs and debt charges for the City from 1992 01 01 to 1992 12 31 was determined from the following:

Water Administration

(1) Billing & Collection	\$ 206 960
(2) Meters (Installation, Reading, Repairs)	189 119
<u>Debt Charges (Principal & Interest)</u>	<u>327 637</u>
	\$ 723 716

Administration costs per megalitre of water produced:

$$\frac{\$ 396 079}{8570} = \$ 46.22$$

Debt charges per megalitre of water produced:

$$\frac{\$ 327 637}{8570} = \$ 38.23$$

The following table gives a comparison of administration costs and debt charges per megalitre of water produced for the last ten years:

**ADMINISTRATION COSTS AND DEBT CHARGES PER MEGLITRE
(rounded to nearest dollar)**

YEAR	ADMINISTRATION (BILLING & COLLECTION & METERS)	DEBT CHARGES
1983	\$ 51	\$ 107
1984	42	97
1985	43	94
1986	43	75
1987	37	52
1988	39	46
1989	44	46
1990	44	43
1991	45	43
1992	46	38

The following table gives a comparison of total water costs per megalitre of water produced for the last ten years:

TOTAL COSTS PER MEGLITRE

YEAR	PRODUCTION COSTS	TRANSMISSION & DISTRIBUTION COSTS	ADMINISTRATION	DEBT CHARGES	*TOTAL
1983	\$ 60	\$ 87	\$ 51	\$ 107	\$ 305
1984	71	92	42	97	302
1985	82	99	43	94	318
1986	94	88	43	75	300
1987	87	89	37	52	265
1988	85	93	39	46	263
1989	87	126	44	46	303
1990	79	106	44	43	272
1991	97	117	45	43	302
1992	97	121	46	38	302

* **TOTAL COST = Production Costs + Transmission & Distribution Costs
+ Administration Costs + Debt Charges**

S U M M A R Y

WATER AND SEWER REVENUE & EXPENDITURES

1992

ITEM	NET EXPENDITURE	REVENUE
COMMON SERVICES (WATER & SEWER)		
General Equipment	\$ 494 084	\$ 413 679
Safety & Benefits	239 293	
Administration	157 347	
WATER		
Water Administration (Billing & Collection)	206 960	
Water Ordinary (Including Meters)	1 229 958	4 597 087
Water Treatment Facility & Well Production Costs	828 783	
Debt Charges - Principal & Interest	327 637	
SANITARY SEWER		
Operating & Maintenance	561 004	3 153 992
Sewage Treatment & Disposal	1 421 141	
Debt Charges	176 623	
TOTALS	\$ 5 642 830	\$ 8 164 758

1992 SURPLUS:	\$ 2 521 928
SURPLUS @ BEGINNING OF 1992:	<u>982 902</u>
OVERALL SURPLUS:	\$ 3 504 830

NOTE: \$ 2 500 950 of the above noted overall surplus was appropriated for utility capital expenditures.

CAPITAL PROGRAMS

The following gives brief descriptions of capital projects begun or completed in 1992:

WATER:

In 1992, water mains were installed along the Canadian Atlantic Railway right-of-way off of Main Street between Brookside Drive and Royal Road; on Claudio Road from the end of Phase 1 to the end of the built-up area; and in Lower St. Marys on Timber lane and a portion of Alderwood Drive.

Streets such as Waggoners Lane between Rookwood Avenue and Hanwell Road; Windsor Street between Albert Street and Kings College Road; the upper end of Queen Street near Northumberland Street; King Street between Carleton Street and York Street; and Kings College Road near York Street and Regent Street had their water mains upgraded or installed under the System Replacement and Oversizing Account.

Also, under the Capital Water Account, repairs were done at the Montgomery and Longwood reservoirs, Well No. 7 was installed and the Water Treatment Plant addition was begun.

New mains were also installed by developers in the Chippins Subdivision (Douglas Avenue, Wiggins Drive, Estey Lane, Evans Street, Columbus Court); L & H Builders Subdivision (Rose Court); Hayland Ltd. Subdivision (Bailey Avenue, McAdam Avenue); Rosewood Estates Subdivision (Selkirk Crescent, Giles Street); Brookside Mini-Home Park (James Street, Jeremy Street, Randolph Street); Carolin Ventures Subdivision (Murray Avenue, Sparrow Lane, Stafford Drive); and Karelyn Place Subdivision (Bishop Drive, Avonlea Court, Lian Street).

