

ANNUAL REPORT OF THE ENGINEERING AND PUBLIC WORKS DEPARTMENT

1970



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

Gentlemen:

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

This report covers the period January 1, 1970 to
December 31, 1970 and is written for the purpose of maintaining
an accurate record on file of the activities and costs of the
various departments.

During the year, along with regular maintenance,
City crews and contractors constructed the following works:-

Concrete Curb and Gutter.....	4.23 miles
Concrete Sidewalk.....	1.76 miles
Grading and Gravelling City Streets.....	2.63 miles
New Street Construction.....	1.32 miles
New Pavement (3/4" Dense Mix)	
Forbes & Sloat Ltd.....	2.23 miles
Recap (1/2" Minus)	
Forbes & Sloat Ltd.....	3.08 miles
Sealing City Streets (3/8" Minus)	
Forbes & Sloat Ltd.....	7.63 miles
Chip Seal (3/8" Chips, Seal coat)	
Flintkote Co. of Canada Ltd.....	2.53 miles
Armour Coating (3/4"-1/2"-3/8" Chips)	
Flintkote Co. of Canada Ltd.....	1.00 miles
Slurry Seal - (Flintkote Co. of Can. Ltd.)	
.37 miles	
8" - 10" Domestic Sewer.....	
1.03 miles	
10" - 12" - 15" - 18" - 24" - 30" - 36"	
Surface Sewer.....	1.13 miles
4"-6"-8"-10"-12"	C. I. Water Pipe.....1.25 miles

Contractors under contract with the Public Works
Department of the City of Fredericton in 1970 constructed,
completed construction or began construction on the follow-
ing projects:-

- | | |
|-----------------------------|---|
| Maplewood Construction Ltd. | - Completed 1969 contract for
the installation of Domestic
Sewer, Surface Sewer and
Water on Prospect Street,
Regent Street to Smythe Street. |
| Maplewood Construction Ltd. | - To installing Domestic Sewer,
Surface Sewer and Water on Park
side Development off Smythe
(Incomplete). |
| Maritime Engineering Ltd. | - To completion of the con-
struction of the City Maint-
enance Depot, Regent Street. |
| John Kilburn & Sons Ltd. | - To installation of Domestic
Sewer, Surface Sewer and
Water in the Industrial Park. |

In addition tenders were received and accepted from the following contractors:-

- Forbes & Sloat Ltd. - supply and delivery of crushed gravel.
- Wendell Thomas - to supplying and delivering winter sand to City Maintenance Depot, Regent Street.
- Wendell Thomas - to supplying and delivering pipe bedding sand for Domestic Sewer, Surface Sewer and Water.
- Harry C. Smith - to supply and delivery of topsoil.
- Gordon's Ready Mix Ltd. - to supply and delivery ready-mix concrete.

The current expenditures for the twelve-month period, January 1, 1970 to December 31, 1970 appears as follows:-

	<u>Appropriation</u>	<u>Expenditures</u>	<u>Net Debit</u>	<u>Credit</u>
Street Lights	\$ 78,000.00	78,928.31	928.31	
Public Works	47,400.00	45,913.95		1,486.05
Roads and Streets	326,500.00	368,588.10	42,088.10	
Garbage Collection	66,123.00	66,272.64	149.64	
Garbage Disposal	16,885.00	17,247.43	362.43	
Wilmot Park	6,515.00	7,296.16	781.16	
Odell Park	12,875.00	14,542.31	1,667.31	
Carleton Park	6,275.00	4,496.06		1,778.94
Old Burial Ground	2,995.00	2,592.39		402.61
Loyalist Burial Ground	76.00	80.69		4.69
Street Cleaning	66,200.00	84,480.94		18,280.94
Development of Park Areas	5,100.00	4,660.77		439.23
Storm Sewers	<u>12,000.00</u>	<u>21,671.72</u>	<u>9,671.72</u>	<u></u>
TOTALS	<u>\$646,944.00</u>	<u>716,771.47</u>	<u>73,934.30</u>	<u>4,106.83</u>

	<u>Revenue</u>	<u>Net Expenditure</u>	<u>Credit</u>
Water Pumping Station	\$ 80,679.22		
Water Ordinary	405,987.73	106,770.30	
Sewer Domestic	153,826.35	35,240.65	
*F. P. C. C. Accs. P.		35,000.00	
Revenue-Private Hydrants	6,480.00		
-Sprinklers	8,800.00		
Revenue-City owned Hydrants	59,160.00		
Water-Office Administration		46,800.57	
Salaries		16,447.04	
Principal and Interest (Water)		183,058.48	
Principal and Interest (Dom. Sewer)		<u>61,019.46</u>	<u> </u>
	<u>\$634,254.08</u>	<u>565,015.46</u>	<u>69,238.62</u>

* Fredericton Pollution Control Commission Sewerage Treatment.

The City of Fredericton occupies a total of some 23.5 square miles. This area includes the water area occupied by the Saint John River within the boundaries of the City.

The 1966 final census shows that the City's population was 22,460.

Following in the body of this report is a detailed statement of the work done, comparative expenditures and unit costs under the various departments. The detailed report of any particular department may be found by referring to the index.

Respectfully submitted,

CITY ENGINEER.

TOTAL YEARLY EXPENDITURE

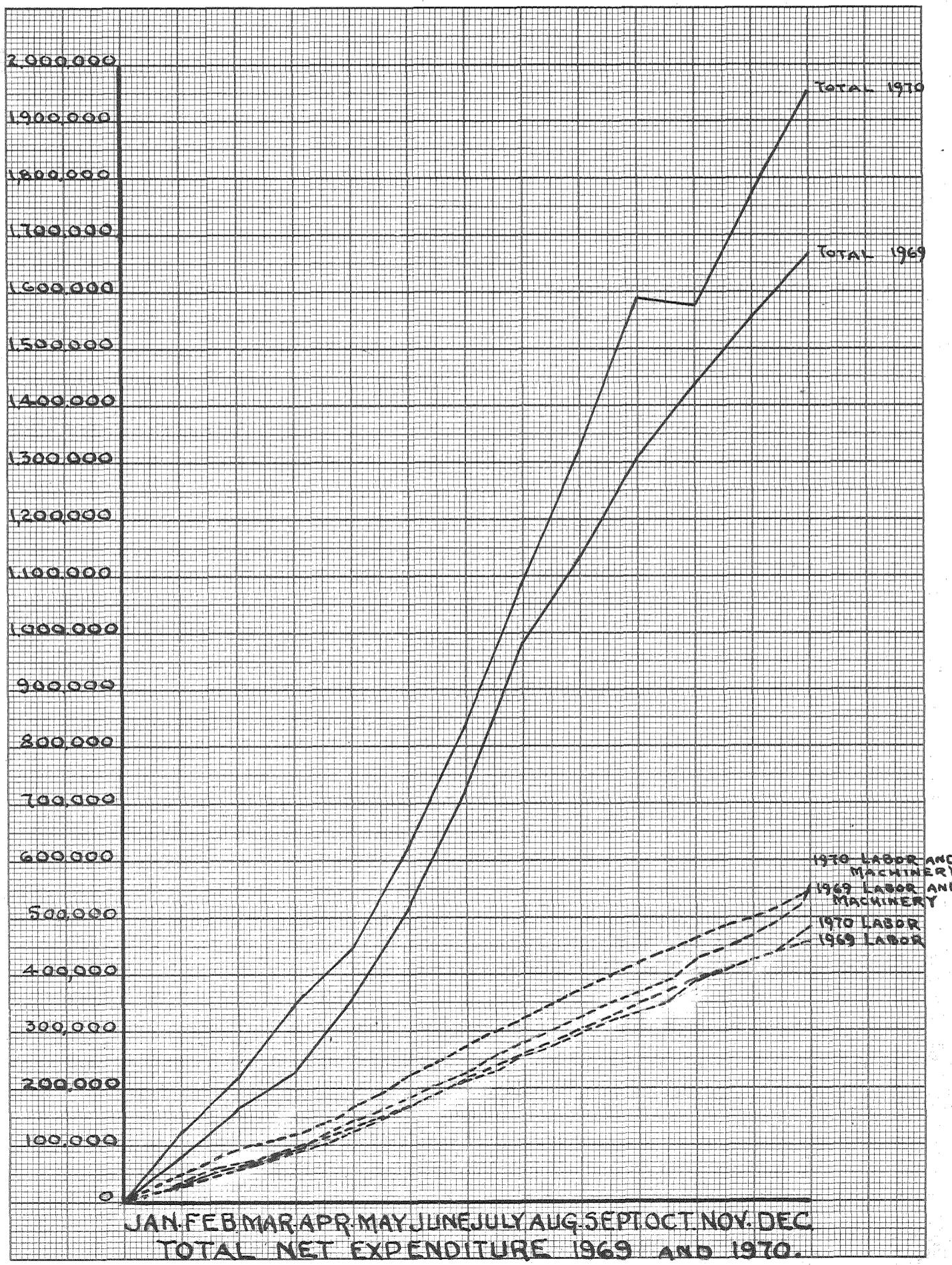
The total yearly net expenditure under the direct supervision of the City Engineer in 1970 amounted to \$1,954,859.77.

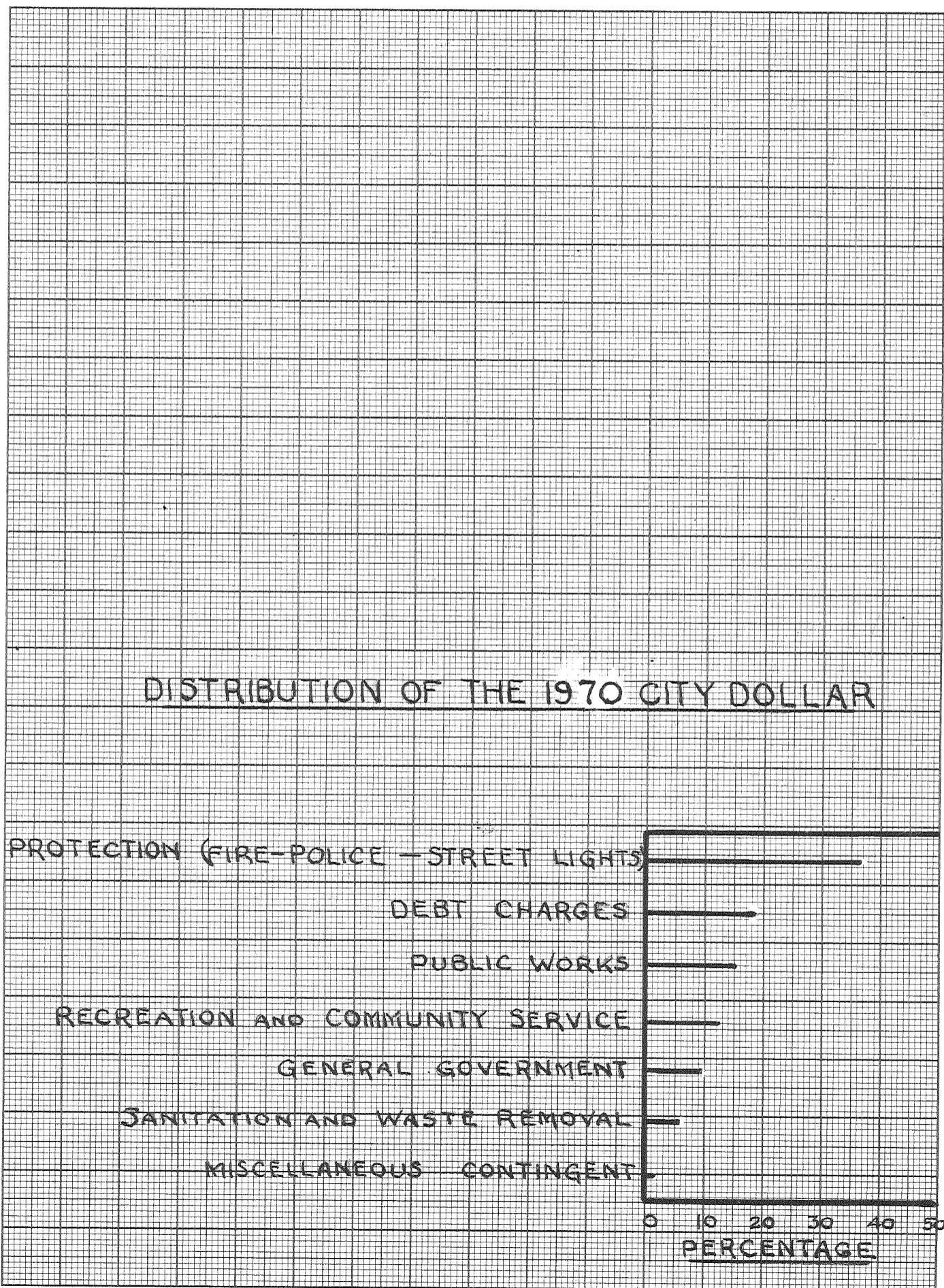
A graphic comparison of expenditures for labor, labor and hired machinery and materials for the year 1969 and the year 1970 are shown on the following graph.

The location of new construction completed or commenced in 1970 is shown on maps inserted after page 4 of this report.

Following the maps is a graph showing the distribution of the City of Fredericton Tax Dollars in 1970.

HUGHES OWENS 404G





ROADS AND STREETS

In 1970 the appropriation for Roads and Streets was \$326,500.00.

There are in Fredericton 76.24 miles of Roads and Streets; 12.37 miles being located on the north side of the Saint John River and 63.87 on the south side. In addition there are 60.57 miles of concrete and asphalt sidewalks; 9.66 miles on the north side of the Saint John River and 50.91 miles on the south side of the Saint John River.

	<u>Roads and Streets</u>		
	<u>Urban</u>	<u>Rural</u>	<u>Total (Miles)</u>
Paved	59.64	5.31	64.95
Gravel	1.92	6.27	8.19
Chip Seal	<u>2.69</u>	.41	<u>3.10</u>
TOTALS =	<u>64.25</u>	<u>11.99</u>	<u>76.24</u>

Not included in the above mileage, Parkside Development, Doone Street and Wilson Row the latter two being in Carleton Ward.

Roads and Streets Expenditure - 1970

Gross Expenditure.....	\$483,735.91
Credits.....	<u>115,147.81</u>
Net Expenditure.....	\$368,588.10
1970 Appropriation.....	<u>326,500.00</u>
DEFICIT.....	\$ 42,088.10

The above credits amounting to \$115,147.81 are made up as follows:

Miles Tire (Clearing snow and installing sewer)....\$	100.69
Province of New Brunswick (Repairs to Forest Hill Rehab. Centre).....	25.00
Sgoolai Israel Synagogue (Thawing grave yard).....	36.90
J. Fox (Labor, repairs to machine).....	2.96
DeSourdy's Construction Co. Ltd. (Welding down manholes).....	47.79
Canadian National Railway (Grading around Freight Shed).....	102.77
New Brunswick Electric Power Commission (Grading parking area).....	10.96
J. Clark & Sons (Grading).....	10.67
Riverview Arms (Grading parking lot).....	10.99
Irving Oil Ltd. (Repairing streets).....	93.89
Fredericton Housing Ltd. (Repairing Streets).....	77.28
P. Ouelette (Sale of Asphalt and rock).....	88.90
Atlantic Speedy Propane (Over-payment at Rink)....	1.52
New Brunswick Telephone Co. (Repairs to Streets)..	213.78
R. A. Corbett Co. Ltd. (Repairs to Street).....	330.63
Victoria Public Hospital (Repairs to parking lot).....	69.41
J. Heber Brown Ltd. (Cleaning culvert).....	149.40
J. Armour and Sons Ltd. (Damage to lawn).....	20.00
Willaim B. Wolfe (Damage to street sign).....	10.00
Chippin's Ltd. (Correction on Invoice, raincoats, waders and gloves).....	244.94
Carleton Safety Supplies (Correction on Invoice) ..	22.68

Sherwood Brewer (Damage to culvert).....	\$ 25.00
Burtt's Tire Service.....	5.50
Abe Levine (Sale of scrap metal).....	98.08
J. McBean (Loss of sand deposit).....	100.00
Sydney Satter (Sale of wire, etc.).....	40.00
Workmen's Compensation.....	519.46
New Brunswick Telephone Co. (Payment on Long Distance Calls - R. Dorcas).....	9.50
Repairs to Curbs for various Private Parties.....	440.00
Repairs to Concrete Sidewalks for various Private Parties.....	461.50
Journal Voucher (Gas, oil, varsol, anti-freeze, diesel fuel).....	5,537.60
Journal Voucher (City Pension).....	9,070.90
Journal Voucher (Canada Pension).....	4,579.84
Journal Voucher (Materials sold to Private Parties, sand and salt).....	333.45
Journal Voucher (Materials sold to other City Depts., sand, salt, rock dust, decals, etc)....	2,161.57
Journal Voucher (Machinery rental on other Accounts).....	<u>90,094.25</u>
TOTAL =	<u><u>\$115,147.81</u></u>

The Gross Expenditure is divided as follows:

Labor - the total of Roads & Streets Payrolls.....	\$153,863.32
Hired Trucks and Machinery.....	56,791.64
Material Charges - which includes Workmen's Compensation, Unemployment Insurance and all materials including purchase and repairs to City owned equipment.....	<u>273,080.95</u>
TOTAL =	<u><u>\$483,735.91</u></u>

The Net Expenditure of \$368,588.10 is divided into the following items. These items give an account of the amount and kind of work done by the Roads and Streets Department during the year.

ITEM #1

Salting & Sanding Streets & Sanding Walks:

Storing sand in Winter Storage Pile and spreading same on slippery streets and walks.

Labor.....	\$ 10,995.47
Hired Trucks & Machinery.....	2,712.00
City Machinery charges.....	4,639.00
Materials.....	<u>34,949.65</u>
Total Expenditure.....	<u><u>\$ 53,286.12</u></u>

6,057 cubic yards of sand was purchased during the winter of 1970. The sand was supplied by Wendell Thomas at a price of \$1.30 per cubic yard, delivered to the City Stock Pile.

In 1970, 902.7 tons of salt was used for ice control. The cost and distribution charges are included under the above heading. The City purchased 912.7 tons of salt in 1970. In stock as of December 31, 1970 there were 50 tons.

ITEM #2

Snowplowing Sidewalks:-.....60.57 miles

60.57 miles of sidewalk were plowed during the winter months in 1970.

Total expenditure under this heading amounted to \$6,767.34 and was made up as follows:-

Labor.....	\$ 4,492.84
City Machinery charges.....	<u>2,274.50</u>
TOTAL.....\$ 6,767.34	

In 1970 the unit cost of plowing and sanding one mile of sidewalk was approximately \$198.00 and was calculated as follows:-

Labor.....	\$ 6,691.93
Hired Trucks & Machinery.....	542.40
City Machinery charges.....	<u>3,202.30</u>
Material (Sand).....	<u>1,574.82</u>
TOTAL.....\$12,011.45 - - - (1)	

The overall cost, including Compensation, Pension Fund and Sick Leave was approximately \$218.00 per mile.

ITEM #3

Snow Control (Streets):-

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

The total cost of snow control (streets) amounted to \$105,412.65 and was made up as follows:-

Labor.....	\$ 26,991.80
Hired Trucks & Machinery.....	46,440.39
City Machinery charges (Jeeps, bulldozers, graders, etc.).....	24,046.00
Expendable Materials (Grader Blades, chains, etc.).....	3,559.18
Maintenance of Snow Equipment (Repairs to Blowers, etc.).....	3,671.04
Miscellaneous Materials (Shovels, Picks, Lumber, etc.).....	<u>704.24</u>
TOTAL.....\$105,412.65	

The following table shows comparative labor (including hired trucks and machinery) costs of Snow Control for the year 1968 to 1970 inclusive:-

	<u>1968</u>	<u>1969</u>	<u>1970</u>
Snowplowing Roads & Streets..	\$23,848.90	32,366.41	33,861.18
Blowing, hauling and shovelling snow.....	53,092.80	30,988.56	36,112.41
Catch Basins.....	6,643.45	4,230.39	2,438.37
Snow Fences.....	882.72	806.63	882.44
Plowing Parking Lots.....	450.62	678.16	137.79
TOTAL.....	<u>\$84,918.49</u>	<u>69,070.15</u>	<u>73,432.19</u>

76.24 miles of Roads & Streets were plowed and maintained during the winter months.

The unit cost per mile of plowing, salting and sanding City Roads and Streets was approximately \$1,990.00 and was calculated as follows:-

Labor (Plowing and Sanding).....	\$ 35,788.18
Hired Trucks and Machinery	48,609.99
Machinery charges (Grader, Jeeps, Bulldozer, etc..)	27,757.20
Materials (Sand and Salt).....	31,679.72
Repairs to Snow Blowers and Boilers.....	3,671.04
Expendable materials (Grader Blades, Chains, etc..).	3,559.18
Miscellaneous Materials (Lumber, Fencing, Wire, Shovels, etc.).....	<u>704.24</u>
TOTAL.....	<u>\$151,769.55---(2)</u>

The overall cost including Workmen's Compensation, (.18% on Labor)
Pension Fund and Sick Leave was approximately \$2,075.00 per mile.

TOTAL COST OF SNOW CONTROL - Add (1) and (2).....\$163,781.00

Net Cost of Snow Control (Less City Machinery
Charges - \$30,959.50.....\$132,821.50

Snow Fall in Fredericton for the last five years was as follows:-

January 1, 1966 to December 31, 1966.....	63.80 inches
January 1, 1967 to December 31, 1967.....	152.91 152.20 inches
January 1, 1968 to December 31, 1968.....	86.80 inches
January 1, 1969 to December 31, 1969.....	77.00 inches
January 1, 1970 to December 31, 1970.....	121.20 inches

Snow Fences:-

Twelve thousand feet of lath and wire snow fencing was erected under Snow Control to prevent drifting snow from building up on Outlying Roads. No new fencing was purchased in 1970.

ITEM #4Streets:

General work of maintenance of Roads & Streets and any other items such as building culverts, curbs and gutters or pavement which are not mentioned under some particular heading.

Total expenditure under Streets Account (Labor, Hired Trucks and Machinery and Materials) amounted to \$48,649.15 and was made up as follows:

Item	Labor Hired Trucks & Machinery	City Machinery Charges	Materials	Total
Maintaining Driveways	\$ 923.09	532.50		1,446.59
Culverts	1,222.07	1,011.50	1,378.38	3,611.95
Ditching	615.95	285.00	-----	900.95
Erection of Guard Posts	803.25	399.00	326.69	1,528.94
Repairing Curbs & Gutters	3,782.36	969.75	1,004.32	5,756.43
Sodding & Seeding	3,302.04	315.00	565.82	4,182.86
Rip-Rapping	519.20	128.50	-----	647.70
Cutting Grass	2,152.41	367.50	322.11	2,842.02
Repairing Sidewalks	1,856.38	583.25	660.57	3,100.20
Holidays (Sick Leave, etc.)	23,547.55	-----	-----	23,547.55
Clothing Issue	-----	-----	1,083.96	1,083.96
TOTALS.....	\$38,724.30	4,583.00	5,341.85	48,649.15

Repairing Machinery which was previously included under the above heading "Streets Account" was taken out of this account in 1970 and made a separate item namely "Equipment Repairs" under Roads and Streets and appears under Item #5.

ITEM #5Equipment Repairs:-

The expenditure under this heading amounted to \$36,783.53 and is made up as follows:

Labor.....	\$ 15,542.85
Hired Trucks & Machinery (Floats, etc.).	489.00
City Machinery charges.....	1,259.00
Materials.....	1,412.59
Outside Repairs & Parts for machines....	17,333.19
Expendable Accessories.....	746.90
TOTAL.....	\$ 36,783.55

The above expenditure includes all City vehicles with the exception of those used in Street Cleaning, Snow Control and Water, which are charged under their respective headings.

ITEM #6Grading and Gravelling:-

Grading and application of Gravel on City Roads and Streets.

Labor.....	\$ 333.87
Hired Trucks and Machinery.....	238.00
City Machinery charges.....	358.00
Materials (Crushed Rock, Class A Gravel.)	991.24
TOTAL...\$	<u>1,921.11</u>

535.8 tons of Class "A" crushed gravel was used in the maintenance and repairs to Gravel Roads under Roads and Streets.

The gravel was purchased from Forbes & Sloat at a contract price of \$1.85 per ton for Class "A" (1¼") crushed gravel.

A stock pile is placed at the site of the Old City Dump on the Wilsey Road for spring frost boils and excavation repairs.

ITEM #7

Lincoln Road:-

All work done on the Lincoln Road, other than work done by the Motor Graders.

The current expenditure incurred on this Road was as follows:-

Labor.....	\$ 454.37
Hired Trucks.....	11.00
City Machinery charges.....	442.00
Materials.....	<u>13.50</u>
	\$ 920.87
Less Credit DeSourdy's Construction Company.....	<u>-47.79</u>
	TOTAL.....\$ 873.08
	<u><u> </u></u>

The above credit of \$47.79 is amount to replace and weld down Manhole cover on Lincoln Road.

ITEM #8

Wilsey Road:-

All work done on the Wilsey Road, other than work done by the Motor Graders.

Labor.....	\$ 2,319.89
Hired Trucks and Machinery.....	31.75
City Machinery charges.....	845.00
Materials (Gravel).....	<u>2,602.77</u>
	TOTAL.....\$ 5,799.41
	<u><u> </u></u>

A portion of this Road from the Doak Road to the Vanier a distance of 2,100 feet was gravelled. This portion was later chip sealed and the account is charged to "Roads and Streets" under the heading "Chip Seal".

1,406.9 tons of Class "A" crushed gravel was used in the maintenance and repairs to this Road.

ITEM #9

Doak and Flanagan Roads:-

All work done on the above mentioned Roads, other than work done by the Motor Graders:

Labor.....	\$ 1,278.88
Hired Trucks.....	115.50
City Machinery charges.....	<u>1,484.25</u>
TOTAL....\$ <u>2,878.63</u>	

ITEM #10

Maryland Road:-

Under this heading the expenditure amounted to \$2,395.72 and was made up as follows:-

Labor.....	\$ 2,152.47
Hired Trucks and Machinery.....	67.25
City Machinery charges.....	<u>176.00</u>
TOTAL....\$ <u>2,395.72</u>	

ITEM #11

Rural Roads:-

This heading includes the Corbett Road from existing pavement on Forest Hill Road to the Vanier Highway and Tower Road.

The expenditure amounting to \$191.25 was made up as follows:

Labor.....	\$ 49.75
Hired Truck and Machinery.....	5.50
City Machinery Charges.....	<u>136.00</u>
TOTAL....\$ <u>191.25</u>	

In 1969 Tower Road was chip sealed a distance of 800 feet. In 1970 this section of Tower Road was resealed with 3/8" Chips and charged to Roads and Streets under the heading "Chip Seal".

ITEM #12

Resurfacing Asphaltic Concrete Repairs
and Paving Entrances:-

Patching and repairing pavement, applying seal coat, light tar or asphalt to pavement and applying asphalt to driveway entrances.

Labor.....	\$ 33,858.65
Hired Trucks and Machinery.....	5,157.50
City Machinery charges.....	13,314.00
Materials.....	<u>37,382.36</u>
TOTAL...\$ <u>89,712.51</u>	

In 1958 a large Aggregate Dryer and Aggregate Conveyor Belt was purchased to facilitate the mixing of patching material in the City Yard. This equipment has resulted in an improvement to the quality of the patching material produced at the Yard and has also accelerated the operation.

When local contractors have plant set up, patching material can be obtained more economically. Patching material when available was obtained from Forbes & Sloat Ltd., W. J. Gorman and Perma Paving Asphalt Ltd.

The total expenditure for Pavement Repairs and Drive-ways for 1970 under the above heading, including Workmen's Compensation, Pension Fund, Holiday and Sick Leave amounted to \$94,949.89 and was computed as follows:-

ASPHALT

Stock from 1969

1,620 Gallons RC	\$440.60	
90 Gallons RS ₃	<u>36.00</u>	\$ 476.60

Plus Stock purchased in 1970

4,230 Gallons emulsion.....	\$1,857.29	
5,400 Gallons RC ₃	<u>1,467.70</u>	\$3,324.99

TOTAL STOCK..\$3,801.59

Less Stock for 1971

55 Gallons emulsion.....	24.15	
1,845 Gallons RC ₃	<u>498.15</u>	\$ 522.30

NET COST OF LIQUID ASPHALT.....\$3,279.29

Cost of Hot Mix Asphalt in Repairing Streets and paving driveway entrances obtained from Perma Paving Asphalt Limited and W. J. Gorman.....\$26,837.32

Total Hot Mix Asphalt Cost.....	\$26,837.32
Asphalt from Flintkote Company (Cold Patch).....	2,107.70
Liquid Asphalt.....	3,279.29
Kerosene (539 Gallons).....	171.40
Crusher Dust (140 Tons).....	350.00
Sand (300 cu. yd.).....	390.00
Crushed Rock (1,803 tons).....	4,526.41
Repairs to Plant.....	306.61
New Equipment (Atlantic Speedy Propane-Burner).....	379.36
Propane Gas.....	446.69
Chips (115.1 tons 1/4"-1/2" Chips).....	460.40
City Labor (City employees, including Pension Fund, Workmen's Compensation, Sick Leave and Holiday Account).....	39,024.86
Hired Trucks and Machinery.....	5,157.50
City Machinery.....	13,314.00
Miscellaneous (pickaxes, Water Cans, etc.....)	316.98

Total Gross Expenditure.....\$97,068.52

LESS CREDITS:

Irving Oil Ltd.....	\$ 93.89
Fredericton Housing Ltd.....	77.28
P. Ouelette.....	88.90
Atlantic Speedy Propane.....	1.52
New Brunswick Telephone Co.....	213.78
Miles Tire Ltd.....	21.97
R. A. Corbett Ltd.....	330.63
Victoria Public Hospital.....	69.41
Journal Voucher (Sale of crushed rock and crusher dust to other City Departments.....)	<u>\$1,221.25</u>
	<u>\$ 2,118.63</u>

TOTAL NET COST \$94,949.89

Materials in Stock, December 31, 1970:-

1845 Gallons RC.....	\$1,467.70
55 Gallons Emulsion.....	24.15
185 Tons 1¼" Crushed Rock.....	462.50
25 Tons Crusher Dust.....	<u>62.50</u>
	<u>TOTAL.....</u>
	<u>\$2,016.85</u>

ITEM #13

CITY MOTOR GRADERS:-

Operators Wages.....	\$1,597.02
Machinery Charges.....	<u>3,040.00</u>
	<u>\$ 4,637.02</u>

Less Credits:

Canadian National Railway (Grading Yard).....	\$ 102.77
New Brunswick Electric Power Commission (Grading Parking Area - King Street).....	10.96
J. Clark & Sons Ltd. (Grading). Riverview Arms (Grading Parking Lot).....	<u>10.67</u>
	<u>10.99</u>
	<u>\$ 135.39</u>
	<u>TOTAL...\$ 4,501.63</u>

ITEM #14

Parking Lots:-

The above heading includes the following areas:-
extension of the Brunswick Street Parking Lot situated
between York Street and Carleton Street and the construction
of a Parking Lot on the north side of Queen Street situated
between Westmorland and Phoenix Square.

The expenditures on these Parking Areas was as follows:

Labor.....	\$ 818.31
Hired Trucks and Machinery.....	74.00
City Machinery.....	1,723.00
Materials.....	<u>3,169.41</u>

TOTAL...\$5,784.72

200.05 tons Class "A" Gravel was used on the Brunswick Street Parking Lot, 810.35 tons Class "A" Gravel and 678 tons of Pit Run Gravel was used in the construction of the Queen Street Parking Area.

ITEM #15

Clearing along Rights-of-way:-

Expenditure.....\$169.95

The above expenditure was a labor charge for cutting bushes along the Maryland Road and Wilsey Road.

ITEM #16

Chip Seal and Seal Coating:-

In 1970 Flintkote Company Canada Ltd. was contracted to Chip Seal ($\frac{3}{8}$ " and Armour Coat ($\frac{3}{4}$ " - $\frac{1}{2}$ " - $\frac{3}{8}$ ") various City Streets. In addition Forbes & Sloat Ltd. recapped and surface sealed various City Streets. Slurry seal was applied to Connaught Street by Flintkote Company Canada Limited.

The above heading includes the following:-

- 1). Chip Seal - $\frac{3}{8}$ " Chips.
- 2). Armour Coat ($\frac{3}{4}$ " - $\frac{1}{2}$ " - $\frac{3}{8}$ ") Chips.
- 3). Slurry Seal.
- 4). Recap 1/2" Minus.
- 5). Surface Seal $\frac{3}{8}$ " Minus.

1). Chip Seal with $\frac{3}{8}$ " Chips

Expenditure ----- \$8,620.35

Under this heading the following Street and Roads were resurfaced with $\frac{3}{8}$ " Chips:-

<u>Location</u>	<u>Lineal Feet</u>
Tower Road.....	800
Dunn Road.....	2,400
Wilsey Road, Lincoln Road to Doak Road and Doak Road from Wilsey Road to Vanier	
Highway.....	7,140
Prospect Street, from #105 West to West City Limits.....	<u>3,000</u>
TOTAL.....	13,340

13,340 Lineal feet = 2.53 miles.

Materials Used:-

518.70 tons $\frac{3}{8}$ " Chips @ \$6.50.....\$ 3,371.55
14,280 Gallons Colas @ .36¢ per gal..... 5,248.80

TOTAL.....\$ 8,620.35

2). Armour Coat (3/4" - 1/2" - 3/8" Chips)

Expenditure.....\$6,389.24

Under this heading the Wilsey Road from the Doak Road to the Vanier Highway a distance of 2,100 feet was surfaced with 3/4" - 1/2" and 3/8" Chips.

Following are the materials used:-

260.15 tons 3/4" Chips @ \$5.50 per ton...\$1,430.82
133.10 tons 1/2" Chips @ \$6.00 per ton... 798.60
75.05 tons 3/8" Chips @ \$6.50 per ton... 487.82
10,200 Gals. Colas @ .36¢ per gal.....3,672.00

TOTAL.....\$6,389.24

3). Slurry Seal

Application of Slurry Seal on Connaught Street, York Street to Smythe Street:-

6,600 sq. yds. @ .36¢ per sq. yd.....\$2,376.00

The street preparatory work, other than the laying in place of the Chips was done by regular City Crews at an expenditure of \$781.44 and was made up as follows:

City Labor.....\$ 548.44
Hired Machinery..... 11.00
City Machinery.....222.00

TOTAL.....\$ 781.44

TOTAL EXPENDITURE FOR CHIP AND SLURRY SEAL....\$18,167.03

4). Recap 1/2" Minus Asphalt

Expenditure.....\$5,752.38

The following streets were recapped by Forbes & Sloat Ltd:-

<u>Location</u>	<u>Lineal Feet</u>
-----------------	--------------------

Smythe Street, Aberdeen St. to Dundonald St.....	1,200
York St., Albert Street to Victoria Street.....	<u>1,300</u>

TOTAL....2,500

2,500 Lineal feet = .47 miles

591.20 tons 1/2" Minus Asphalt @ \$9.73 per ton.\$5,752.38

5). Surface Seal 3/8" Minus Asphalt

Expenditure.....\$28,373.63

Under this heading the following Streets were resurfaced with 3/8" Minus by Forbes & Sloat Ltd.: -

<u>Location</u>	<u>Lineal Feet</u>
George Street, University Avenue to Smythe St....	5,300
Smythe Street, Brunswick St. to Aberdeen St.....	1,420
Northumberland St., Saunders St. to Connaught St.	1,850
Westmorland St., Saunders Street to Connaught....	1,850
Saunders St., Northumberland St. to York St.....	1,250
Aberdeen St., Westmorland St. to York Street.....	600
King St., Northumberland Street to St. John St... .	3,200
Chestnut St., Albert Street to Crockett Street...	800
Palmer St., Albert St. to Kings College Road....	<u>1,000</u>
TOTAL... 17,270	

17,270 lineal feet = 3.27 miles.

Following is the expenditure for Materials for the surface sealing of the above Streets:-

Horsnell's (203 lbs. scrap plate).....	\$ 4.38
Atlas Building Supplies (Hooks for signs).	5.18
2,475.25 tons seal @ \$ 11.00 per ton.....	27,227.75
2,100 Gallons RS ₁ @ .50¢ per gal.....	1,050.00
Journal Voucher (Brick, Cement, etc.).....	<u>86.32</u>
TOTAL...\$28,373.63	

The Street preparatory work for recapping and sealing other than the laying in place of the pavement was done by City crews at an expenditure of \$2,516.21 made up as follows:-

Labor.....	\$1,676.21
Hired Machinery.....	40.00
City Machinery.....	<u>800.00</u>
TOTAL....\$2,516.21	

TOTAL EXPENDITURE FOR RECAPPING AND SURFACE SEALING
(HOT MIX).....\$36,642.22

ITEM #17

Administration:-

Expenditure.....\$3,711.64

The above expenditure of \$3,711.64 is made up as follows:

Salaries.....	\$3,168.96
McBee Company Ltd. (Time reports)...	<u>542.68</u>

TOTAL....\$3,711.64

ITEM #18

City Yard and Maintenance Depot

Gross Expenditure.....\$28,693.17

Credit.....2.30

Net Expenditure.....\$28,690.87

City Yard

Caretaker at City Yard, repair work in City Yard,
Heat, Power, etc.

Gross Expenditure.....\$11,813.15

Credit.....2.30

TOTAL.....\$11,810.85

The above credit was Journal Voucher for 10#-8" Spikes.

The above expenditure is made up as follows:-

Labor.....\$ 7,513.52

Hired Machinery..... 52.00

City Machinery Charges..... 523.80

Light, Power and Telephone..... 1,217.37

Minister of Finance (S S & E

Audit)..... 2.36

Furnace Oil..... 958.98

Repairs to City Yard (Furnace,
Doors, etc.)..... 691.24

Miscellaneous (Tools, paint,
soap, towels, etc).... 846.88

Journal Voucher (Rental on
Massey Ferguson
Tractor)..... 7.00

TOTAL....\$11,813.15

Less Credit.....2.30

Net Expenditure.....\$11,810.85

The City Yard situated on Dundonald Street will,
in future, be used by the following Departments:-

"Water and Sewer"

"Parks and Trees"

"Street Cleaning"

Maintenance Depot

Expenditure.....\$16,880.02

The above expenditure of \$16,880.02 was made up as follows:-

Imperial Oil (1,000 gals. furnace oil).....	\$ 142.00
Atlantic Fire Safety (Fire extinguisher's).....	460.40
Canadian National Railway (Freight on Stock cards).....	5.60
Visirecord (5,000 Stock cards).....	292.33
Horsnell's (Making covers and sign brackets)....	83.38
Raymond Savage (Keys, Padlocks).....	29.62
J. L. Simms (Plywood).....	16.40
Atlas Building Supplies (Bulletin boards, stain)	60.63
E. M. Young (Kitchen utensils, garbage can, funnel, padlock).....	92.88
Paul Burden (Furniture).....	1,189.13
Eastern Fence Ltd. (Fencing).....	10,143.77
Kitchen Bros. (1 case Mr. Clean).....	11.77
Neill's Wholesale (mop, dustbane, pails).....	19.68
C. W. Hall (Office supplies).....	21.66
Carleton Safety Supplies (First Aid Kit, signs).....	26.41
Forbes & Sloat (568.55 ton Class "A" gravel @ \$1.85 per ton).....	1,051.82
Auto Machinery (Hand cleaner, hose, nozzle, cleaner dispenser, catalogue racks).....	225.80
Eastern Drug Services (cups, hand cleaner).....	27.00
Petrofina Canada Ltd. (3,771 gals. furnace oil).....	566.78
Dobbelsteyn Electric (wiring welders and bench grinder).....	52.09
New Brunswick Telephone Co.....	66.38
New Brunswick Electric Power Commission.....	171.89
G. H. Wood (Air fresheners, screens, cup dispenser, deodorizers)...	212.88
Ted Grey (Sign).....	50.00
Petty Cash (Detergent).....	1.52
Labor.....	1,800.00
Hired Machinery.....	58.20
 TOTAL.....	<u>\$16,880.02</u>

The cost of the above building will be taken up later
in this Report under "Capital Account Maintenance Depot".