Following are lengths and sizes of water mains installed in 1992:

LOCATION	LENGTH OF MAINS - metres							
	150 mm D.I.	200 mm D.I. & P.V.C.	250 mm D.I.	300 mm D.I.	350 mm D.I.	400 mm D.I.	500 mm D.I.	600 mm D.I.
* Waggoners Lane		239						
* Windsor St. - Albert to Kings College		444						
* Queen St. near Northumberland	4		131					
* King St. - Carleton to York	13		157					
* Carleton St. - Queen to King	5		79					
* Kings College Road		26	202					
Claudie Road Phase 2	18			366				
Main St. - along Canadian Atlantic Railway R.O.W.	3	4	51		13	802		
Lower St. Marys (Timber Lane, Alderwood)	18	8	3	476				
*** Water Treatment Plant							10	32
** Chippins Subd. (Douglas Ave.; Evans St.; Estey Ln.; Wiggins Dr.; Columbus Ct.)	60	556	869					
** Rose Ct.	6	289						
** Bailey Ave./McAdam Ave.	15	500						
** Rosewood Subd. (Selkirk; Giles)	25	559						
** Brookside Mini-Home Park (James, Jeremy, Randolph)	9	466						
** Carolin Ventures Subdivision (Murray, Stafford, Sparrow)	28	414						
** Karellyn Place Subd. (Bishop, Avonlea, Lian)	40	210		698				
TOTALS	244	3715	1492	1540	13	802	10	32

OVERALL TOTAL - 7848 metres = 7.848 kilometres

- * Done under system replacement and oversizing.
- ** Paid for by the developer through Local Improvement Agreement.
- *** Done in conjunction with the Water Treatment Plant addition.

SANITARY SEWER:

In 1992, sanitary sewer mains were installed on Claudie Road from the end of Phase 1 to the end of the built-up area and in Lower St. Marys on Timber Lane and a portion of Alderwood Drive.

Windsor Street between Albert Street and Kings College Road had its sanitary sewer main upgraded under the System Replacement and Oversizing Account.

New mains were also installed by developers in the Chippin Subdivision (Douglas Avenue, Wiggins Drive, Estey Lane, Evans Street, Columbus Court); L & H Builders Subdivision (Rose Court); Hayland Ltd. Subdivision (Bailey Avenue, McAdam Avenue); Rosewood Estates Subdivision (Selkirk Crescent, Giles Street); Brookside Mini-Home Park (James Street, Jeremy Street, Randolph Street); Carolin Ventures Subdivision (Murray Avenue, Sparrow Lane, Stafford Drive); Karellyn Place Subdivision (Bishop Drive, Avonlea Court, Lian Street); and the Targett Subdivision (St. Marys Street).

Following are lengths and sizes of sanitary sewer mains installed in 1992:

LOCATION	LENGTH OF MAINS - metres			
	200 mm P.V.C.	250 mm P.V.C.	300 mm P.V.C.	150 mm D.I.F.M.
Claudie Road Phase 2			368	
Lower St. Marys (Timber Lane, Alderwood)	355			331
* Windsor St. - Albert to Kings College Rd.	440			
** Chippins Subd. (Douglas Ave.; Evans St.; Estey Ln.; Wiggins Dr.; Columbus Ct.)	1440			
** Rose Ct.	201			
** Bailey Ave.; McAdam Ave.	419			
** Rosewood Subdivision (Selkirk Cres.; Giles St.)	557			
** Brookside Mini-Home Park (James; Jeremy; Randolph)	399			
** Carolin Ventures Subdivision (Murray, Stafford, Sparrow)	378			
** Karellyn Place Subdivision (Bishop; Avonlea; Lian)	180	47	538	
** Targett Subd. (St.Marys St.)	50			
TOTALS	4419	47	906	331

OVERALL TOTAL - 5703 metres = 5.703 kilometres

* Done under system replacement and oversizing.

** Paid for by the developer through Local Improvement Agreement.

STORM SEWER:

In 1992, storm sewer mains were installed on Waggoners Lane (associated with roadway reconstruction); on Claudie Road from the end of Phase 1 to the end of the built-up area; in Lower St. Marys on Timber Lane and a portion of Alderwood Drive; and on Canada Street (associated with sidewalk construction).