ITEM #19

Street Signs

Purchasing, repairing and installing Street Signs on City Streets.

The expenditure under this heading amounted to \$5,043.42 made up as follows:-

Labor.....	\$1,722.52
City Machinery.....	42.00
Materials.....	<u>3,317.90</u>
	\$ 5,082.42

Less Credits:-

4 Decals Police Department....	\$ 29.00
William B. Wolfe (Damage to Street Sign).....	<u>10.00</u>
	\$ 39.00
TOTAL....	<u>\$ 5,043.42</u>

In addition to the listed expenditures, there is included under "Roads and Streets" an expenditure of \$26,694.53 which does not show in any of the previous accounts and is made up as follows:-

Workmen's Compensation.....	\$ 4,536.81
Mobile Radio (Telephone Company).....	746.25
N. B. Telephone Co. (Telephone).....	91.55
Miles Tire Ltd. (Repairing tires).....	27.76
Minister of Finance (Vehicle registration).....	135.36
Minister of Finance (S S & E Audit).....	502.10
N. B. Industrial Safety Council (Safety courses) ..	55.00
Car Allowance.....	120.00
Department of Labor (Stationery Engineer's License)	1.50
Royal Mills (Jute Bags).....	36.30
E. M. Young (Pails).....	9.07
Industrial Management Club (Driving Courses).....	15.00
Unemployment Insurance Commission.....	2,368.10
Daily Gleaner (Tender call and weight restrictions)	68.70
Carleton Safety Supplies (Vests, flags).....	91.17
Elm City Chrysler (License).....	6.00
Neill's Wholesale (Road flares, cords, nails).....	114.33
Rosser Sales (Cutters, flare wicks).....	354.58
Auto Machinery (Battery, revolving lights, belts, car wash).....	298.31
Battery & Electric (Block for cement mixer, car kits).....	59.85
Sansom Equipment (Repairs to compressors and pavement breakers).....	1,147.58
City of Fredericton (City Pension).....	5,275.47
Canada Pension.....	2,122.35
Fuels and Lubricants.....	<u>9,308.93</u>
TOTAL....	<u>\$ 27,492.07</u>

Less Credits:-

Workmen's Compensation (cheques)....	\$ 519.46
Sherwood Brewer (Damage to culvert).....	25.00
Burtt's Tire Service (Credit from Police Department).....	5.50
R. Dorcas (Telephone).....	9.50
Abe Levine (Sale of scrap metal)....	98.08
John MacBean (Loss of sand deposit).....	100.00
Sydney Satter (Sale of scrap metal).....	<u>40.00</u>
Net Expenditure.....	<u>\$ 26,694.53</u>

TABLE COMPARING YEARLY COSTS OF LABOR AND HIRED
MACHINERY ON ROADS AND STREETS ITEMS

ITEM	1967	1968	1969	1970
1. Sanding Streets	\$ 14,540.33	16,951.88	18,919.25	13,707.47
2. Snowplowing Side-walks	6,301.80	4,225.00	6,075.34	4,492.84
3. Snow Control	141,990.38	84,918.49	69,070.15	73,432.19
4. Streets Account	44,879.18	41,071.02	43,927.08	38,724.30
5. Equipment Repair	-----	-----	-----	16,031.85
6. Grading & Gravelling	932.41	107.17	1,129.04	571.87
7. Lincoln Road	148.83	109.90	590.15	465.37
8. Wilsey Road	316.02	339.57	454.09	2,351.64
9. Doak and Flanagan Roads	362.67	422.08	564.87	1,394.38
10. Maryland Road	-----	2.32	833.93	2,219.72
11. Rural Roads	-----	266.36	87.32	55.25
12. Asphalt Repairs	17,286.39	17,421.51	18,653.57	39,016.15
13. Motor Graders	978.67	687.72	848.13	1,597.02
14. Parking Lots	366.65	319.80	1,129.95	892.31
15. Clearing along Right-of-Way	-----	-----	1,520.85	169.95
16. Chip Seal) Surface Seal)	-----	244.25	631.63	559.44
17. Administration	-----	-----	-----	2,168.96
18. Maintenance Depot & City Yard	-----	-----	-----	9,365.52
19. Street Signs	-----	-----	-----	1,722.52
TOTALS.....	228,103.33	167,087.07	165,347.02	210,654.96

In 1970 the following separate accounts were put in Roads and Streets Account namely:-

Item #18 Maintenance Depot and City Yard
Item #19 Street Signs.

In addition "Equipment Repairs" was taken out of Streets Account and made a separate item under Roads and Streets Item #5.

The following items of machinery were purchased in 1970 and charged to Roads and Streets:-

- 1 - 1970 Ford F-600 C & C 174" W. B.
300 HD6, HD vinyl seat trim
Full foam seat type 4 speed
direct transmission rear axle
17,500 2 speed front axle 5,500
tires 825 x 20, 10 P.R.M. & S. rear
20 x 6.5 cast L. H. & R. H. Mirrors
dual horn, 70 amp. battery
HD 11.84 S.M. frame, Front shock
absorbers, front springs 3,000
rear 10,400 auxillary 2,250.....\$7,280.00
- Less trade-in 1963 Dodge 3 Ton.....\$1,408.00
\$5,872.00
Plus Sales Tax 8%.....\$ 469.76
\$6,341.76
- 1 - Platform Body for above truck.....\$ 563.82
- \$6,905.58
Plus Sales Tax (8% of \$563.82).....\$ 37.11 \$ 6,942.69
- 1 - Allis Chalmers Model 545
Wheel Loader complete with
2 Cu. Yd. bucket, 17.5 x 25
12 Ply tires, powered by an A. C.
2,900 Diesel Engine, Cab, Heater,
and Defroster H. D. windshield
Wiper Motor, Powershift
transmission, Lights, Horn
and other standard features
Unit S/N 21D03002 Eng. S/N
2D-35376, Bucket S/N G-801
Cab S/N 15782.....\$28,865.00
- Less trade-in 1963 Hough Loader.....\$12,015.00
\$16,850.00
Plus Provincial Sales Tax.....\$ 1,348.00 \$18,198.00
- 1 - 1970 Dodge 1/2 Ton Serial No.
D13ABOS163910.....\$ 3,571.65
Less trade-in 1965 Chev. 1/2 Ton.....\$ 810.25
- \$2,761.40
Plus Provincial Sales Tax.....\$ 220.91 \$ 2,982.31
- 1 - 1970 Kaiser Jeep Model CJ5,
1/2 Kelly Cab, Serial No. 8305015-
273022, 4 Cyl. 5 (855 x 15) Tires
Half Metal Cab, Kelly Draw Bar,
Undercoated, 12 V Curb Idle
Generator.....\$ 3,857.00
Less trade-in 1966 CJ5 Jeep.....\$ 857.00
- \$3,000.00
Plus Provincial Sales Tax.....\$ 240.00 \$ 3,240.00

2 only - E2 6.6 ½ Yd. Spreaders			
(\$2,795.00 each).....	\$ 5,590.00		
Plus Provincial Sales Tax.....	<u>\$ 447.22</u>	\$ 6,037.20	
1 - Essick Tarvia Roller.....	\$ 3,500.00		
Plus Provincial Sales Tax.....	<u>\$ 288.00</u>	<u>\$ 3,780.00</u>	
		\$ 41,180.20	
		<u><u></u></u>	

The Spreaders purchased from Darrell Tatton were charged to "Snow Control", and Essick Roller was charged to "Tarvia Repairs", both these items are included under "Roads and Streets".

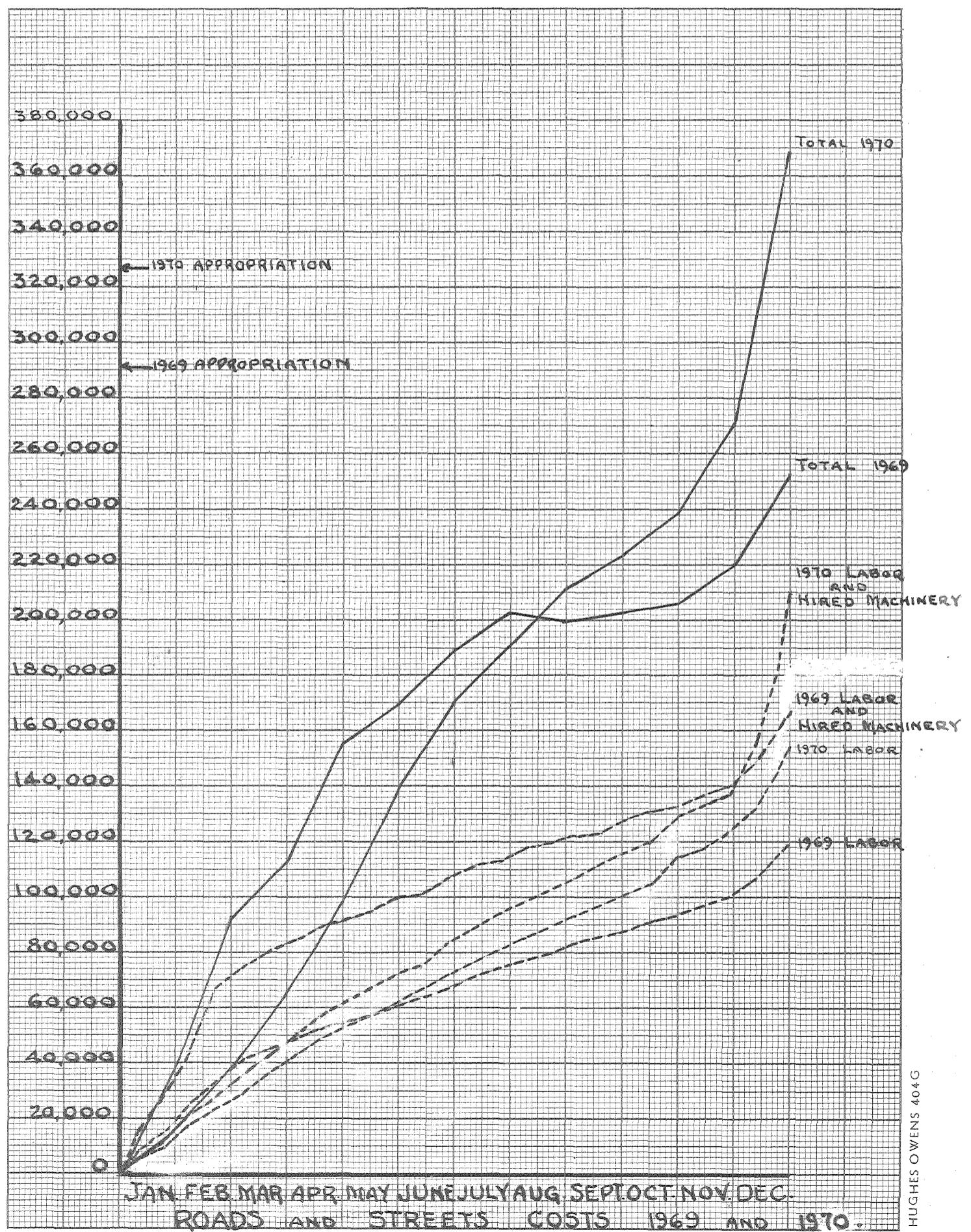
The following is a list of vehicles and machinery used in the Roads and Streets Department, together with the repair costs for 1969 and 1970, including tires and tubes.

Name of Vehicle	Year Purchased	Repairs 1969	Repairs 1970
Austin Western Grader (300 Pacer)	1962	4,383.30	1,054.30
Galion Grader	1961	2,872.22	5,283.68
Galion Grader Model 118	1966	5,297.88	1,007.59
Caterpillar D-5 Bulldozer	1969	257.65	994.81
Case 420 Crawler Tractor	1961	363.97	-----
TD5 International Crawler Tractor	1963	2,879.15	183.84
Case 750 D Bulldozer	1965	1,863.89	1,645.72
Case 850 Bulldozer	1968	643.46	273.72
Hy Hoe 3/8 Yard Backhoe	1964	3,199.05	1,097.82
Unit 3/4 Yard Backhoe	1957	4,326.37	1,375.91
Case W9 Front End Loader	1967	1,844.73	819.53
Hough 50 Model Loader (Traded in 1970)	1963	1,926.58	139.43 ✓
Allis Chalmers Loader	1970	-----	243.35
Arpic Compressor	1953	68.82	36.45
Ingersol Rand Compressor	1957	251.19	57.66
Copco Compressor	1964	235.97	263.88
Ingersol Rand Compressor	1969	17.23	20.76
Tarvia Roller Model #157	1955	839.65	161.33
Essick Roller	1970	-----	5.11
Willys Jeep #11 (Traded in 1970)	1966	179.96	77.93 ✓
Willys Jeep #12	1967	412.28	264.03
Willys Jeep #40	1968	46.38	290.91
Willys Jeep #11	1970	-----	64.35
Ford Bronco	1969	23.66	70.04
Dodge 3 Ton (Traded in 1970)	1963	816.90	128.28 ✓
Ford 3 Ton	1970	-----	43.90
Dodge 3 Ton	1969	33.33	87.12
Dodge 3 Ton	1967	192.40	1,114.59
Chevrolet 3 Ton	1960	145.10	374.64 ✓
Chevrolet 3 Ton	1965	440.32	296.37
Chevrolet 1/2 Ton	1966	510.73	123.09
International 3 Ton	1968	279.00	586.07
Chevrolet 1/2 Ton (Traded in 1970)	1965	283.38	18.89
Dodge 1/2 Ton	1970	-----	65.38
Dodge 1/2 Ton	1967	316.88	290.89
G. M. C. Panel	1968	35.43	192.88
Ford Custom 2 Door	1969	112.41	244.37
Expendable accessories (Grader Blades, Bolts, Nuts, Bulldozer Blades and Corners, Tools, etc.)		1,746.55	746.90
TOTAL COST	=	\$36,845.82	\$19,745.54

The following equipment is used on Snow Control and the repair and maintenance cost for this equipment is shown as follows:

Name of Vehicle	Year Purchased	Repairs 1969	Repairs 1970
Sicard Snow Blower #30	1949	\$ 286.09	\$ 261.73
Sicard Snow Blower #39 (1952 Model)	1961	103.69	211.32
Sicard Snow Blower #47	1963	519.84	1,541.73
Ford Sand Spreader	1960	103.01	1,158.35
International Stake (obtained in 1970)	1951	-----	255.04
Coal-Fired Boiler		-----	-----
Oil-Fired Boiler		251.89	661.68
Bombardier	1968	519.65	338.63
TOTAL COST	=	\$1,784.17	\$4,428.48

The above costs include City labor, Outside labor, and parts for the equipment shown.



CAPITAL ACCOUNT CURB AND GUTTER

The net expenditure under this heading amounted to \$61,973.94.

For the above expenditure of \$61,973.94, concrete curb and gutter was constructed at the following locations:-

<u>Location</u>	<u>Lineal Feet</u>
Priestman Street, Smythe Street to 600' East of Regent Street (both sides).....	7,395
Michener Court (both sides).....	1,012
Mansfield Street, extension of existing (both sides).....	208
Oxford Street, Eglinton Street east to Eglinton Street west (both sides).....	2,237
Willingdon Street, existing to Stanley Street (both sides).....	1,873
Clark Street, MacLaren Avenue to Hillcrest Drive (West side).....	533
Hanwell Road, existing to City Line (West side)...	3,093
Walker Street, Bailey Drive to Irvine Street (both sides).....	903
Bailey Drive, Kennedy Court to Walker Street (both sides).....	651
Canterbury Drive, Woodbridge Street to Topcliffe Crescent (both sides).....	670
Canterbury Drive, Cambridge Crescent to existing curb (South side).....	459
Woodbridge Street, existing to Canterbury Drive (both sides).....	3,296
TOTAL.....	<u>22,330</u>

All the above listed Curb and Gutter was constructed by City Crews.

All the concrete poured was purchased ready-mixed from Gordon's Ready Mix Ltd. at a price of \$18.00 per cubic yard.

The unit cost of one lineal foot of curb and gutter, found by dividing the total length laid, which equals 22,330 lineal feet into the total cost of \$61,973.94 is \$2.78 per lineal foot. The topsoiling of Boulevards is included in this cost..

The unit cost of one lineal foot of curb and gutter minus topsoiling was \$2.17 per lineal foot and was calculated as follows:-

<u>TOPSOILING COSTS</u>	
Labor	6,442.93
Hired Trucks and Machinery.....	454.00
City Machinery Charges.....	1,014.00
Materials (3,965 yds topsoil).....	<u>5,630.30</u>
TOTAL.....	<u>\$13,541.23</u>

Total Cost for Curbing, including Topsoiling..... \$61,973.94
Cost of Topsoiling..... \$13,541.23

TOTAL COST OF CURBING..... \$48,432.71

\$48,432.71 = \$2.17 per lineal foot
22,330

Cost per lineal foot of Topsoiling.....\$13,541.23 = \$0.61/L. ft.
22,330

Labor cost of constructing 1 lineal foot
of Curb and Gutter, minus Topsoiling
was.....\$20,505.65 = \$0.92/L. ft.
22,330

CAPITAL ACCOUNT PAVING

In 1970 Forbes & Sloat Ltd. was awarded a contract to lay pavement and resurface a number of City Streets. The material cost amounted to \$106,302.52 and was made up as follows:-

Forbes & Sloat Ltd.

6681.80 tons 3/4" Hot Mix Asphalt	@ \$ 9.36 per ton....	\$ 62,541.64
3210.70 ton 3/8" Minus Asphalt	@ \$11.00 per ton....	\$ 35,317.70
10,500 Gallons Primer	@ \$ 0.30¢ per gal....	\$ 3,150.00
2,100 Gallons RS ₁	@ \$ 0.50¢ per gal....	\$ 1,050.00

W. J. Gorman

84.50 ton Base Asphalt	@ \$ 8.50 per ton....	\$ 714.00
224.50 ton Top Asphalt	@ \$10.00 per ton....	\$ 2,245.00

Perma Paving Asphalt Ltd.