New mains were also installed by developers in the Chippin Subdivision (Douglas Avenue, Wiggins Drive, Estey Lane, Evans Street, Columbus Court); L & H Builders Subdivision (Rose Court); Hayland Ltd. Subdivision (Bailey Avenue, McAdam Avenue), Rosewood Estates Subdivision (Selkirk Crescent, Giles Street); Brookside Mini-Home Park (James Street, Jeremy Street, Randolph Street); Carolin Ventures Subdivision (Murray Avenue, Sparrow Lane, Stafford Drive); and the Karellyn Place Subdivision (Bishop Drive, Avonlea Court, Lian Street).

Following are lengths and sizes of storm sewer mains installed in 1992:

LOCATION	LENGTH OF MAINS - metres							
	250 mm	300 mm	375 mm	450 mm	600 mm	750 mm	900 mm	1050 mm
* Waggoners Lane	40			146	54			
Claudie Road Phase 2	58			10	91	148	82	130
Lower St. Marys (Timber Lane, Alderwood)	32	228						
*** Canada Street	18			99	217	52	31	
** Chippins Subdivision (Douglas Ave.; Evans St.; Estey Ln.; Wiggins Dr.; Columbus Ct.)	172	374	14	583	48	119		293
** Rose Ct.	35	194						
** Bailey Ave.; McAdam Ave.	28	190	254					
** Rosewood Subdivision (Selkirk Cres.; Giles St.)	69	462		205				
** Brookside Mini-Home Park (James; Jeremy; Randolph)	85		32	284			84	
** Carolin Ventures Subd. (Murray, Stafford, Sparrow)	47	370						
** Karellyn Place Subd. (Bishop; Avonlea; Lian)	130	132			347	173	145	
TOTALS	714	1950	300	1327	757	492	342	423

OVERALL TOTAL - 6305 metres = 6.305 kilometres

* Done under Capital Street Reconstruction.

** Paid for by the developer through Local Improvement Agreement.

*** Done in conjunction with sidewalk construction.

CURB AND GUTTER

Concrete curb and gutter was constructed at the following locations in 1992:
 (Notes indicate budget item under which work was done)

	Location	Length (metres)
(5)	Bennett Street	122
(3)	Bridge Street - Coronation St. to Marshall St.	309
(2)	Burpee Street (Floral Ave. to Civic #136)	665
(3)	Canada Street	587
(2)	Claudie Road Phase 1	632
	Coburn Drive - Golf Club Road to Kingswood Dr.	645
(2)	Coronation Street	990
(4)	Doone Street	600
	Drammen Drive/Jewett Street	1038
(2)	Golf Club Road (along golf course) & Woodstock Int.	715
	Herschel Court	178
(3)	Kings College Road - Regent St. to Windsor St.	368
(2)	MacLaren Avenue - Gibson to Sewell	91
(6)	Mainstreet Program (King St.; Carleton St.; Queen St.)	487
(2)	Maxwell Street	355
(5)	McConnell Street	155
(2)	McMinniman Court/Jarvis Street/Hossack Street	1281
(2)	Miles Street	460
(7)	Prospect Street - Regent St. to Mall entrance (east)	472
(7)	Regent Street - Priestman St. to Prospect St.	1453
(5)	Rookwood Avenue - by Wilmot Park	230
(2)	Sewell Street - MacLaren Ave. to Henry Park	512
(1)	Smythe/King/Brunswick intersection	552
	Stairs Street	796
(5)	Veterans/Canada intersection	72
(2)	Victory Avenue	464
(2)	Waggoners Lane - Hanwell Rd. to Rookwood Ave.	<u>955</u>
TOTAL		15 184

15 184 metres = 15.184 kilometres

- (1) Done under Traffic Management
- (2) Done under Street Reconstruction
- (3) Done in conjunction with sidewalk installation
- (4) Done under Agreement with Municipal Affairs, Culture & Housing
- (5) Done under O & M Budget
- (6) Done under Mainstreet Program
- (7) Special upgrading project. Cost shared with Department of Transportation

PAVING:

In 1992, Gorman Paving Inc. was awarded a contract to supply and place asphalt concrete on a number of City streets.

The street preparatory work was done by City forces.

The paving program required the supply and placement of the following grades of asphalt concrete:

- 1) Binder Course - Type "B" at \$ 31.95 plus G.S.T. per tonne in place
- 2) Surface Course - Type "D" at \$ 34.50 plus G.S.T. per tonne in place

(1) **BINDER COURSE - TYPE "B"**

The following streets were paved with Type "B" asphalt concrete in 1992:

LOCATION	Length (metres)
Bennett Street	70
Burpee Street - Floral Ave. to Civic #136	299
Claudie Road - Clements Drive to Civic #139	320
Coburn Drive - Golf Club Road to Kingswood Dr.	308
Coronation Street	488
Doone Street	294
Drammen Drive	395
Golf Club Road near Golf Course	291
Herschel Court	89
Hossack Street	177
Jarvis Street	111
Jewett Street - Hartt St. to Civic # 241	142
MacLaren Avenue - Gibson St. to Sewell St.	85
Maxwell Street	170
McConnell Street	107
McMinniman Court	385
Miles Street	223
* Prospect Street - Regent St. to Mall entrance (east) (one side)	291
* Regent Street - Priestman St. to Prospect St.	397
Sewell Street - MacLaren Ave. to Henry Park	255
Smythe/King/Brunswick intersection	195
Stairs Street	382
Victory Avenue	223
Waggoners Lane - Rookwood Ave. to Hanwell Road	456
William Street	<u>82</u>
 TOTAL	 6235

6235 metres = 6.235 kilometres

* Approximately 120 m of concrete paving was also installed on Prospect Street and Vanier Highway and 111 m on Regent Street.

CONCRETE SIDEWALKS:

New sidewalks were constructed at the following locations in 1992:

LOCATION	Length (metres)
Bridge Street	294
Canada Street	570
* Carleton Street - Queen to King (both sides)	91
Claudie Road Phase 1	312
Coburn Drive - Golf Club Rd. to Kingswood Dr.	318
** Doone Street	272
Drammen Drive / Jewett St.	435
Golf Club Road along Golf Course	303
Hanwell Road - existing to Riverview Mercury	543
Harrison Court	95
Kings College Road - Regent St. to Windsor St.	323
* King Street - Carleton St. to York St. (north side)	188
Maxwell Street	165
*** Prospect Street - Regent St. to Mall Entrance (east)	253
* Queen St. near Northumberland Street	91
*** Regent St.	606
Smythe/King/Brunswick intersection	267
Stairs Street	362
**** Waggoners Lane - Rookwood Ave. to Hanwell Road	<u>459</u>
 TOTAL	 5947

5.947 metres = 5.947 kilometres

* Reconstruction of existing sidewalk under Capital Mainstreet Program.

** Done under Agreement with Municipal Affairs, Culture & Housing.

*** Done in conjunction with Regent Street upgrading.

**** Reconstruction of existing.

STREET RECONSTRUCTION:

In 1992, a number of streets were upgraded with curb and gutter and paving and in some instances, sidewalk. These streets included Waggoners lane between Rookwood Avenue and Hanwell Road; Claudie Road Phase 1; McMinniman Court, Jarvis Street, Hossack Street; Maxwell Street; Victory Avenue; Coronation Street; Burpee Street between Floral Avenue and Civic #136; Golf Club Road along the Golf Course; MacLaren Avenue between Gibson Street and Sewell Street; Bennett Street and Sewell Street between MacLaren Avenue and Henry Park; and Miles Street. Doone Street was also reconstructed through an agreement with Municipal Affairs, Culture & Housing.

TRAFFIC MANAGEMENT:

In 1992, the intersection at Smythe Street, King Street, and Brunswick Street was upgraded under this account.

SPECIAL PROJECT:

In 1992, the upgrading of Regent Street between Montgomery Street and the Trans Canada Highway was essentially completed. The portion of Prospect Street between Regent Street and the eastern entrance to the Fredericton Mall was also upgraded in 1992 in conjunction with the Regent Street upgrading.

MAINSTREET PROGRAM:

In 1992, the upgrading of the downtown of the City continued. Work was finalized on the south side of Queen Street from the parking structure to Northumberland Street; on the north side of King Street between York Street and Carleton Street; and on Carleton Street between Queen Street and King Street.