162.40 ton Base Asphalt	@ \$8.25 per ton....	\$ 1,367.71
Bond Discount.....	\$ 301.61
Miscellaneous (Advertisement, pension fund contribution and portion of staff salaries.....	\$ 2,614.86
TOTAL....	\$109,302.52	

LESS CREDITS

Fredericton Area Pollution Commission (Resurfacing Lincoln Road).....	\$ 3,000.00
--	-------	-------------

NET EXPENDITURE....\$106,302.52

The Street preparatory work, other than laying in place of the pre-mixed material, was done by regular City Crews at an expenditure of \$13,772.06, made up as follows:-

City Labor.....	\$ 8,574.56
Hired Trucks and Machinery.....	\$ 170.00
City Machinery.....	\$ 5,027.50
TOTAL....		\$ 13,772.06

The total expenditure under this heading amounted to \$120,074.58 and was made up as follows:-

City Labor.....	\$ 8,574.56
Hired Trucks and Machinery.....	\$ 170.00
City Machinery Charges.....	\$ 5,027.50
Forbes & Sloat Limited.....	\$ 102,059.34
W. J. Gorman.....	\$ 2,959.00
Perma Paving Asphalt Limited.....	\$ 1,367.71
Bond Discount.....	\$ 301.61
Miscellaneous.....	\$ 2,614.86
TOTAL....		\$ 123,074.58
LESS CREDIT.....	\$ 3,000.00
NET EXPENDITURE....		\$ 120,074.58

The paving program required the supply and placement of the following grades of materials:-

- 1). New Pavement - 3/4" Dense Mix
- 2). Surface Seal - 3/8" Minus
- 1). New Pavement

The following streets were paved with 3/4" Hot Mix by Forbes & Sloat Ltd.: -

<u>Street</u>	<u>Location</u>	<u>Lineal Feet</u>
Priestman, Smythe Street to approximately 600'		
East of Regent St.....		3,780
Mansfield, South end of Mansfield Street.....		104
Michener Court.....		375
Topcliffe Crescent.....		1,780
Oxford, Eglinton Street to Eglinton Street.....		1,134
Bailey Drive, Kennedy Court to Walker St.....		300
Walker, Bailey Drive to Irvine Street.....		445
Willingdon, from existing to Stanley Street.....		954
Canterbury Drive, Cambridge Crescent to Woodbridge		
Street.....		1,310
Woodbridge, from existing to Canterbury Drive.....		1,613
	TOTAL... 11,795	

11,795 lineal feet = 2.23 miles

For the above, the following materials were used:-

10,500 I.G. Primer @ 30¢ per gallon.....	\$ 1,050.00
6681.80 tons 3/4" Hot Mix Asphalt	
@ \$9.36 per ton.....	<u>\$62,541.64</u>
	TOTAL.... <u>\$63,591.64</u>

The above listed Streets were laid to a thickness of 3". The Street grading and preparatory work was done by regular City Crews. The pre-mixed material was supplied by Forbes & Sloat Ltd. from its plant situated at Nashwaak Village on Route #8. The Company charged the City of Fredericton \$9.36 per ton in place.

2). Surface Seal 3/8" Minus

The following City Streets were surface sealed under Capital Account with 3/8" Minus:-

<u>Street</u>	<u>Location</u>	<u>Lineal Feet</u>
Church, Aberdeen Street to McLeod Avenue.....	500	
Squire, Mitchell Street to Regent Street.....	1,315	
Valleyview, Hanson Street to Windsor Street.....	600	
Windsor, Kings College Road to Montgomery Street.	1,540	
Montgomery, Smythe Street to College Hill Road...	5,366	
Turnbull Court.....	350	
Forest Acres Court.....	1,500	
Woodbridge, Forest Hill Road to new pavement laid in 1970.....	1,140	
Forest Hill Road, Trans Canada Highway to Canterbury Drive and from Woodbridge Street to Residence #812		
Forest Hill.....	2,000	
Lincoln Road, From Princess Margaret Bridge under- pass to Residence #576...	5,540	
Waterloo Row, From Princess Margaret Bridge under- pass to Residence #619...	1,320	
TOTAL.....	<u>21,221</u>	

21,221 lineal feet = 4.02 miles

In addition Carleton Ward Tennis Court was surface sealed in 1970.

For the above Street and Tennis Court the following materials were used:-

2,100 Gallons tack coat @ 50¢ per gallon..	\$ 1,050.00
3,210.70 tons 3/8" Minus Asphalt	
@ \$11.00 per ton.....	<u>35,317.70</u>
TOTAL.....	<u>\$36,367.70</u>

The Company charged the City of Fredericton
\$11.00 per ton in place.

Also charged to this Account was the laying of pavement between the existing pavement and the new curb constructed on the West side of Hanwell Road in 1970.

2). Route #101

To cost of upgrading, preparing surface and installing culvert:

City Labour.....	\$ 2,907.28
Hired Machinery.....	260.76
City Machinery.....	1,931.00
9.95 tons Asphalt Seal @ \$10.00 per ton.....	99.50
60'-36" Corrugated Pipe.....	739.24
Grade stakes, paint for sign posts, signs.....	452.23
3,106.65 tons Class "C" gravel @ \$1.65 per ton.....	5,125.97
3,652.80 tons Class "A" gravel @ \$1.85 per ton.....	<u>6,757.68</u> \$18,273.66

To cost of resurfacing by Forbes and Sloat Ltd.:

1,500 gals. Tack Coat @ 50¢ per gal.....	750.00
340.35 tons 3/4" Asphalt @ \$9.36 per ton.....	3,185.68
3,819.80 tons 1/2" Asphalt @ \$9.73 per ton.....	<u>37,166.65</u> \$41,102.33

Cost of Engineering and Supervision Lump Sum.....	<u>\$ 1,000.00</u>
TOTAL COST.....	<u>\$60,375.99</u>

To 50% of above total as Province of New
Brunswick Share..... \$30,188.00

Mileage for the above projects:

Route #105 = .33
Route #101 = <u>2.28</u>
TOTAL MILEAGE... <u>2.61</u>

CAPITAL ACCOUNT DOMESTIC SEWER

Gross Expenditure and Stocked Material.	\$52,811.43
Less Inventory December 31, 1970.....	<u>\$ 5,369.01</u>
	\$47,442.42
	Credit... <u>\$37,856.69</u>
	Net Expenditure.... <u>\$ 9,585.73</u>

Included in the Net Expenditure of \$9,585.73 is the amount of \$2,097.65 holdback from jobs completed in 1969 and showing in 1970 accounts.

Hill Brothers Ltd. (Prospect Street)	Local	\$ 4,102.74
Cambridge Leaseholds Ltd.		1,617.09
(Prospect Street)		
Province of New Brunswick	Improvement	6,929.76
(Prospect Street)		
Commercial Builders Ltd.	Charges	13,752.83
(Prospect Street)		
Work done and Materials sold to Private Parties		3,429.13
Journal Vouchers (Materials paid for by Capital Account Domestic Sewer and Charged to other City Departments)		<u>8,025.14</u>
TOTAL....		<u>\$37,856.69</u>

Domestic Sewer mains were constructed at the following locations:-

Location	Lineal Feet	
	10"	8"
Prospect Street, Smythe to Regent Street (Installed by Maplewood Construction Co. completed in 1970)		
Construction 1969.....	1,325	
Construction 1970.....	1,293	
Parkside Development (Installed by Maplewood Construction Co. incomplete in 1970).....	430	463
TOTAL....	430	3,081

Total Lineal Feet Installed in 1970.....2,186

The Actual cost of installing the above listed Sewer Mains was as follows:

Location	Payment to Contractors Including Reserve for Holdbacks	City Labor and Machinery	Materials	Total
Prospect Street, Regent to Smythe Street				
Expenditure 1969	\$ 7,152.32	350.79	3,234.98	10,738.09
Expenditure 1970	11,992.18	774.24	2,900.60	15,667.02
Parkside Development Incomplete in 1970	4,253.23	395.23	1,837.02	6,485.48
TOTALS.....	\$23,397.73	\$1,520.26	\$7,972.60	\$32,890.59

The above costs include any holdback payments thus showing the actual cost of construction greater than the net expenditure. To arrive at the cost per foot of construction the cost of \$30,792.94 (\$32,890.59 minus \$2,097.65 holdback from 1969) must be used for determining same.

Total lineal feet laid (1969-1970)-----3,511

Average cost per foot = $\frac{\$30,792.94}{3,511} = \8.77

Cost by Contractor per lineal foot

Location and Contractor	Size of Pipe	
	10"	8"
*Prospect Street (Maplewood Construction Co.)		\$10.09
* Partial Rock		

All above Domestic Sewers were laid in a common trench with the water main.

A section of Montgomery Street Sewer Main was relayed by City Workmen due to damage caused by Diamond Construction (1961) Ltd. in constructing a heating line across Montgomery Street. This work was paid for by Diamond Construction (1961) Ltd. The distance was 208 lineal feet.

Materials in Stock December 31, 1970:-

313 lineal feet of 8" Terra Cotta Pipe @ .86¢ per foot... 269.18
32½ lineal feet of 12" Terra Cotta Pipe @ \$1.55 per foot. 50.38

1190½ lineal feet of 8" Asbestos Pipe @ \$1.83 per foot... 2,178.62
234 lineal feet of 10" Asbestos Pipe @ \$2.30 per foot.... 538.20
744 lineal feet of 12" Asbestos Pipe @ \$2.40 per foot.... 1,785.60

11 Manholes (Covers and Frames) @ \$49.73 each..... 547.03

TOTAL.... \$ 5,369.01

CAPITAL ACCOUNT SURFACE SEWER

Gross Expenditure and
Stocked Material..... \$99,738.96
Less Inventory Dec. 31, 1970. \$ 9,473.81

 \$90,265.15
 Credits... \$64,306.61
Net Expenditure..... \$25,958.54

Included in the above expenditure of \$25,958.54 is the amount of \$2,816.94 holdback from jobs completed in 1969 and showing in 1970 accounts.

The above credit is made up as follows:

Hill Bros. Ltd. (Prospect St.)		\$ 5,366.59
Cambridge Leaseholds Ltd.)	Local	1,896.83
(Prospect St.))	Improvement	11,251.83
Province of New Brunswick)	Charges	21,223.68
(Prospect St.))		
Commercial Builders Ltd.)		
(Prospect St.))		
Jos. A. Likely (Refund re 834"-48" Concrete Pipe		11,447.65
Work done and Materials sold to Private Parties		2,627.40
Journal Voucher (Materials paid for by Capital Account Surface Sewer and charged to other City Departments		<u>10,492.63</u>
TOTAL....		<u>\$64,306.61</u>

Under this heading Surface Sewer Mains and Laterals were constructed at the following locations:-

Location	Lineal Feet						
	10"	12"	15"	18"	24"	30"	36"
Canterbury Drive, Back of Lots facing on Canterbury Drive, Woodbridge St. to Cambridge Crescent (Installed by Fredericton Housing Ltd.) Completed in 1970. Construction 1969 Construction 1970		8	4				800 592
York Street near Oxford Street to M. H. on Back Drain Diversion (Installed by City Workmen)							227
Clark Street, MacLaren Avenue to the north side of Hillcrest Drive (Installed by City Workmen)	36	40		604	102		
Crerar Court outfall extension towards Saint John River (Installed by N.B.L.C.B.)				120			
Hanwell Road (Cross Trench) (Installed by City Workmen)	32						
Prospect Street, Smythe Street to Regent Street (Installed by Maplewood Construction Co) Complete in 1970 Construction 1969 Construction 1970	184 460	600 440	635 473	60 276	174		
Woodbridge & Leicester Streets (OFF TAKE) (Installed by City Workmen)	64						
Parkside Development (Installed by Maplewood Construction Co. incomplete in 1970	196	386		423			
MacLeod Avenue	26	318					
TOTALS	998	1792	1232	1363	276	227	1392

Total Lineal Feet installed under the above heading in 1970 was 4,827

An itemized account was kept of installing Surface Sewers at the following locations:-

Location	Payment to Contractors Including Reserve for Holdbacks	City Labor and Machinery	Materials	Total
Canterbury Drive, Back of Lots facing on Canterbury Drive, Woodbridge Street to Cambridge Crescent				
Expenditure 1969	3,430.00	153.41	14,714.05	18,297.46
Expenditure 1970	5,674.00	688.70	377.00	6,739.70
York St., near Oxford St. to M.H. on Back Drain Diversion		2,464.84	2,832.79	5,297.63
Clark Street, MacLaren Ave. to the north side of Hillcrest Drive (Relaid)		5,315.87	3,359.91	8,675.78
Crerar Court, OUTFALL EXTENSION towards Saint John River		56.03	250.80	306.83
Hanwell Road (Cross Trench)		181.80	148.99	330.79
Prospect St., Smythe St. to Regent St.				
Expenditure 1969	9,372.52	409.83	6,338.32	16,120.67
Expenditure 1970	16,327.48	1,702.25	5,525.47	23,555.20
Woodbridge and Leicester Streets (OFF TAKE)		118.86	85.87	204.73
Parkside Development (Incomplete in 1970)	7,647.28	656.58	3,349.80	11,653.66
McLeod Avenue		627.14	817.35	1,444.49
TOTALS.....	42,451.28	12,375.31	37,800.35	92,626.94

Following is the cost of laying various sizes of pipe including Catch Basins in place by Contractors and City workmen and machinery:-

Cost by Contractor - per lineal foot

Location	Concrete Pipe						
	10"	12"	15"	18"	24"	30"	36"
Canterbury Dr., Back of Lots facing on Canterbury Dr., Woodbridge St. to Cambridge Cres.							17.83
+Prospect St., Smythe St. to Regent Street	10.95	11.33	12.03	13.67	16.64		
*Parkside Drive (Incomplete in 1970)	9.70	11.06		12.53			

* Partial Rock

* Rock

Cost by City Crews and Machinery - per lineal foot

*York Street, Oxford St. to M.H. on Back Drain Diversion							23.34
Clark St., MacLaren Ave. to the north side of Hillcrest Drive	9.21	9.57		10.94	14.32		
Crerar Court, Outfall Extension towards Saint John River			2.55				
Hanwell Road (Cross Trench)	10.34						
Woodbridge & Leicester Sts. (OFF TAKE)	3.20						
McLeod Avenue	5.50	5.86					

* Also includes cost of relaying concrete sidewalk.

Included in the above expenditure under the above heading "Capital Account Surface Sewer" were the following:-

Survey Work Dayton Court by Seaboard Surveys.....\$ 700.65
Heather Terrace (complete piping of water course) 1,706.77
Waterloo Row and University Ave. (Survey costs).. 69.84

TOTAL.....\$2,477.26

Stock on Hand December 31, 1970:-

930	lineal feet of 10" Concrete Pipe @ \$1.08 per foot.....	\$ 1,004.40
958	lineal feet of 12" Concrete Pipe @ \$1.44 per foot.....	\$ 1,379.52
786	lineal feet of 15" Concrete Pipe @ \$2.09 per foot.....	\$ 1,642.74
795	lineal feet of 18" Concrete Pipe @ \$2.81 per foot.....	\$ 2,233.95
76	lineal feet of 24" Concrete pipe @ \$6.19 per foot.....	\$ 470.44
161	lineal feet of 30" Concrete pipe @ \$7.68 per foot.....	\$ 1,236.48
24	lineal feet of 36" Concrete pipe @ \$10.17 per foot.....	\$ 244.08
25	Catch Basins (Covers and Frames) @ \$49.73 each.....	\$ 1,243.25
1	Pre-cast Bottom @ \$18.95.....	\$ 18.95
		<u>TOTAL..... \$ 9,473.81</u>

CAPITAL ACCOUNT WATER

Gross Expenditure and Stocked Material	\$ 176,056.00
Less Inventory December 31, 1970.....	<u>\$ 38,715.54</u>
	\$ 137,340.46
Less Credits.....	<u>\$ 81,380.09</u>
Net Expenditure.....	<u>\$ 55,960.37</u>

Included in the net expenditure of \$55,960.37 is the amount of \$2,546.00 holdback from jobs completed in 1969 and shown in 1970 accounts.

The above credit is made up as follows:-

Hill Bros. Ltd. (Prospect St.)		\$ 7,947.35
Cambridge Leaseholds Ltd. } (Prospect Street)	Local	\$ 2,573.89
Province of New Brunswick } (Prospect Street)	Improvement	\$ 11,029.93
Commercial Builders Ltd. } (Prospect Street)	Charges	\$ 23,416.84
Canron Ltd. (Partial credit re freight on Pipe)		\$ 122.37
Work done and Materials sold to Private Parties		\$ 4,495.38
Journal Voucher (Materials paid for by Capital Account Water and sold to other City Depts.)		<u>\$ 31,794.33</u>
		<u>TOTAL.... \$ 81,380.09</u>

Water Main installations were made at the following locations:-

Location	Lineal Feet			
	12"	10"	6"	4"
Prospect Street, Smythe Street to Regent Street, Installed by Maplewood Construction Co. Completed in 1970.				
Construction 1969	1425		60	
Construction 1970	1803		86	
Parkside Development (Incomplete in 1970)		430	24	485
TOTAL.....	3228	430	170	485

Total Lineal Feet Laid in 1970 = 2828

An itemized account was kept of installing Water Mains at the following locations and expenditures were made up as follows:-

Location	Payment to Contractors Including Reserve for Holdbacks	City Labor and Machinery	Materials	Total
Prospect St., Smythe St. to Regent St, Completed in 1970				
Expenditure 1969	\$ 5,503.32	\$1,233.45	\$13,026.89	19,763.66
Expenditure 1970	8,690.18	869.89	15,517.71	25,077.78
Parkside Development (Incomplete in 1970)	4,705.09	419.40	4,832.22	9,956.71
TOTAL....	\$18,898.59	2,522.74	33,376.82	54,798.15

All above costs include any holdback payments which will appear in 1971 accounts.

The following shows the cost per foot for laying various sizes of Cast Iron Pipe by Maplewood Construction Co. and includes gates and manholes, but does not include fire hydrants:-

Location	Size of Pipe	
	12"	6"
Prospect Street, Smythe Street to Regent Street	\$13.60	\$9.36

Total Inventory as of December 31, 1970.....\$38,715.54

In addition to laying of the above listed Water Mains the following is included under this heading:-

- 1). Water - High Level Reservoir
- 2). Water Exploration - Carleton Ward
- 3). Forest Hill Reservoir - Canterbury Drive.

1). Water - High Level Reservoir

In 1968 a site on Regent Street, near the Trans Canada Highway was purchased by the City of Fredericton from Mr. Leith Draper for a Reservoir for the High Level Water System.

In 1969 Canada Gunite Co. Ltd. was awarded a contract to construct a 250,000 Gallon Reservoir on this site at a price of \$159,000.00. To date this Reservoir has been constructed and connected to the Water Main on Regent Street and on December 31, 1969 put into operation.

The expenditure on this Reservoir for 1970 amounted to \$3,177.61 and was made up as follows:-

Richards Electric (Setting up controls on Reservoir and tying in new Reservoir to System Controls).....	\$ 490.55
T. C. Chown (Receiver, transmitter, etc.)..	1,454.57
Journal Voucher (Pension contribution).....	7.05
MacLaren Atlantic (Engineering services)...	1,209.44
Journal Voucher (City machinery).....	16.00
TOTAL.....	\$ 3,177.61

Landscaping, etc. will be completed on this site in 1971.

Expenditures to date for the above construction are as follows:-

1967.....	124.10
1968.....	9,859.01
1969.....	150,462.14
1970.....	<u>3,177.61</u>

Total Expenditure (1967-1970). \$163,622.86

2). Water Exploration - Carleton Ward - 1970

A drilling program was carried out in Carleton Ward in 1970 for an additional source of water supply.

The first 6" test hole was drilled on City property off Maple Street to a depth of 500 feet. This drill hole was test pumped and was found to interfere to some extent with the supply to the Nashwaaksis well at Douglas Avenue. In an attempt to find a source that would not interfere with the Nashwaaksis supply, another test hole was drilled on City property off Noble Street. This well was drilled to a depth of 600 feet with a potential output of 45 I.G.P.M. The hole was abandoned, due to lack of potential water supply.

The next test hole was drilled on City property off Forbes Street, near MacLaren Avenue. The test well was drilled to a depth of 168 feet into a gravel formation, which appeared to have a good potential. The hole was test pumped and the samples analyzed, with the results showing the manganese content as being too high for domestic use. The hole was abandoned for this reason.

Having exhausted the potential areas of non-interference and in consideration of the recorded data on existing wells in Carleton Ward, the only alternative left for a source of supply was the Maple Street location.

The hole at the Maple Street location was reamed at 12" diameter to a depth of 300 feet. The well was test pumped at a rate of 210 I.G.P.M. for a period of 48 hours, with half-hourly readings for pumping level at this location as well as the levels in the Nashwaaksis Well at Douglas Avenue.

From the results obtained from test pumping, it would appear that this well could be pumped at the rate of 200 I.G.P.M., without seriously interfering with the Nashwaaksis supply at Douglas Avenue. This source could be developed at a higher rate of production, providing Nashwaaksis lowered their pumping unit in the Douglas Avenue Well. It is reported that their pumping unit is set at 168 feet with a static level of 92 feet. The setting is comparatively shallow for a rock wall well.

It is anticipated that the Maple Street well will be put into production in 1971.

Costs of the drilling program were as follows:

Maple Street

Drilling 500 ft. - 6" hole @ \$6.00/ft.	\$3,000.00
Setting pump & test pumping 52 hours @ \$20.00	1,040.00
Reaming 6" hole to 18" for depth of 28 ft. @ \$20.00/ft.	560.00
Installing 12" Well Casing 30 ft. @ \$12.00/ft.	360.00
Supply and install cement grout	400.00
Reaming 6" hole to 12" diam. - 300 ft. @ \$12.00	3,600.00
Installation and removal of test pump	600.00
48 hour test pumping @ \$45.00/hr.	<u>2,160.00</u>
	\$11,720.00

Noble Street

Drilling - 600 ft. - 6" hole @ \$6.00/ft.	<u>3,600.00</u>	\$ 3,600.00
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Forbes Street

Drilling 168 ft. - 6" hole @ \$6.00/ft.	1,008.00
Setting pump and test pumping - 28 hrs. @ \$20.00	<u>560.00</u>
Plus City Labor, Machinery, Materials	<u>491.62</u>

Total Cost of Water Exploration Program

Carleton Ward - 1970	<u>.....</u>	\$ 17,379.62
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3). Forest Hill Reservoir - Canterbury Drive

In 1971 tenders will be called to construct a 200,000 Gallon Reservoir to be situated on Canterbury Drive near the now existing 35,000 Gallon Reservoir.

The expenditures in 1970 amounted to \$9,555.01 and were made up as follows:

Provincial Artisans (Surveyors stakes).....	\$ 11.02
Sub Surface Surveys (Foundation Investigation).....	1,014.00
Wendall Thomas (36 yds. sand).....	43.20
L. E. Shaw (Brick).....	41.34
Cutting City Main & installing Pipe inside Street Line - Labor.....	\$494.91
City Machinery.....	204.00
Materials (Sleeve, valve, pipe, etc.).....	<u>693.56</u>
MacLaren Associates (Engineering services).....	<u>7,052.98</u>
TOTAL.....	<u>\$ 9,555.01</u>

A summary of ground water exploration and development costs from 1953 to December 31, 1970 is as follows:

Cost of Well Water Supply to Date (South Side)

1953 Test Hole Program.....	\$ 7,500.00
1954 Supply Line and partial development of #1 Well	42,271.16
1955 Develop, House and Connecting of #1 Well.....	22,883.05
1956 Remote Control and Landscaping.....	3,048.33
1957 Develop, House and Connecting #2 Well.....	44,217.72
1958 Holdbacks, etc.....	7,641.01
1958-1959 Test Hole Program.....	24,294.40
1960-1961 Develop, House and Connecting #3 Well....	46,554.32
1961 Develop, House and Connecting #4 Well.....	42,834.45
1962 Remote Control and Landscaping #4 Well.....	1,011.41
1965 Test Hole Program (Water Exploration).....	13,597.08
1966-1967 Develop, House and Connecting Cameron Court Well.....	26,642.17
1966 Test Hole Program (Continuation of 1965 Program).....	5,143.07
1966-1967 Drilling and Testing Well, St. Anne's Pt., Woodstock Road, together with a report on future supply.....	6,788.70
1968 Developing and Testing Well #5 St. Anne's Point, Woodstock Road.....	43,233.90
1969 Housing, Installing Pumping Equipment, connecting #5 Well, St. Anne's Point, Woodstock Road to City supply line in Wilmot Park and Landscaping.....	<u>26,272.48</u>
TOTAL.....	<u>\$363,933.25</u>

Capacity available in 1970 - - - 3,300 I.G.P.M.

Present average demand - - - - - 1,501 I.G.P.M.

Maximum demand - - - - - 2,080 I.G.P.M.

CAPITAL ACCOUNT GRAVEL ROADS

Gross Expenditure.....\$103,414.93
 Credits.....76,299.29

Net Expenditure.....\$ 27,115.64

The above credits are made up as follows:-

Hill Bros. Ltd. (Prospect Street)		\$13,559.97	
Cambridge Leaseholds Ltd.	Local		
(Prospect Street).....		4,340.13	
Province of New Brunswick	Improvement		
(Prospect Street).....		19,135.87	
Commercial Builders Ltd.	Charges		
(Prospect Street).....		38,789.91	
Journal Voucher (Materials).....		<u>473.41</u>	
		TOTAL.....	<u>\$76,299.29</u>

Included in the above expenditures are:-

- 1). Grading and Gravelling Curbed Streets
- 2). Gravel Road Construction

1). Grading and Gravelling Curbed Streets

The list of Streets under this heading will be found under "Capital Account Curb and Gutter", which is contained in the body of this Report on Page 25. The expenditure for gravelling Curb Streets amounted to \$14,418.25.

2). Gravel Road Construction

The cost of constructing and gravelling the following Streets under this heading was as follows:-

Location	Lineal Feet	Expenditure
McLeod Avenue, Church Street to Saint John Street	614	\$ 4,447.10
Prospect St., Smythe St. to Regent Street	3178	
Expenditure 1969		219.03
Expenditure 1970		75,585.75
Parkside Development (Incomplete in 1970)	853	
Expenditure (1970)		168.89
TOTAL	4685	\$80,420.77

In addition two new Streets were constructed this year in the Industrial Area and will appear later in the Report.

Total Mileage for new Street Construction for
1970 = 1.32 miles

NOTE:-

Not included in City Mileage for Roads and Streets were the following:-

Doone Street) Carleton Ward
Wilson Row)
Parkside Development

Included under the heading Capital Account Gravel Roads was, the Armour Coating of Prospect Street by Flintkote Company at a cost of \$15,571.40. Following were the materials used:-

3/4" Chips 703.20 tons @ \$5.50 per ton.....	\$ 3,867.60
1/2" Chips 214.25 tons @ \$6.00 per ton.....	1,285.50
3/8" Chips 218.20 tons @ \$6.50 per ton.....	1,418.30
Colas RS-1K 25,000 gals, @ .36 per gal.....	<u>9,000.00</u>

TOTAL.....\$15,571.40

The cost was recovered under the Local Improvement charges.

Also included under the above heading were the following:-

Waggoner's Lane (charge for Concrete Pipe omitted in 1969 accounts).....	\$ 185.32
Priestman Street (Regent to College Hill Road, installing culvert).....	3,497.10
Dunn's Road (Surveying).....	<u>257.56</u>
TOTAL.....	\$ 3,939.98

CAPITAL ACCOUNT FOREST HILL ACCESS ROAD

Expenditure.....\$9,722.61

The above expenditure was for rip rapping and bank protection along the Railway Tracks and along Beaverbrook Street from University Avenue to Forest Hill Access Road.

Labor.....	\$6,455.03
Hired Trucks & Machinery.....	30.25
City Machinery.....	2,686.25
Journal Voucher (Sand, dynamite, detonators).....	227.55
Journal Voucher (Pension contribution)	<u>323.53</u>
TOTAL.....	<u>\$9,722.61</u>

CAPITAL ACCOUNT INDUSTRIAL DEVELOPMENT-A.D.B.

Gross Expenditure.....	\$108,331.14
Credits (Material).....	<u>2,471.02</u>
	\$105,860.12
Less Credit Province of New Brunswick	<u>90,000.00</u>
Net Expenditure.....	<u>\$ 15,860.12</u>

The above credits of \$92,471.02 were made up as follows:

J. D. Irvine (Sale of 23.97 cords pulpwood).....	\$ 466.54
J. Nicholsen (Sale of Hardwood).....	35.00
Theodore Howe (Sale of Hardwood).....	49.00
Province of New Brunswick (Interim claim).....	90,000.00
Journal Voucher (Materials).....	<u>1,815.48</u>
TOTAL.....	<u>\$92,471.02</u>

In 1970 two new Roads were constructed in the Industrial Area. A portion of Flemming Road (587') and a Road off Wilsey Road (2600') were constructed, water and sewer installed, Roads partially gravelled and investigation for the foundation to construct a Reservoir in 1971.

Following is the cost for the above items:-

Installing Domestic Sewer Mains.....	\$ 18,319.80
Installing Water Mains.....	46,257.38
Installing Storm Sewer Mains.....	6,766.82
Partial Road construction & Gravelling.....	32,002.97
Reservoir Site.....	<u>2,513.15</u>
TOTAL.....	<u>\$105,860.12</u>

The expenditure of \$2,513.15 for the construction of a Reservoir on Flemming Road in 1971 was as follows:

Sub Surface Surveying (Foundation Investigation)....	\$ 1,252.62
MacLaren Atlantic Associates (Engineering & Design) ..	1,138.32
City Labor.....	110.53
City Machinery.....	8.00
Pension Contribution.....	3.68
TOTAL...\$ 2,513.15	

Following is the cost per foot of installing Domestic Sewer, Surface Sewer and Water on the above mentioned Roads:-

Domestic Sewer	(1882' - 10" A. C. Pipe @ \$6.15	6.31
	(1371' - 8" A. C. Pipe @ \$5.84	
Surface Sewer	{ 623' - 12" Concrete Pipe @ \$6.74	
	{ 348' - 18" Concrete Pipe @ \$8.61	
Water	138' - 6" Cast Iron Pipe @ \$9.40	
	800' - 8" Cast Iron Pipe @ \$10.83	
	926' - 10" Cast Iron Pipe @ \$12.88	
	1791' - 12" Cast Iron Pipe @ \$14.38	

John Kilburn & Sons Ltd. were awarded the contract to construct the above.

CAPITAL INDUSTRIAL DEVELOPMENT WILSEY ROAD

Gross Expenditure.....\$4,656.32
Credit.....61.53

Net Expenditure.....\$4,594.79

The above credit was for 4 - 4" Elbows returned to Canron Ltd.

The above expenditure was for modification to the Sewer Lift Station Wilsey Road, purchase and installation of Sump Pumps and the relocating of the main Pump and is made up as follows:-

H. S. Gill (Plywood).....	\$ 27.83
Lytle Engineering Spec. Ltd. (Water operated sump pump).....	62.00
Canadian Pacific Express (Cartage on Pump).....	3.75
Atlas Building Supplies (Styrofoam, nails, etc.).....	77.99
Canron Ltd. (8-4" flanged elbows, 8 companion flanges).....	197.09
J. L. Simms (Plywood, plastic cement).....	15.40
Ashfield Construction Co. (Holdbacks from 1969) ..	1,279.45
E. W. Clowater (Galvanized Hatch Cover).....	41.00
Fredericton Housing Ltd. (Construction of pre-fab roof).....	323.51
Horsnell's Ltd. (Machining fittings, building p pump frame, etc.)..	211.04
J. W. Bird & Co. Ltd. (Anchor cement, sump pump & fittings, etc.)..	87.60
Richards Electric (Installing cord on sump pump, checking pump switch, supplying & installing pump, cleaning motor & connecting lift pump and controls).....	1,475.92
Journal Voucher (Pension contribution).....	31.10
Journal Voucher (City Machinery).....	129.00
Journal Voucher (Materials).....	60.51
City Labor.....	633.13
TOTAL....	\$ 4,656.32

CAPITAL ACCOUNT URBAN RENEWAL

Expenditure.....\$7,150.00

The above expenditure of \$7,150.00 was for surveying King Street by Seaboard Surveys Ltd.

CAPITAL ACCOUNT MAINTENANCE DEPOT

In 1968 the City purchased land from Crown Assets Disposal Corporation on the east side of Maryland Hill Road, beyond the Trans Canada Highway. Due to experiments being conducted on the property by the University of New Brunswick, the City of Fredericton traded this section of land for a section of land of the University of New Brunswick, on the west side of Maryland Hill Road beyond the Trans Canada Highway.

In 1969 the City of Fredericton awarded a contract to Maritime Engineering Ltd. for the construction of a maintenance depot on this property at a cost of \$189,630.00. This project was completed in 1970.

Expenditure 1970.....\$128,972.36

The above expenditure is made up as follows:

Labor.....	\$ 2,226.30
Hired Trucks & Machinery....	78.00
City Machinery.....	4,004.50
Materials.....	<u>122,663.56</u>
TOTAL...\$128,972.36	

The material charge of \$122,663.56 is made up as follows:

A.D.I. (Design, Field & Office Supervision).....	\$ 2,083.50
Maritime Engineering Ltd.....	107,509.04
Minister of Finance (S. S. & E. Tax Audit).....	.68 ✓
Merrithew Refrigeration Ltd. (Used frig & stove)...	200.00
Atlantic Bridge Co. (Shelves, benches, pan rack)...	842.85 ✓
Provincial Artisans (Stakes).....	7.34 ✓
L. E. Shaw (Brick).....	8.42 ✓
Wendall Thomas (Sand).....	31.20 ✓
Forbes & Sloat (Class "A" Gravel).....	11,254.57 ✓
Journal Voucher (Pension contributions).....	109.49
Journal Voucher (Cement, brick, concrete pipe)....	485.25 ✓
Scott Concrete Works (Precast Curbs).....	<u>131.22</u>
TOTAL....\$122,663.56	

Expenditures to date:

1968-----	\$ 14,144.93
1969-----	\$ 96,458.58
1970-----	<u>\$128,972.36</u>

TOTAL (1968-1970)....\$239,575.87

The Roads & Streets Dept. occupied the new Maintenance Depot - November 13, 1970.

CAPITAL ACCOUNT TRAFFIC LIGHTS

In 1970 Stan Cassidy Ltd. was awarded a contract to install traffic lights at various street intersections and to synchronize the traffic lights in the Central Business District.

Expenditure to Dec. 31, 1970-\$94,163.96

CAPITAL ACCOUNT FIRE AND POLICE STATION

In 1970 Diamond Construction (1961) Ltd. was awarded a contract to construct a building to house the Police and Fire Departments. This building will be ready for occupancy early in 1971..

Expenditure to Dec. 31, 1970-\$339,870.84

LOCAL IMPROVEMENT 1970

The following summary of Local Improvement Projects undertaken or continued from 1969, show the actual cost of construction (including holdback payments) which was paid by the subdivider.

Location	Service	Cost	No. of Lots
Prospect St. - Smythe to Regent	Water	\$ 44,968.01	C O M
Hill Bros., Cambridge Leaseholds	Dom. Sewer	26,402.42	M E R
Commercial Builders	Storm Sewer	39,738.93	C I
Province of New Brunswick	Gravel Road	75,825.88	A L
	Sidewalk	<u>7,944.88</u>	
TOTAL.....		\$194,880.12	

McLeod Ave.

Miles Tire Ltd.	<u>Storm Sewer</u>	\$ 1,444.49	I N
City of Fredericton	<u>Gravel Road</u>	<u>4,447.10</u>	D U
TOTAL.....		\$ 5,891.59	S T R I A L

Parkside Dev. (Off Smythe St.)	under construction (Housing Project)	24
Mar-Sands (Off Dunn Road)	Scheduled-1971 (Apartment Project)	3

PUBLIC WORKS

Gross Expenditure.....	\$ 54,922.65
Credits.....	<u>9,008.70</u>
Net Expenditure.....	\$ 45,913.95
1970 Appropriation.....	<u>47,400.00</u>
CREDIT...\$	<u>1,486.05</u>

The credits of \$9,008.70 are made up as follows:

New Brunswick Telepone Co. (Long distance calls)....	\$ 11.49
New Brunswick Dept. Public Works (Removing 3 trees) ..	248.42
R. C. M. P. (Removal of stump).....	6.18
John Gibson & Son Ltd. (Lime).....	68.88
Preston MacNeill (Lime).....	14.50
Journal Voucher (use of chain saw).....	180.00
Journal Voucher (Oil).....	16.35
Journal Voucher (Mobile Radios).....	6,060.66
Journal Voucher (Use of Ford Tractor).....	1,995.00
Journal Voucher (Lime).....	173.64
Journal Voucher (500' chain link fence).....	220.00
Harold Hanson (Remove stump).....	<u>13.58</u>
TOTAL...\$	<u>9,008.70</u>

The labor, hired trucks and city machinery charges under Public Works expenditure ~~was~~ incurred as follows:

ITEM	LABOR	Hired Trucks	CITY MACHINERY
Trees	\$12,510.94	\$ 2,259.94	\$ 5,357.00
Back Drain Diversion	272.73		16.00
Back Drain	232.65		34.00
Survey	380.98		52.00
Surface Sewer	183.91		130.00
Unforseen	4,908.23	160.21	711.00
Casual's Vacation Pay	4,689.99		
	<u>\$23,179.43</u>	<u>\$2,420.15</u>	<u>\$6,300.00</u>

TREES:

Expenditure.....\$29,706.40

The above expenditure of \$29,706.40 is made up as follows:

Labor.....	\$12,510.94
Hired Trucks.....	2,259.44
City Machinery.....	5,357.00
Materials.....	8,978.52
Mr. Charles Smith (Honorarium for services rendered)....	<u>600.00</u>
TOTAL...\$	<u>29,706.40</u>

In 1970, 164 trees were removed upon the recommendation of the Fredericton Tree Commission. The condemned 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 1970:-

<u>SPECIES</u>	<u>NUMBER REMOVED</u>
Elm	127
Maple	22
Poplar	7
Spruce	2
Pine	1
Ash	1
Birch	1
Chinese Elm	1
Willow	2
Total All Species =	<u>164</u>

The procedure followed at the present time is as follows:

The trees are condemned by four members of the Fredericton Tree Commission. The list, signed by the four members of the Commission is then forwarded to the office of the City Engineer..

Trees on private property which are condemned as possible breeding places for the Dutch Elm Disease, are also removed by City crews. Following is a list of trees which were confirmed as Dutch Elm Disease trees:

<u>LOCATION</u>	<u>NUMBER OF TREES</u>
606 Kitchen Street.....	1
48 Lansdowne Street.....	1
Corner Grey & Winslow Streets.....	1
161 Winslow Street.....	1
University Avenue.....	3
837 Charlotte Street.....	1
428 Forest Hill Road.....	1
Dunn's Crossing Road.....	2
Wilsey Road (Old Dump Site).....	1
278 Lincoln Road.....	1
284 Waterloo Row.....	1
Waterloo Row (Green).....	1
283 George Street.....	1
George Street (Fredericton High School).....	1
623 George Street.....	1
336 Brunswick Street.....	1
Corner Brunswick & Westmorland Sts..	1
304 York Street.....	1
305 York Street.....	1
144 Saunders Street.....	1
179 Saunders Street.....	1
326 Saunders Street.....	1
179 Odell Avenue.....	1
Wilmot Park (near Swings).....	1
Odell Park.....	2
Woodstock Road (opposite Trites Flower Shop).....	1

Fwd... 30

<u>LOCATION</u>	<u>NUMBER OF TREES</u>
Carried Forward	30
541 Woodstock Road.....	1
550 Woodstock Road.....	1
Shaws Brick Yard (Gulley).....	1
Hermitage Cemetery.....	2
Rookwood Avenue (along C.N.R.).....	1
188 Inglewood Drive.....	1
Victoria Public Hospital (Rear Parking Area).....	3
Corner St. Mary's & Dedham Streets..	1
99 Smith Street.....	1
Hayes Street.....	2
364 Union Street.....	2
Union Street (Government Store)....	1
Union Street (Devon Shopping Plaza)..	1
Corner Prince & Henry Streets.....	1

TOTAL REMOVED = 49

Following is a list of trees removed from 1961 to 1970 with Dutch Elm Disease:-

1961-----	2
1962-----	2
1963-----	1
1964-----	14
1965-----	8
1966-----	12
1967-----	18
1968-----	33
1969-----	30
1970-----	49

TOTAL ••• 169

Permission for the removal of trees on private property, as well as a statement to the effect that no claim for damages will be filed by the property owners, are obtained before proceeding with this work.