NEW STREET CONSTRUCTION:

The following new streets or portions of streets were constructed in 1992:

LOCATION	Length (metres)
Avonlea Court	291
Bailey Avenue	275
Bishop Drive	217
Columbus Court	61
Douglas Avenue	890
Estey Lane	76
Evans Street	159
Giles Street	219
James Street	261
Jeremy Street	149
Lian Street	83
McAdam Avenue	150
Murray Avenue	82
Randolph Street	156
Rose Court	215
Selkirk Crescent	274
Sparrow Lane	191
Stafford Drive	38
Wiggins Drive	<u>222</u>
 TOTAL	 4009

4009 metres = 4.009 kilometres

DESIGNATED ROUTES

The City of Fredericton has a total of 54.648 km of provincial designated highways within its boundaries. In 1992, the Provincial Government paid \$ 323.76 (winter) and \$ 81.69 (summer) per lane kilometre towards maintenance of the routes. If any improvements such as new curb and gutter, paving or storm sewer installations are done to these routes, authorization by the Department of Transportation is required.

The following authorized project was undertaken in 1992:

(1)	Route 101 - Regent Street (Priestman to Prospect) Reconstruction and Widening	\$. .	<u>1 993 526</u>
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TOTAL	\$. .	1 993 526
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CAPITAL PROGRAMS
SUMMARY OF EXPENDITURES

	ITEM	BUDGET	EXPENDITURE	REMARKS
UTILITY FUND				
System Replacement & Oversizing - WATER & SANITARY SEWER	\$ 400 000	\$ 296 823		
Well No. 7 - WATER	300 000	305 134		
Water Treatment Plant Addition - WATER	850 000	1 159 919		
Reservoir Repairs (Montgomery & Longwood) - WATER	200 000	177 269		
Main Street (Brookside to Royal Road) - WATER	350 000	282 979		
Douglas Area (Claudie Road) - WATER & SANITARY SEWER	170 000	144 902		
Lower St. Marys - WATER & SANITARY SEWER	300 000	368 962		
Dewitt Acres - WATER & SANITARY SEWER	250 000	1 287	Deferred - awaiting easement acquisitions.	
GENERAL FUND				
Regent Street widening - SPECIAL PROJECT (Montgomery Street to T.C.H.)	2 000 000	1 993 526		
Douglas Area (Claudie Road) - STORM SEWER & ASSOCIATED ROAD BASE	240 000	238 357		
Smythe Street (near Beechwood) Phase 1 - STORM SEWER	100 000	38 728		
Stairs Street - CURB & GUTTER AND PAVING	80 000	78 537		
Drammen Drive/Jewett Street - CURB & GUTTER AND PAVING	130 000	112 558		
Herschel Court - CURB & GUTTER AND PAVING	30 000	20 646		
Coburn Drive - CURB & GUTTER AND PAVING	70 000	60 342		

CAPITAL PROGRAMS
SUMMARY OF EXPENDITURES

ITEM	BUDGET	EXPENDITURE	REMARKS
GENERAL FUND			
Waggoners Lane (Hanwell Road to Post Office Bldg.) STREET RECONSTRUCTION	\$ 480 000	\$ 499 081	
Claudie Road (Phase 1) - STREET RECONSTRUCTION	100 000	89 554	
McMinniman, Jarvis, Hossack - STREET RECONSTRUCTION	160 000	116 820	
Maxwell Street - STREET RECONSTRUCTION	40 000	46 177	
Victory Avenue - STREET RECONSTRUCTION	50 000	44 258	
Forest Hill (Biggs to Kimble) - STREET RECONSTRUCTION	100 000	-	Deferred to 1993. Dependent upon land acquisition.
Coronation Street - STREET RECONSTRUCTION	160 000	164 704	
Burpee Street - STREET RECONSTRUCTION	230 000	185 621	
Golf Club Road (along Golf Course) STREET RECONSTRUCTION	100 000	101 060	
MacLaren Avenue/Sewell Street - STREET RECONSTRUCTION	100 000	103 420	
Miles Street - STREET RECONSTRUCTION	60 000	53 675	
Smythe/King/Brunswick Intersection - TRAFFIC MANAGEMENT	300 000	241 906	
Beaverbrook/Regent Street Intersection - TRAFFIC MANAGEMENT	300 000	5 520	Work to be finalized in 1993.
Woodstock/Hanwell Intersection - TRAFFIC MANAGEMENT	120 000	1 161	To be finalized in 1993.
Lincoln/Wilsey Intersection - TRAFFIC MANAGEMENT	60 000	-	To be finalized in 1993.
Mainstreet Program - SPECIAL PROJECT	120 000	380 224	Cost shared with DDFI and ACOA
Prospect Street - SPECIAL PROJECT	300 000	297 607	