The system is working very well, with a minimum of delay, after the tree has been condemned.

A considerable number of trees were pruned (1566) during the year as well as the usual planting program.

Spraying of Mountain Ash at various locations in the City of Fredericton was carried out in 1970 to keep down the defoliation of these trees due to Beetles.

Trees were planted at the following locations:-

<u>LOCATION</u>	<u>NUMBER OF TREES</u>
Smythe Street.....	34
Prospect Street.....	14
Willingdon Street.....	16
Gregg Court.....	7
Crocket Street.....	5
McNair Drive.....	30
Limerick Road.....	11
Hearne Street.....	7
Richards Court.....	8
Canterbury Drive.....	15
Topcliffe Crescent.....	47
Bailey Drive.....	3
Walker Street.....	1
York Street.....	1
Montgomery Street.....	5
Kings College Road.....	8
Lynnhaven Street.....	1
Victoria Street.....	1
Parkhurst Drive.....	3
Ashland Court.....	1
Harewood Court.....	1
Irvine Street.....	3
Union Street.....	1
<hr/>	
TOTAL =	<u>223</u>

104 Trees were planted at various locations to replace losses due to dry weather and vandalism.

Under the above heading the following trees were purchased in 1970 from Lansdowne Nursery:-

78 Norway Maples 8'-10' @ \$5.50 each.....	\$ 429.00
25 Norway Maples 10'-12' @ \$6.50 each.....	162.50
50 Crimson King Maples 8' @ \$6.25 each.....	312.50
11 Crimson King Maples 9' @ \$6.50 each.....	71.50
50 Schwedler Maples 8' @ \$6.25 each.....	312.50
4 Schwedler Maples 8' @ \$6.50 each.....	26.00
50 Tilia Cordata 8' @ \$5.25 each.....	262.50
50 Tilia Pallida 8' @ \$5.00 each.....	250.00
22 Ash 8' @ \$5.25 each.....	115.50
4 Red Oak 8' @ \$6.50 each.....	<u>26.00</u>
<hr/>	
	\$1,968.00

LESS CREDIT:

11 Tilia Pallida 8' @ \$5.25 each...	\$ 57.75
6 Tilia Cordata 8' @ \$5.00 each....	<u>30.00</u> 87.75
TOTAL.....	<u>\$1,880.25</u>

In 1965 the City of Fredericton purchased a Power-R-Stumper at a cost of \$5,746.16.

With the addition of this machine, 109 stumps were removed at various locations in the City at an expenditure of \$1,736.31 and was made up as follows:

Labor.....	\$ 815.56
Machinery charges.....	820.00
Materials.....	<u>100.75</u>
TOTAL....\$1,736.31	

In 1967 Mr. David Urquhart was appointed Superintendent of Parks and Trees, responsible to the City Engineer. With this addition to staff, this branch is more efficiently operated, with beneficial results in the beautification of the Public Parks and Recreational Areas of the City as well as improved tree care.

BACK DRAIN DIVERSION:-

Expenditure-----\$288.73

The above expenditure is made up as follows:-

Labor.....	\$272.73
City Machinery.....	<u>16.00</u>
TOTAL...\$288.73	

The above expenditure was for general maintenance.

BACK DRAIN:-

Expenditure-----\$266.65

The above expenditure is made up as follows:

Labor.....	\$232.65
City Machinery.....	<u>34.00</u>
TOTAL...\$266.65	

This expenditure was for general maintenance to the Back Drain.

SURVEYING:-

Under this heading expenditures amounted to \$877.17 made up as follows:-

Labor.....	\$380.98
City Machinery.....	52.00
Materials.....	<u>444.19</u>
TOTAL..\$877.17	

The labor charge of \$380.98 was for helpers with the Engineers during the course of their work in 1970, on other than programmed projects.

The material cost of \$444.19 was made up as follows:

Canadian National Railway (Transite to Kelvin Hughes).....	3.85
Canadian Pacific Express (Transite from Kelvin Hughes).....	3.85
Kelvin Hughes (Repair to Transite).....	187.50
E. M. Young (Spray paint, cord, nails, crayons, nails, etc.).....	59.11
Paul Burden (2 Frisco Levelling Rods).....	133.92
J. L. Simms (Spray enamel).....	5.96
Trainor Surveys Ltd. (Replacing pins Bailey Dr.)	<u>50.00</u>
TOTAL...\$444.19	

SURFACE SEWER: -

Expenditure-----\$313.91

The above expenditure is made up as follows:

Labor.....	\$183.91
City Machinery.....	<u>130.00</u>
TOTAL...\$313.91	

For the above amount Surface Sewers were extended to take care of the overflows from private property to City Streets.

UNFORSEEN ACCOUNT - LABOR AND HIRED TRUCKS:

Removal of Christmas trees from City Streets.....	\$ 842.19
Marking Domestic Sewer Outlet, St. John River.....	40.96
Benches, (Painting and Repairs).....	435.64
Spraying Swamp Areas.....	14.32
Armistice Stand.....	35.09
Sir James Dunn Fountain.....	72.17
Taking of Inventory 1970.....	165.94
Greens (Cutting, raking, seeding, topsoiling, etc.)	<u>3,423.09</u>
Signs.....	<u>39.04</u>
TOTAL...\$5,068.44	

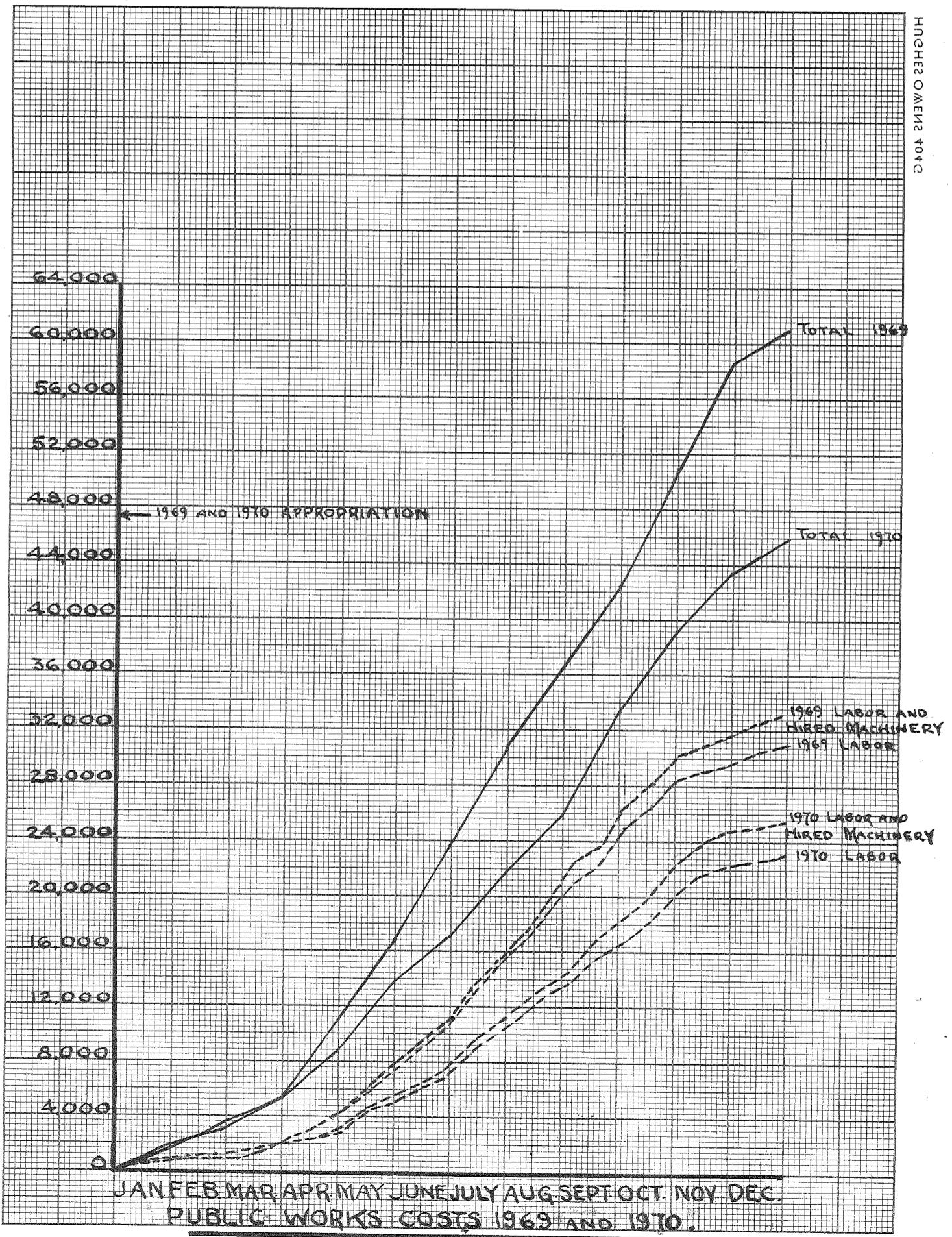
The total expenditure amounted to \$9,771.10 and was made up as follows:

Labor.....	\$4,908.23
Hired Trucks.....	160.21
City Machinery.....	711.00
Other Materials.....	<u>3,991.66</u>
TOTAL...\$9,771.10	

CASUALS' VACATION PAY:-

The total amount under this heading amounted to \$4,689.99 for casual labor vacation pay.

HUGHES OWNERS 404C



ODELL PARK

Gross Expenditure-----\$14,655.28
Credits-----112.97

Net Expenditure-----\$14,542.31

Included in the above are the following:-

- 1). Odell Park Maintenance
2). Odell Park Development

1). ODELL PARK MAINTENANCE

Gross Expenditure.....\$ 8,567.53
Credit.....107.21

Net Expenditure.....\$ 8,460.32

The above credit is made up as follows:-

Payment of Long Distance calls (J. Doherty).....	\$ 9.45
Rental on Massey Ferguson Tractor (Recreation Dept.).....	84.00
Allen, Bennett & Dunphy (Repairs to broken guard post).....	<u>13.76</u>
TOTAL...\$107.21	

The Gross Expenditure of \$8,567.53 is made up as follows:

Auto Machinery & General Supply Co. (Belts).....	\$ 17.65
John Gibson & Son Ltd. (Feed, seed, bulbs, etc.)....	154.37
Millar Motors (Repairs to tractor & chain saw).....	8.07
Workmen's Compensation.....	125.00
Chippin Ltd. (1-21" Lawn mower).....	106.51
E. M. Young (Screening, chain, hooks).....	7.67
Maritime Accessories Ltd. (Fittings for tractor, trailer hitch).....	2.19
J. C. Risteen Co. (Paint).....	8.66
John L. Simms (Sandpaper, paint, turpentine).....	14.92
U. S. Borax & Chemical Corp. (Grass chemical).....	36.50
Royal Mills Ltd. (Dairy ration).....	3.55
Harry Smith (Topsoil).....	22.72
N. B. Telephone Co.....	64.51
Minister of Finance (vehicle registration, audit) ..	3.38
City of Fredericton (Water and Sewer rates).....	40.00
Bud Wolfe (Gas).....	21.90
Scott's Nursery (Bedding Plants).....	108.55
Battery & Electric (Spark plugs).....	4.58
J. W. Bird & Co. (pipe and couplings).....	7.96
Miles Tire (Repairing tire).....	6.74
Frank N. Blaney (Parts for mower).....	2.29
Hawkins Equipment Rental (Parts for mower).....	4.88
J. G. Savage (Keys).....	1.30
Journal Voucher (Machinery).....	302.50
Journal Voucher (Pension contribution).....	325.43
Journal Voucher (Cement, sand, lime, posts).....	46.36
Journal Voucher (Diesel fuel, gas, oil).....	36.12
Journal Voucher (City Labor).....	<u>7,083.22</u>

TOTAL....\$8,567.53

2). ODELL PARK DEVELOPMENT

Gross Expenditure-----\$6,087.75
 Credit----- 5.76

Net Expenditure-----\$6,081.99

The above credit return of Dynamite.

The gross expenditure amounting to \$6,087.75 is made up as follows:-

Provincial Artisans (Stakes).....	\$ 14.69
E. M. Young (Fence Staples).....	4.05
Flintkote Co. (Sealing road to ball park)....	763.76
Scholten Hardware (Hinges).....	1.59
Scott Concrete (Curb pieces).....	131.22
J. W. Bird & Co. (Fencing, pipe, chicken netting, etc.).....	1,657.80
Neill's Retail Ltd. (Fencing staples).....	31.19
Wendall Thomas (Gravel).....	12.25
J. L. Simms (Underlay.....	27.84
H. S. Gill (Lumber).....	273.03
Atlas Building Supplies (Nails, plywood).....	107.04
East Coast Distributors (Dynamite).....	38.40
Journal Voucher (Machinery).....	802.00
Journal Voucher (Pension).....	77.27
Journal Voucher (Diesel fuel).....	1.62
Journal Voucher (Calcium, sand, cement, rock dust, etc.).....	199.98
Journal Voucher (City Labor).....	<u>1,944.02</u>
 TOTAL....\$6,087.75	

Under this heading "Odell Park", trees were cut and pruned where necessary, flowers planted, underbrush cleared, trails constructed and the Road from Smythe Street to the Athletic Field was Chip Sealed.

In addition animals namely, ducks, rabbits, peacocks and deer were added to the Park making Odell Park a picturesque attraction.

CARLETON PARK

Expenditure-----\$4,496.06

The above expenditure is made up as follows:-

Bud Wolfe (Gas).....	\$ 10.10
Harry Smith (Topsoil).....	11.36
Crane Supply (Faucet).....	11.89
Scott's Nursery (Bedding Plants, fertilizer) ..	99.42
Marathon Realty Co. (Yearly park rental).....	700.00
John Gibson & Son Ltd. (Fertilizer, tulip bulbs).....	78.96
E. M. Young Ltd. (Pole axe and twine).....	5.99
J. W. Bird & Co. (Grass shears, wrench, linsolene)	24.44
Journal Voucher (Pension).....	158.66
Hawkins Equipment Rentals (Repair to mower)...	12.60

Journal Voucher (Oil).....	\$ 3.60
Journal Voucher (Rock dust, lime, roses).....	51.21
Journal Voucher (Machinery).....	501.00
Journal Voucher (City Labor).....	<u>2,826.83</u>
TOTAL.....	\$4,496.06

WILMOT PARK

Expenditure-----\$7,296.16

The expenditure of \$7,296.16 is made up as follows:-

Materials used on lawns and flower beds.....	\$ 244.96
Supplies and repairs to lawn mowers.....	71.65
Materials and labor charges expended on Caretaker's House).....	515.59
Lighting (Wilmot Park 14-4' Fluorescent Lamps)....	840.00
Water and Sewer Rates.....	48.00
Journal Voucher (Water used in 1970).....	30.00
Journal Voucher (Sewer rental 1970).....	12.00
Journal Voucher (City Machinery).....	721.00
Journal Voucher (Pension contribution).....	199.05
Journal Voucher (Lime).....	94.25
Journal Voucher (City Labor and Hired Machinery)..	4,377.15
Hawkins Equipment & Rental (1 Lawn Boy Mower).....	<u>142.51</u>

TOTAL.. \$7,296.16

DEVELOPMENT OF PARK AREAS

Gross Expenditure-----	\$4,928.27
Credits-----	<u>267.50</u>
Net Expenditure-----	<u>\$4,660.77</u>

The above credits are made up as follows:

H. S. Gill (Payment for logs).....	\$ 54.60
Journal Voucher (Cedar Posts).....	<u>212.90</u>
TOTAL..	<u>\$267.50</u>

For the above expenditure the following Park Areas were fenced, Dover Crescent Park Area, pathway from Topcliffe Crescent and Woodbridge Street and from Chelsea Court to Leicester Street. Posts were erected and crusher dust applied to the walks. In addition the pathway between Massey Street and York Street was improved. Topsoil was added to all Park Areas where necessary.

RECREATION:

Expenditure-----\$4,823.87

The above expenditure does not include all playground expenditures, but only those which appear on departmental payrolls or costs of materials ordered through the office of the City Engineer. The salaries of the Recreation Director and Playground Supervisors hired for the summer months are not in the above costs, nor does the cost of equipment on the playgrounds appear here.

The expenditure of \$4,823.87 is made up as follows:

J. W. Bird & Co. Ltd. (Fencing).....	\$ 221.40
J. L. Simms & Sons (Paint).....	14.64
E. M. Young (Twine).....	.92
Journal Voucher (City Machinery).....	540.50
Journal Voucher (Pension contribution).....	47.74
Journal Voucher (Gas, Oil).....	244.35
Journal Voucher (Coliseum Lights).....	330.00
Journal Voucher (Rock dust, cedar posts, fencing, sand).....	724.50
Journal Voucher (Water-Queen Square Pool).....	500.00
Journal Voucher (Water-Henry Park).....	500.00
Journal Voucher (Wading Pools).....	500.00
Journal Voucher (City labor & hired machinery)...	<u>1,199.82</u>
TOTAL.....	<u>\$4,823.87</u>

CITY HALL

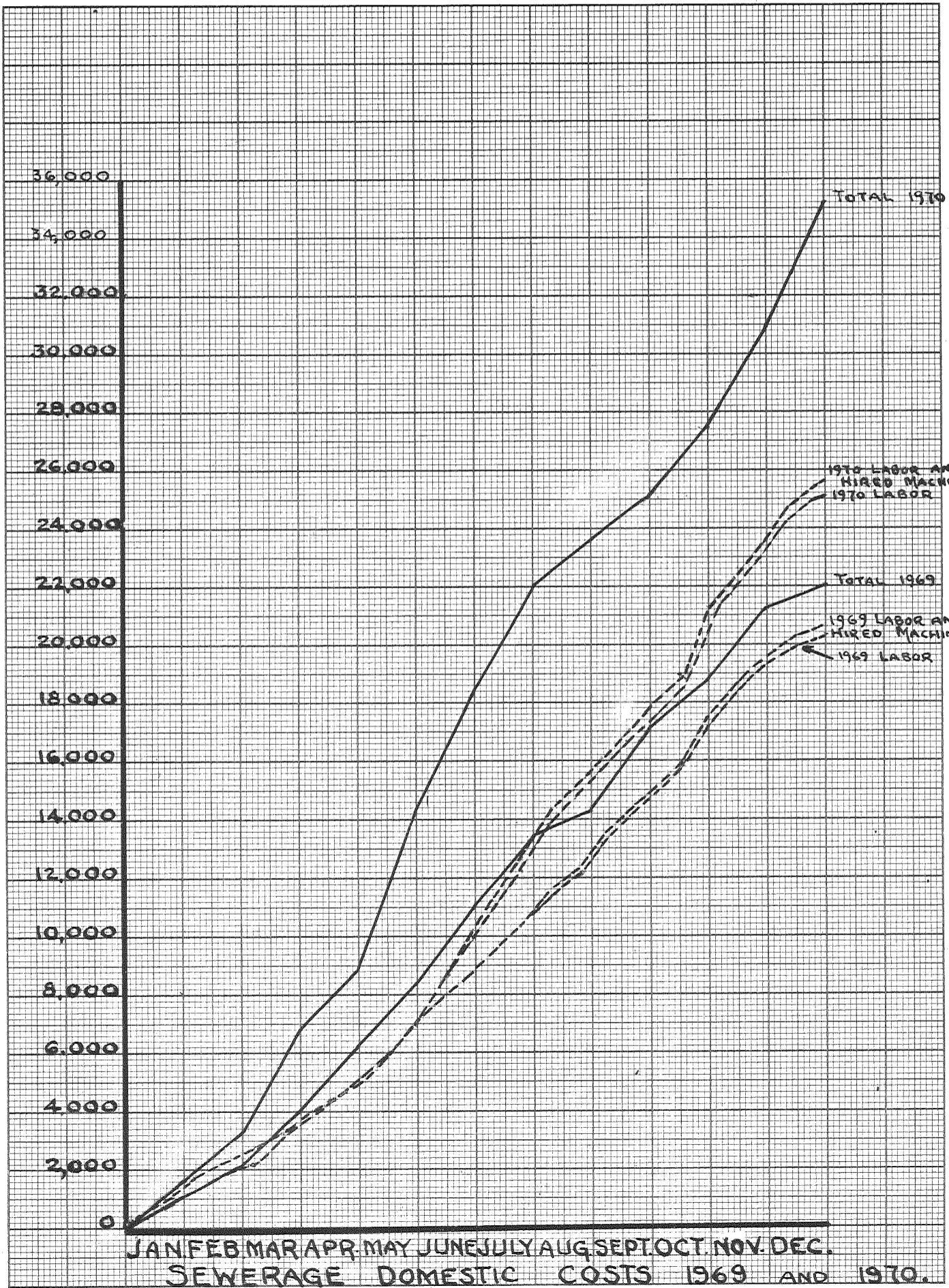
Expenditure-----\$393.47

The above is, of course, only the expenditure for the City Hall made through the office of the City Engineer and is not the total expenditure made on City Hall.