CAPITAL PROGRAMS
SUMMARY OF EXPENDITURES

ITEM	BUDGET	EXPENDITURE	REMARKS
GENERAL FUND (continued)			
Dewitt Acres - STORM SEWER	\$ 40 000	\$ 1 287	Deferred - awaiting easement acquisitions
College Brook Phase I - STORM SEWER	\$ 200 000	\$ 144 738	Carried over from 1991.
Doone Street - STREET RECONSTRUCTION	\$ 190 000	\$ 149 588	Done under agreement with Municipal Affairs, Culture & Housing
NEW SIDEWALK (DONE UNDER O & M BUDGET AND LOCAL IMPROVEMENT)			
Canada Street (Civic #505 to Perley Ave.)	\$ 130 000	\$ 167 649	
Bridge Street (Downing to Coronation)	\$ 30 000	\$ 80 903	
Harrison Court	\$ 10 000	\$ 8 650	
Hanwell Road (existing to Prospect)	\$ 80 000	\$ 86 819	
Kings College Road (Regent to Windsor - north side)	\$ 40 000	\$ 48 628	
Stairs Street	\$ 25 000	\$ 20 298	
Drammen Drive/Jewett Street	\$ 28 000	\$ 24 906	
Coburn Drive	\$ 20 000	\$ 18 255	

WATER QUALITY - 1992

GENERAL

Fredericton's Water Treatment Plant was put into service in July 1984, and with the commissioning of the pipeline to Fredericton North in late 1987, and the commissioning of the Longwood Booster Station in late 1990, is now treating approximately 95% of the City supply. The plant removes iron and manganese and raises the pH to approximately 8 pH units, thus reducing the damage by corrosion to the water system. The chlorine content of the treated water is 1.0 - 1.4 mg/L measured as free chlorine. This water is odourless, colourless, and has an agreeable taste.

Layers of impurities and corrosion byproducts left in parts of the distribution system by less treated water supplies tend to deplete the free chlorine residual until their own chlorine demand is satisfied. When the resultant chlorine residual is low, reaction byproducts with chemical or bleach like odours can be sensed by the public. As chlorine residuals have continued to rise throughout the systems served by the Water Treatment Plant, complaints concerning objectionable tastes and odours have continued to decrease.

Breakpoint chlorination began in the Killarney and Marysville water systems during May, 1989, after laboratory testing and public meetings on the subject. As chlorine residuals made their way through the systems, some taste and odour complaints were received. These have also continued to decrease.

BACTERIAL ANALYSIS

Coliform bacteria counts are accepted as a good index of the degree of bacteriologic safety of water. Although they are not themselves disease producers, coliform bacteria are found in densities roughly proportional to the degree of fecal pollution in polluted water. When members of the coliform group are present, other kinds of microorganisms capable of causing disease may also be present. The absence of coliform bacteria from water is an indication that the water is bacteriologically safe for human consumption, since coliform bacteria are more hardy than disease-causing bacteria.

Forty-two locations, including all active and emergency wells and key distribution system locations, are each sampled by water operators twice each month. All samples are tested for total coliform by the membrane filtration technique.

Tests showing positive with small numbers of coliform are not uncommon, and are usually attributed to poor sampling conditions, slight contamination of sample tap, or inexperience of sampler. In such cases, resampling and reanalysis is carried out. During 1992, no samples contained more than a few coliform and no location provided positive results on resampling.

CHEMICAL ANALYSIS

Most recent samples for chemical analysis were taken from wells and the distribution system in March, 1993 and analysed by Environment New Brunswick's laboratory. Results are displayed on the following page. All water delivered to the distribution system meets the Guidelines for Canadian Drinking Water Quality, Health & Welfare Canada.

One column concerning annual pumpage is added for quick reference.

1993 ANALYSES
 (Sampled: 1993 04 29)

LOCATION	pH pH units	Alk-Tol CaCO ³	Hardness mg/L CaCO ₃	Ca mg/L	Cl mg/L	Cond. dissolved silicate	Cu mg/L	F mg/L	K mg/L	Mg mg/L	Mn mg/L	Na mg/L	Pb ug/L	SO ⁴ ug/L	Turb NTU	Zn mg/L	1992 PUMPAGE	
Wilnot #1 Well	7.20	51.98	55.2	18.2	4.77	142.	0.03	0.16	0.04	0.92	2.39	1.03	6.30		8.07	0.1	0.02	
Wilnot #2 Well	6.84	40.21	44.0	13.9	4.53	124.6	0.03	0.16	0.11	0.59	2.21	0.92	7.00		10.36	0.1	0.04	
Wilnot #3 Well	7.17	85.47	142.2	47.4	45.84	379.	0.02	0.13	0.00	3.21	5.79	0.04	18.02		22.73	0.3	0.01	
Wilnot #4 Well	6.86	57.16	75.3	24.9	18.78	211.	0.01	0.14	0.01	1.48	3.17	0.61	11.14	0.35	0.6	12.08	0.013	
Wilnot #5 Well	7.02	48.19	54.1	17.9	5.44	138.	0.02	0.11	0.01	0.86	2.24	0.57	4.91	0.20	8.69	0.015	0.015	
Wilnot #6 Well	6.90	34.75	37.3	12.2	2.76	97.7	0.01	0.16	0.01	0.48	1.69	0.28	4.45	0.22	6.21	0.5	0.009	
Wilnot #7 Well	7.22	61.77	65.8	22.2	3.39	158.	0.01	0.25	0.04	0.45	2.49	1.18	4.77	1.9	9.60	0.2	0.003	
WTP influent	7.00	70.35	113.7	37.8	30.68	287.	0.19	0.13	0.00	2.50	4.71	0.20	15.03	0.53	19.9	17.52	0.4	0.010
WTP Effluent	8.17	82.67	103.9	36.2	20.84	264.	0.02	0.14	0.00	1.49	3.27	0.01	11.80	0.38		13.26	0.2	0.002
Silverwood #2 Well	7.49	144.	161.2	35.5	41.54	429.	0.01	0.10	0.02	0.70	17.64	0.00	25.29	0.39	0.1	11.05	0.2	0.256
Silverwood #3 Well	7.74	102.	113.2	25.6	7.61	231.	0.02	0.09	0.02	0.43	11.94	0.00	4.49	0.05		6.00	0.8	0.036
Cameron Cr. Well *	7.26	103.	120.7	40.9	41.86	376.	0.01	0.19	0.02	0.74	4.53	0.00	28.46	0.50	0.4	14.45	0.3	0.016
Durval Well *	7.76	148.	190.6	66.3	45.13	474.	0.01	0.22	0.07	1.16	6.07	0.17	22.43	0.10	0.8	19.94		1
Rainsford *																		
Tower Rd. #1 Well	7.36	74.84	104.7	36.0	11.1	269.	0.02	0.19	0.00	0.53	3.58	0.02	13.71	0.02		39.14	0.3	0.014
Tower Rd. #2 Well	7.20	70.32	94.8	31.2	26.5	259.	0.01	0.15	0.00	0.57	4.09	0.00	14.09	0.05		12.66	0.005	264
McGloin Well *	7.65	80.60	85.4	29.2	11.3	238.	0.01	0.22	0.15	0.74	3.06	0.16	15.39	0.32	0.0	18.51	0.6	0.014
Cliffe Well *	7.57	90.65	85.6	31.3	2.3	205.	0.02	0.14	0.02	0.57	1.78	0.17	8.57			10.80	0.1	0.033
Highland Well *	6.99	64.69	76.3	26.4	10.6	199.	0.02	0.13	0.03	0.63	2.51	0.01	7.42	0.09		13.62	0.2	0.030
Maple #1 Well *	7.32	91.24	122.1	41.9	42.5	369.	0.02	0.20	0.19	0.81	4.25	0.03	24.45	0.38		20.20	0.2	0.052
Maple #3 Well *	7.81	103.	132.5	47.9	30.4	347.	0.02	0.16	0.01	0.79	3.13	0.03	17.44			20.67	1.6	0.011
Killarney #1 Well *	7.28	79.32	86.0	28.8	2.1	185.	0.01	0.11	0.43	0.59	3.39	0.01	4.42	0.05	0.8	12.02	1.2	0.036
Killarney #10 Well *	7.63	124	120.7	40.8	3.8	268.	0.01	0.16	0.11	0.67	4.55	1.01	9.38	0.4		9.89	0.4	0.037
NBHC Bunker **	7.35	69.03	95.7	31.6	27.1	261.	0.07	0.16	0.01	0.59	4.08	0.00	14.05	0.06	5.0	13.75		0.015
Trudell Bridg., Peppin **	8.12	71.89	85.9	28.1	12.8	210.	0.08	0.14	0.01	0.92	3.79	0.01	9.38	0.21		12.39		0.007
Park St. School **	7.85	78.89	99.5	34.5	19.6	251.	0.02	0.14	0.01	1.36	3.27	0.01	10.91	0.33		13.04	0.1	0.004
Woodbridge Rehab **	8.01	76.71	92.2	30.9	17.6	238.	0.02	0.14	0.01	1.13	3.69	0.01	9.87	0.29		13.07	0.1	0.009
York Manor, Sunseed **	8.02	80.27	98.7	34.2	20.1	256.	0.04	0.14	0.01	1.37	3.23	0.01	10.88	0.33	0.3	13.26	0.1	0.003