The expenditure of \$393.47 is made up as follows:

John Gibson & Son (25 tulip bulbs).....	\$ 2.15
Journal Voucher (City machinery).....	16.00
Journal Voucher (Pension contribution).....	14.69
Journal Voucher (City Labor).....	<u>360.63</u>
TOTAL..	<u>\$393.47</u>

HUGHES OWENS 4046



SURFACE SEWERS

Gross Expenditure-----	\$22,490.92
Credits-----	<u>819.20</u>
Net Expenditure-----	<u>\$21,671.72</u>

The above credits are made up as follows:-

Forest Hill Cemetery (Digging graves).....	\$ 124.33
New Brunswick Department Public Works (Thawing drain).....	120.18
Irving Oil Ltd. (Installing storm drain).....	428.96
Miles Tire (Installing storm sewer).....	98.83
Leonard Stewart (Installing drain).....	<u>46.90</u>
TOTAL.....\$ 819.20	

The Surface Sewers in the City were flushed where necessary and all Catch Basins were cleaned and repaired during the year and repairs were made to any breaks that occurred or extensions required for the sewer outfalls, amounting to \$21,671.72, made up as follows:

Labor.....	\$14,203.36
Hired Trucks & Machinery.	592.00
City Machinery charges...	4,756.00
Materials.....	<u>2,120.36</u>
TOTAL.....\$21,671.72	

There are in Fredericton 53.10 miles of Surface Sewer, consisting of 6.43 miles on the north side of the Saint John River and 46.67 miles on the south side of the Saint John River.

DOMESTIC SEWER

Labor.....	\$25,145.75
Hired Trucks & Machinery.	506.17
City Machinery Cost.....	10,016.50
Material Cost.....	<u>18,810.86</u>

Gross Expenditure.....\$54,479.28

Credits.....19,238.63

Net Expenditure.....\$35,240.65

The credit of \$19,238.63 is made up as follows:-

Material, labor and supplies for house connections...	\$18,543.56
Work done for private parties.....	524.87
Battery & Electric (Credit on Invoice).....	2.28
Journal Voucher (4' - 8 A. C. Pipe).....	5.92
Journal Voucher (Sewer Rental-Wilmot Park 1970).....	12.00
Journal Voucher (Sewer Rental-Fire Dept. 1970).....	<u>150.00</u>

TOTAL.....\$19,238.63

The expenditures on the Old Burial Ground were as follows:-

Bud Wolfe's Service Station (Gas).....	\$ 28.01
Hagerman's Ltd. (Pipe).....	3.68
J. L. Simms & Sons (Paint).....	6.48
Atlas Building Supplies (Putty, moulding).....	3.23
J. W. Bird & Co. Ltd. (Plastic cement, clamps).....	23.48
E. M. Young (Axe).....	4.27
Hawkins Equipment and Rentals (Repairs to mower) ..	3.52
Millar Motors (Repairs to mower).....	5.59
Journal Voucher (6 Fluorescent lamps).....	441.25
Journal Voucher (City Machinery).....	97.00
Journal Voucher (Pension contributions).....	47.63
Journal Voucher (Rock dust, lime).....	19.71
Journal Voucher (oil).....	3.40
Journal Voucher (City Labor).....	2,193.81
Journal Voucher (Hired Machinery).....	<u>44.00</u>

TOTAL.....\$ 2,925.06

FIRE DEPARTMENT

Expenditure-----\$78,841.17

Journal Voucher (3068.20 gals. gasoline).....	\$ 705.70
Journal Voucher (Hydrants and Sprinklers).....	74,440.00
Journal Voucher (Pension contribution).....	15.22
Journal Voucher (Mobile Radios).....	2,764.28
Journal Voucher (City Machinery).....	70.00
Journal Voucher (City Labor).....	371.47
Journal Voucher (Hired Trucks and Machinery).....	24.50
Journal Voucher (Sewer Rental 1970).....	150.00
Journal Voucher (Water consumption 1970).....	<u>300.00</u>

TOTAL.....\$78,841.17

CEMENT WALKS

Expenditure-----\$30,173.76

For the above expenditure, concrete sidewalks were laid at the following locations:-

<u>Location</u>	<u>Lineal Feet</u>
Saunders Street, Rookwood Avenue to Odell Avenue (South Side).....	1,066
Priestman Street, Smythe Street to Regent Street and from Regent extending east towards College Hill Road (North side)...	3,576
Oxford Street, Eglinton Street (East) to Eglinton Street (West) (North Side).....	899
Willingdon Street, existing to Stanley Street (North Side).....	931
Bailey Drive, Kennedy Court to Walker Street (South side).....	325
Walker Street, Bailey Drive to Irvine Street (East side).....	474
Canterbury Drive, Woodbridge St. to Topcliffe Crescent (North side).....	303
Woodbridge Street, existing to Canterbury Drive (East side).....	1,743
TOTAL.....	9,317

The cost of the above sidewalk is apportioned one-half to the City and one-half to the property owner, except where Local Improvement agreements are in effect with the sub-divider.

The concrete for the above construction of sidewalks was obtained from Gordon's Ready Mix Ltd. at \$18.00 per cubic yard.

The property owner was charged \$1.62 per lineal foot of sidewalk.

The actual cost for laying one lineal foot of sidewalk was \$3.43 which includes Compensation, Pension and Holiday Fund.

SANITATION

Gross Expenditure-----\$168,848.82
Credit----- 847.81

Net Expenditure-----\$168,001.01

The above credit is made up as follows:

Sutherland Marina (Flushing on Lincoln Road).....	\$ 25.24
Wilmot Downs (Water Race Track).....	19.94
Provincial Motor Sales (Credit on brooms returned)	15.90
Fredericton Exhibition Ltd. (Use of Sweeper).....	42.40
Texaco Home Heat Service (Cleaning Street).....	66.17
Carson Pugh (Flushing Service Station).....	12.72
Riverview Arms (Oiling parking lot).....	25.82
Canadian National Railway (Oiling freight yard)...	13.70
Shiretown Construction Co. (Rental on D-5 Dozer) ..	234.00
Journal Voucher (Correction for gas & oil).....	58.54
Journal Voucher (Use of Flusher & Sweeper).....	328.00
Journal Voucher (Bag Calcium chloride).....	5.38
TOTAL...\$847.81	

Under the heading "Sanitation" the following projects are included:-

- 1). Garbage Collection
- 2). Sanitary Land Fill
- 3). Street Cleaning (including Dust Control)

1). Garbage Collection:-

The Garbage Collection was operated by Blizzard's Trucking Service Ltd. The amount paid for the above operation was \$66,272.64 in 1970.

2). Sanitary Land Fill:-

Expenditure-----\$17,481.43

Credit-----234.00

Net Expenditure-----\$17,247.43

The above credit was for Rental on D-5 Bulldozer to Shiretown Construction Company.

The above expenditure is made up as follows:-

Forbes & Sloat (Gravel).....	\$ 1,494.82
Daily Gleaner (Tender Calls).....	25.50
J. R. Savage (keys, padlock).....	9.83
J. W. Bird & Co. Ltd. (chain, padlock).....	16.37
J. L. Simms & Sons (Plywood).....	9.11
Wendall Thomas (Sand).....	252.00
William Thomas (Sand).....	92.40
E. M. Young Ltd. (Warfarin).....	6.87
Journal Voucher (Diesel fuel).....	1.66
Journal Voucher (Pension contribution).....	68.15
Journal Voucher (City machinery).....	1,801.00
Journal Voucher (City labor).....	1,235.80
Journal Voucher (Hired machinery).....	43.00
Shiretown Construction Company.....	<u>12,424.92</u>
TOTAL.....	\$17,481.43

In 1966 a five year contract for bulldozing services at the Sanitary Land Fill was awarded to Shiretown Construction Company at a cost of \$12,424.92.

3). Street Cleaning:-

Gross Expenditure-----\$85,094.75

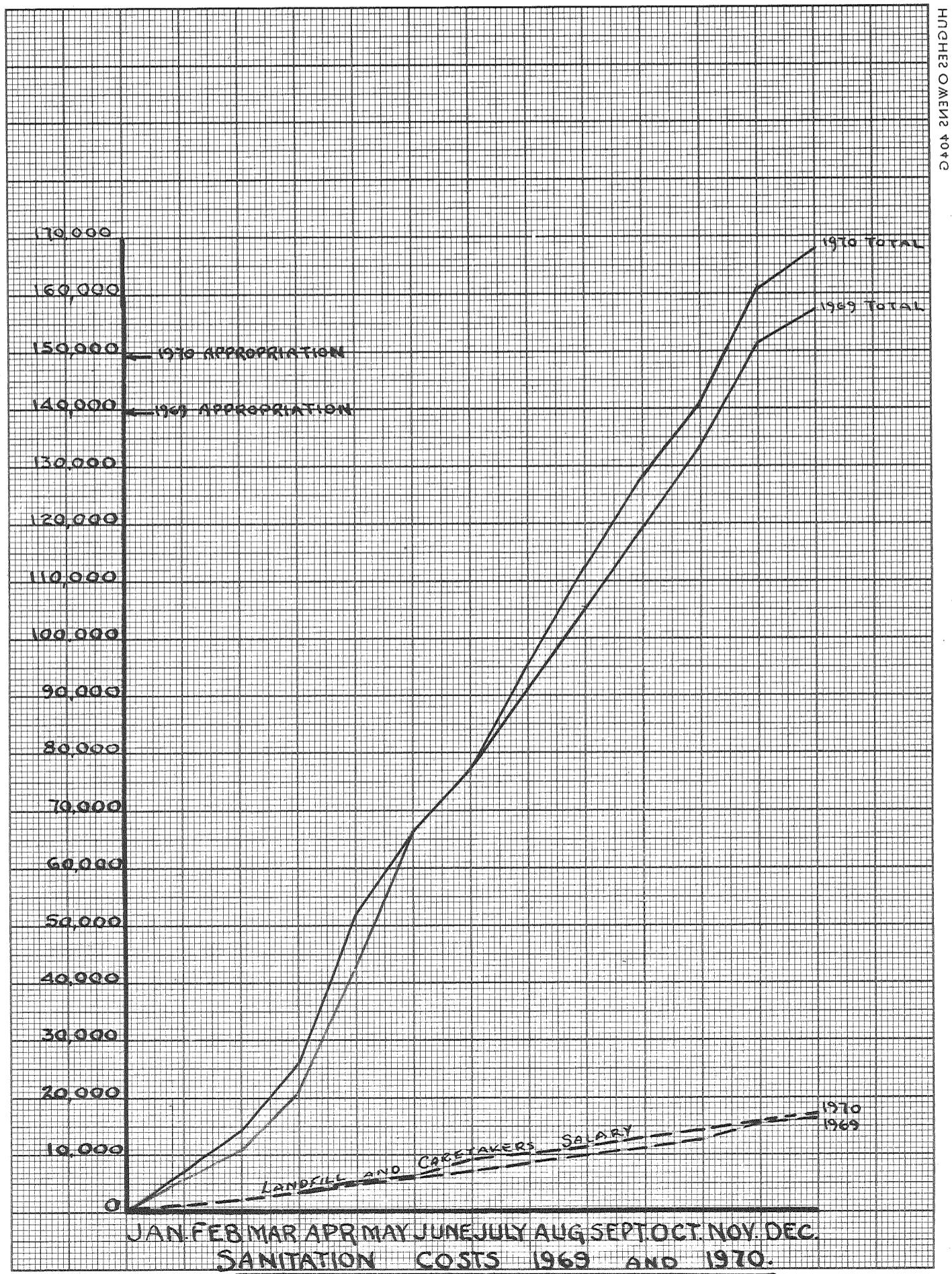
Credit-----613.81

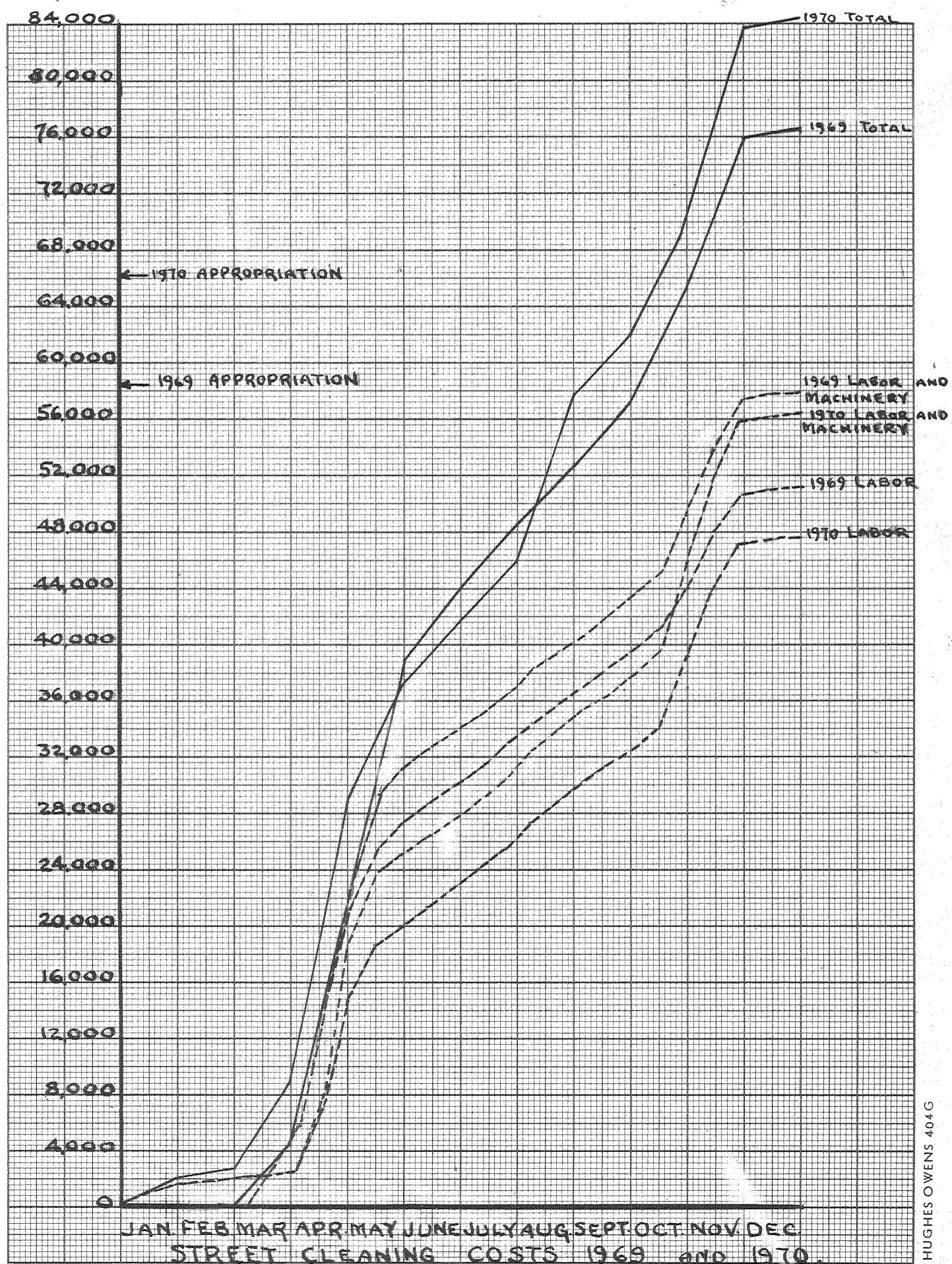
Net Expenditure-----\$84,480.94

The Gross Expenditure is made up as follows:

Labor.....	\$47,681.34
Hired Trucks & Machinery.....	8,728.00
City Machinery.....	4,917.00
Materials.....	<u>23,768.41</u>

TOTAL.....\$85,094.75





Gerbak Collection

Bizzak's Painting Service

1971 \$ 68,083.00

1971 Total

Gerald Burns Collection

1971

\$ 31,640.00

City Machinery and Material charges amounted to \$28,685.41 and are made up as follows:-

Purchase of cans, hand brooms, shovels, rakes, forks, scrapers, repairs to carts, etc.....	\$ 2,072.48
Gutter Broom Wire.....	2,214.80
Main Broom Wire.....	1,718.22
Labor and Repair charges to Sweeper.....	7,440.70
Labor and Repair charges to Flusher.....	5,600.36
Labor and Repair charges to Ford Oil truck.....	292.73
Labor and Repair charges to 1951-3 Ton International Stake Body.....	176.84
Gas & Oil:- 5293.00 gal. gas.....	\$1,217.39
225½ quarts oil.....	78.93
6 3/4 quarts Hydro-oil	5.94
5½ gals. Antifreeze...	<u>13.20</u>
	1,315.46
Minister of Finance (Registration of vehicles and Audit).....	94.12
Capital Garage (Removal of car from River).....	24.00
E. M. Young (12 Bags Calcium Chloride).....	84.24
Imperial Oil Co. (6842 gals. Road Oil).....	778.18
Neill's Wholesale (15 Bags Calcium Chloride).....	90.72
Miles Tire (2 Bags Calcium Chloride).....	19.44
Journal Voucher (City Machinery).....	4,917.00
Journal Voucher (Pension contribution).....	1,666.04
Miscellaneous (Car allowance, printing, etc.)....	<u>180.08</u>
TOTAL.....	<u>\$28,685.41</u>

The Wayne Sweeper (purchased in 1968) worked 1310 hours. The Actual Cost for cleaning streets with this machine was \$16,025.22 and was calculated as follows:-

Labor and Repairs on Sweeper.....	\$ 7,783.90
Main Brooms.....	1,718.22
Gutter Broom Wire.....	2,214.80
Gasoline (2022.60 gallons).....	465.20
Oil (48 Quarts - 6 3/4 Quarts Hydraulic).....	22.74
Antifreeze (1½ gallons).....	3.60
Water (445,400 gallons).....	215.00
Insurance on 1968 Wayne Sweeper.....	65.00
Labor (including Workmen's Compensation, Holiday and Pension Fund-Operators).....	<u>3,536.76</u>
TOTAL.....	<u>\$16,025.22</u>

The operating dates for the above machine (Sweeper) were from April 1, 1970 to November 24, 1970.