NOT SAMPLED

Tower Rd. #1 Well	7.36	74.84	104.7	36.0	11.1	269.	0.02	0.19	0.00	0.53	3.58	0.02	13.71	0.02		39.14	0.3	0.014
Tower Rd. #2 Well	7.20	70.32	94.8	31.2	26.5	259.	0.01	0.15	0.00	0.57	4.09	0.00	14.09	0.05		12.66	0.005	264
McGloin Well *	7.65	80.60	85.4	29.2	11.3	238.	0.01	0.22	0.15	0.74	3.06	0.16	15.39	0.32	0.0	18.51	0.6	0.014
Cliffe Well *	7.57	90.65	85.6	31.3	2.3	205.	0.02	0.14	0.02	0.57	1.78	0.17	8.57			10.80	0.1	0.033
Highland Well *	6.99	64.69	76.3	26.4	10.6	199.	0.02	0.13	0.03	0.63	2.51	0.01	7.42	0.09		13.62	0.2	0.030
Maple #1 Well *	7.32	91.24	122.1	41.9	42.5	369.	0.02	0.20	0.19	0.81	4.25	0.03	24.45	0.38		20.20	0.2	0.052
Maple #3 Well *	7.81	103.	132.5	47.9	30.4	347.	0.02	0.16	0.01	0.79	3.13	0.03	17.44			20.67	1.6	0.011
Killarney #1 Well *	7.28	79.32	86.0	28.8	2.1	185.	0.01	0.11	0.43	0.59	3.39	0.01	4.42	0.05	0.8	12.02	1.2	0.036
Killarney #10 Well *	7.63	124	120.7	40.8	3.8	268.	0.01	0.16	0.11	0.67	4.55	1.01	9.38	0.4		9.89	0.4	0.037
NBHC Bunker **	7.35	69.03	95.7	31.6	27.1	261.	0.07	0.16	0.01	0.59	4.08	0.00	14.05	0.06	5.0	13.75		0.015
Trudell Bridg., Peppin **	8.12	71.89	85.9	28.1	12.8	210.	0.08	0.14	0.01	0.92	3.79	0.01	9.38	0.21		12.39		0.007
Park St. School **	7.85	78.89	99.5	34.5	19.6	251.	0.02	0.14	0.01	1.36	3.27	0.01	10.91	0.33		13.04	0.1	0.004
Woodbridge Rehab **	8.01	76.71	92.2	30.9	17.6	238.	0.02	0.14	0.01	1.13	3.69	0.01	9.87	0.29		13.07	0.1	0.009
York Manor, Sunseed **	8.02	80.27	98.7	34.2	20.1	256.	0.04	0.14	0.01	1.37	3.23	0.01	10.88	0.33	0.3	13.26	0.1	0.003

* These wells are on emergency standby duty.
 ** Sample points within distribution system.