In 1955 the City of Fredericton purchased a Sicard Master Flusher with a capacity of 2,250 Imperial Gallons. The price of this machine was \$19,435.00 and was paid for in 1956. The operating dates for this machine (Flusher) were from May 11, 1970 to November 24, 1970.

The Flusher worked 983 hours. The Actual Cost for flushing streets with this machine was \$11,023.62 and was computed as follows:-

Labor & Repairs to Flusher.....	\$ 5,792.11
Gasoline (2879.2 gals.).....	662.22 ✓
Oil (134½ Quarts).....	47.08
Antifreeze (3 Gallons).....	7.20
Water (4,423.500 Gallons).....	2,005.10
Insurance on Flusher.....	57.00
Labor (including Workmen's Compensation, Holiday and Pension Fund - Operators.....	2,452.91
TOTAL.....	\$11,023.62

In 1970, 12,000 gallons of Oil and 29 bags of Calcium Chloride was used for dust control.

The following is a list of machinery used in the Sanitation Department together with the repair costs for 1969 and 1970, including tires and tubes.

Name of Machine	Year Purchased	Repairs 1969	Repairs 1970
Wayne Street Sweeper	1968	\$ 1,599.28	\$ 7,783.90
Sicard Flusher (2250 I.G.)	1955	656.37	5,792.11
Ford (1947)	----	119.16	478.34
International 1951 3 Ton Stake body reconditioned	1970	-0-	255.04
TOTALS.....		\$ 2,374.81	\$14,309.39

LOYALIST BURIAL GROUND

On the recommendation of the Park Committee of the Fredericton Town Planning Commission, the Loyalist Cemetery on the "Flats" adjacent to the back lots in Elmcroft Place was improved in 1958.

In 1970 the upkeep expenditure amounted to \$80.69 made up as follows:-

Labor.....	\$79.55
Journal Voucher.....	<u>1.14</u>
TOTAL.....	\$80.69

This area continues to be of historic interest and is also a tourist attraction with pedestrian traffic only from the Little League Ball Field on the "Flats" to the site.

ADMINISTRATION OF JUSTICE

Expenditure-----\$4,281.93

The above expenditure of \$4,281.93 is made up as follows:-

Journal Voucher (8,261.9 gallons gasoline).....	\$1,900.18
Journal Voucher (54 quarts oil).....	18.90
Journal Voucher (5 gallons diesel fuel).....	.90
Journal Voucher (Mobile Radios).....	1,822.69
Journal Voucher (Labor by J. Fox).....	2.96
Journal Voucher (Cement, decals, varsol).....	33.00
Journal Voucher (Traffic standard cost).....	59.40
Journal Voucher (Pension contribution).....	7.98
Journal Voucher (City Machinery).....	127.50
Journal Voucher (City Labor).....	<u>308.42</u>

TOTAL...\$4,281.93

MUNICIPAL PARKING LOT - CAMPBELL STREET

In 1966 the City Council authorized the changing of the free parking area at the rear of the City Hall in order to give better parking facilities to the shopping public.

In 1970 the expenditure for the above amounted to \$942.09 and was made up as follows:

Stan Cassidy (Maintenance to gate).....	\$ 281.32
J. R. Savage (Key).....	.65
H. S. Gill (Boards).....	19.01
Cincinnati Parking System (Rubber for gates, solenoid c/w mounting assembly).....	51.74
Journal Voucher (Cedar Posts).....	4.10
Journal Voucher (Pension contribution).....	9.10
Journal Voucher (City Machinery).....	217.00
Journal Voucher (City Labor).....	<u>359.17</u>

TOTAL...\$ 942.09

In addition a new Parking Area on Campbell Street was constructed in 1970. The construction of this Parking Lot Area is included in "Roads and Streets" under "Parking Lots". The maintenance of this lot is charged to Campbell Street Parking Lot #2. The expenditure amounted to \$680.93 and is made up as follows:-

Eastern Salvage (Demolition of house).....	\$ 632.00
Daily Gleaner (Ad re - house demolition).....	8.40
Journal Voucher (City Machinery).....	28.00
Journal Voucher (City Labor).....	<u>12.53</u>

TOTAL....\$ 680.93

The total cost of establishing this lot including fill, gravel, etc. was \$5,227.43.

TOURIST AND INDUSTRY

Expenditure-----\$670.04

The above expenditure was for replacing bulbs, labor and lighting of two signs supplied by the "Tourist and Industrial Committee"; one placed at the junction of Woodstock Road and Golf Club Road, the other on the Lincoln Road.

The expenditure of \$670.04 is made up as follows:-

New Brunswick Electric Power Commission (Light bill) ..	\$189.03
Minister of Finance (S. S. & E. Tax, re 1968-'69 Audit)	7.63
Ted Grey (Repainting Tourists signs)	275.00
J. L. Simms and Sons (Enamel)	2.98
Phillips and Pringle (12 - 150 Watt Bulb)	5.83
Richards Electric (Repair wiring)	44.30
Journal Voucher (Pension contribution)	1.42
Journal Voucher (City machinery)	4.00
Journal Voucher (Hired Machinery)	8.00
Journal Voucher (City Labor)	<u>131.85</u>
TOTAL.....\$670.04	

YORK ARENA

The expenditure under this heading was for the purchase of 12 gallons Varsol at a cost of \$6.00

INDUSTRIAL DEVELOPMENT

Expenditure-----\$1,480.33

The above expenditure was made up as follows:-

Seaboard Surveys Ltd. (Drafting Parcel "A", P-12, P-28)	\$ 21.00
Community Planning Assoc. (Registration)	132.00
Seaboard Surveys Ltd. (Survey work Parcel #10A)	221.85
Seaboard Surveys Ltd. (Survey work Parcel P-18A) ...	114.50
Department Natural Resources (Tracing & Printing) ..	28.08
Seaboard Surveys Ltd. (Survey work-Wilsey Road)	878.80
Seaboard Surveys Ltd. (Survey work-Lot P-29)	<u>84.10</u>
TOTAL.....\$1,480.33	

All above Surveying by Seaboard Surveys Ltd. pertains to the Industrial Area.

BRUNSWICK STREET PARKING LOT

In 1958 the City of Fredericton constructed a Parking Area on the north side of Brunswick Street, between York Street and Carleton Street, just east of J. Clark & Sons property. This area was enlarged in 1970 by the developing of more property.

Expenditure-----\$1,735.73

The above expenditure is made up as follows:-

Labor.....	\$ 467.92
Hired Trucks & Machinery.....	132.25
City Machinery.....	454.00
Materials.....	<u>681.56</u>
TOTAL....	<u>\$1,735.73</u>

The material charge of \$681.56 is made up as follows:-

New Brunswick Electric Power Commission (Parking Lot Lights).....	\$ 151.69
New Brunswick Electric Power Commission (Caretaker's Building).....	61.17
Stan Cassidy (Repairs to light).....	17.72
E. M. Young Ltd. (2 gals. paint for posts).....	21.47
Sherwin Williams Co. (2 gals. Linsolene).....	16.93
Forbes & Sloat (198.85 tons Class "A" Gravel).....	367.87
Journal Voucher (cement, posts).....	28.75
Journal Voucher (Pension contribution).....	<u>15.96</u>
TOTAL....	<u>\$ 681.56</u>

ARTIC RINK SITE PARKING LOT

In 1969 the free Parking Area situated on the south side of Campbell Street, just east of Carleton Street was made a metered parking site by the installation of Parking Meters.

Expenditure-----\$1,086.39

The expenditure is made up as follows:-

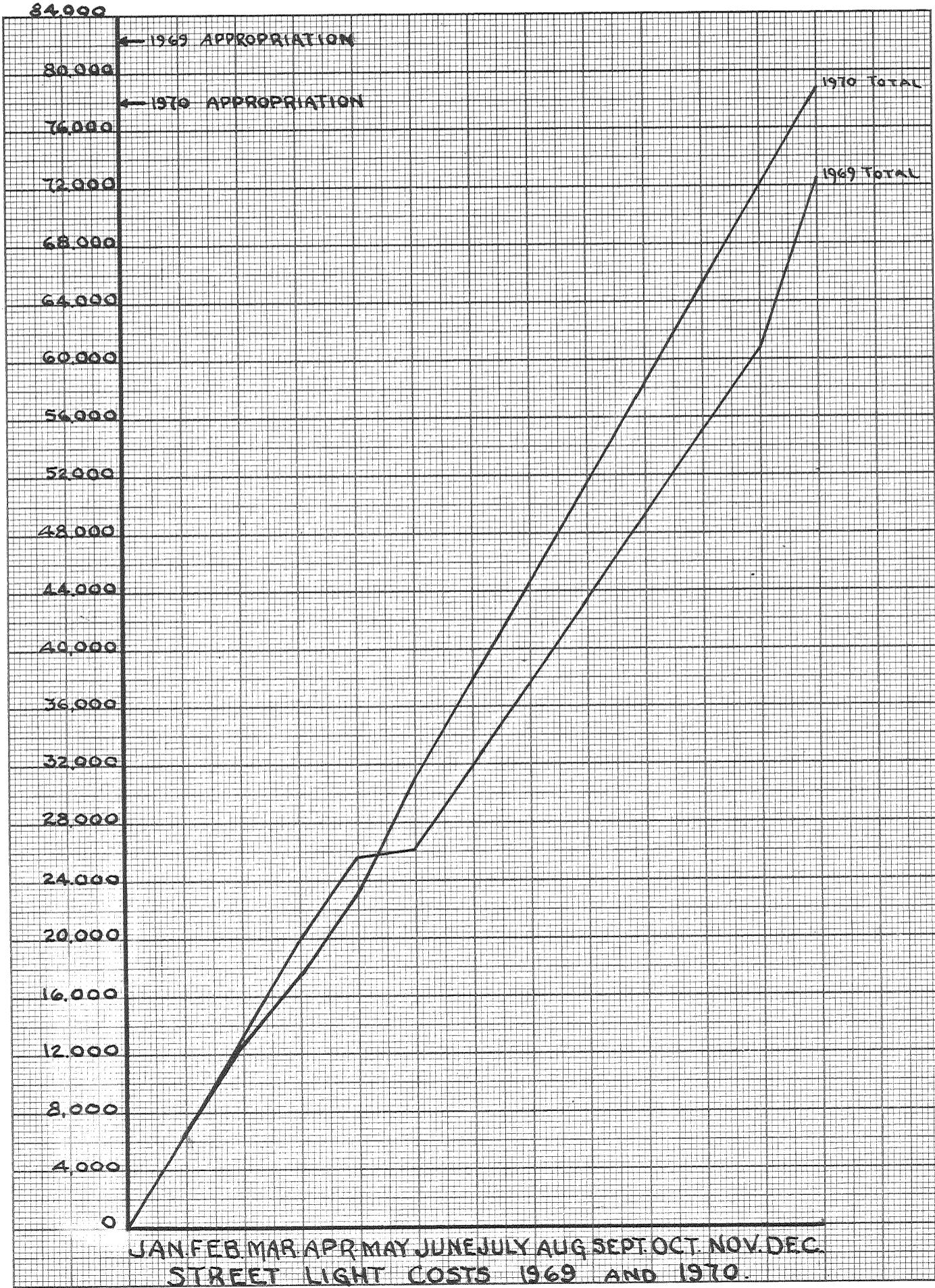
J. J. MacKay Canada Ltd. (Meter housings, plugs for yokes, coin box receptacle).....	\$ 233.24
Canadian National Railway (Parts returned to J. J. MacKay).....	3.70
J. W. Bird & Co. (10 gals. pitch emulsion).....	25.38
Minister of Finance (S. S. & E. Tax re Audit - Meters).....	564.73
Journal Voucher (City Machinery).....	180.00
Journal Voucher (City Labor).....	<u>79.34</u>
TOTAL....	<u>\$1,086.39</u>

STREET LIGHTS

Previous to 1969 the City of Fredericton obtained its electric power from the Maritime Electric Co. On January 1, 1969 the Maritime Electric Co. was taken over by the New Brunswick Electric Power Commission.

In 1970 all Street Lights on both sides of the Saint John River were converted to a multiple lighting system using Mercury Vapor Lamps. It is the intention to convert all street lights in 1971 to Mercury Vapor Lights.

HUGHES OWENS 404G



The Multiple Lighting System as of December 31, 1970 was as follows:-

249 - 500 Watt Incandescent Units @ \$4.33 per light per month
127 - 200 Watt Incandescent Units @ \$2.33 per light per month
590 - 250 Mercury Vapor Units @ \$4.50 per light per month
257 - 400 Mercury Vapor Units @ \$5.67 per light per month
185 - 4' Fluorescent Units @ \$3.00 per light per month
62 - 6' Fluorescent Units @ \$6.25 per light per month

(All above prices net, i.e. 20% off per light per month).

The Street lighting costs for the year 1970 are as follows:-

Expenditure-----\$78,928.31
1970 Appropriation-----78,000.00

Debit-----\$ 928.31

The Street Lighting expenditure of \$78,928.31 is made up as follows:-

New Brunswick Electric Power Comm. (Multiple Lighting).....	\$79,403.00
New Brunswick Electric Power Comm. (Series Lighting ending May 31).....	786.10
New Brunswick Electric Power Comm. (Waterloo Row Subway Lighting).....	79.11
New Brunswick Electric Power Comm. (Cenotaph Lighting).....	146.70
Richards Electric (Work on Subway & Cenotaph Lights).....	52.14
Canadian General Electric (48-2500/6.6 Amp. Bulbs, fuses).....	56.50
Harris & Roome (200 cut-outs).....	41.76
Journal Voucher (Pension contribution).....	1.75
Journal Voucher (City labor).....	37.20
N. B. Electric Power Comm. (Treated Poles and installations).....	<u>1,009.80</u>
Gross Expenditure.....	\$61,614.36

Less Credit:

Abe Levine & Sons (Sale of Scrap Copper).....	\$1,015.40
Journal Voucher (Installing traffic standard)...	59.40
Journal Voucher (lights, Old Burial Ground, Coliseum & Wilmot Park).....	<u>1,611.25</u> <u>2,686.05</u>

Net Expenditure...\$78,928.31

TABLE SHOWING COMPARATIVE YEARLY COST IN
STREET LIGHTING

<u>Year</u>	<u>Total Yearly Cost</u>	<u>Yearly Appropriation</u>
1956	\$31,877.10	\$27,700.00
1957	33,101.56	29,000.00
1958	36,038.79	33,500.00
1959	39,907.64	37,500.00
1960	44,481.71	44,010.00
1961	46,835.74	46,965.00
1962	46,989.38	47,875.00
1963	52,400.10	51,975.00
1964	57,682.43	56,930.00
1965	63,526.25	62,874.90
1966	72,083.35	70,180.00
1967	74,017.50	73,010.00
1968	80,012.18	76,915.00
1969	72,591.54	82,305.00
1970	78,928.31	78,000.00

URBAN RENEWAL

Expenditure-----\$497.39

The above expenditure is made up as follows:-

Atlas Building Supplies (Lumber for signs).....	\$ 4.41
Seaboard Surveys Ltd. (Prints for Urban Renewal Plans).....	48.00
Daily Gleaner (Ad Urban Renewal Proposals).....	26.46
Harvey Studios (Color enlargements).....	11.34
Associate Designers Ltd. (Copies of drawings).....	7.20
Department Natural Resources (Transparencies).....	345.60
N. B. Publishing Co. Ltd. (Ad re Urban Renewal Proposals).....	30.00
Journal Voucher (City Labor).....	<u>24.38</u>
TOTAL....	\$497.39

WATER

There are two separate water systems in the City of Fredericton:

1). During 1970 the south side of the Saint John River derived its water from four Gravel Wall Wells and a Rock Wall Well. Three of these Gravel Wall Wells, namely #1, #3 and #4 are situated in Wilmot Park and #5 on Woodstock Road on the south bank of the Saint John River, west of the Royal Canadian Mounted Police property. This property was acquired from the Province of New Brunswick in 1968. The Rock Wall Well is situated in Cameron Court and supplies approximately three-quarters the residences on Hanwell Road.

2). The water supply on the north side of the Saint John river is derived from three Wells; two of these Wells are outside the City Limits and pump directly into the system and a 1,000,000 Gallon Reservoir. The third Well is located on Bridge Street. The Bridge Street Well is a standby service only due to marginal chemical characteristics.

Chlorine has been added to the Water in Carleton Ward since the reports from the City Analyst showed objectionable Coliform in the water. A liquid solution (HTH) is added at the Killarney Well.

The water costs for the City of Fredericton are divided as follows:-

- 1). Water Ordinary.
- 2). Water Administration (Salaries of Office Staff and Office Equipment)
- 3). Hydrant Revenue
- 4). Water Pumping Station

Gross Expenditure----- \$284,943.42
Credits----- 34,246.29

Net Expenditure----- \$250,697.13

This account includes all expenditures, other than Capital Expenditure for water, expenditures for the Main Pumping Station, cost of supply from Wells and salaries and office equipment. These items will appear later under their various headings. Also included are all current water Expenditures in Carleton Ward.

1). Water Ordinary

The expenditure under this heading is as follows:-

Gross Expenditure----- \$127,320.69
Credit----- 20,550.39
Net Expenditure----- \$106,770.30

The credits are made up as follows:-

Work done and materials sold to private parties when installing a water service over ground other than City property or when the materials are used on parts of the system which do not belong to the City.....	\$13,350.39
Department of Indian Affairs (Thawing Water Service).....	20.60
New Brunswick Electric Power Commission (Repairs to #5 Well).....	25.00
Workmen's Compensation (cheques re L. Anderson).....	726.18
To adjust re Pension Fund.....	427.07
E. B. Billings (Sale of Stainless Steel Sleeves).....	107.36
Whalen Bros. (Sale of 15 Corporation Cocks).....	67.65
York Steel Ltd. (Unloading steel).....	11.90
University of New Brunswick (Cutting pipe).....	9.62
Chippin Bros. Ltd. (Gate wrench).....	12.96
Warren Contracting (Payment for fittings).....	76.00
Allen, Bennett & Dunphy (cheque truck rental, damage to hydrant).....	120.21
Mr. J. Gordon Petrie (Repairs to hydrant).....	113.11
Abe Levine & Sons Ltd. (Sale of scrap).....	81.48
New Brunswick Telephone Co. (Long distance calls).....	9.34
N. Y. A. Brake Co. (To duty paid incorrectly)...	9.73

Glenn's Plumbing Service (1 Corporation Cock)....\$	5.16
Paul Lynch (Repairs to Water gate manhole).....	22.98
Maplewood Construction Co. (Rental on Tapping Machine).....	20.00
Board of School Trustees (Repairs to Hydrant)...	300.52
Repairs to Frozen Water Meters.....	198.08
John King (Sale of scrap meter parts).....	55.00
Mr. Sid Satter (Sale of scrap metal).....	50.00
J. Heber Brown Co. Ltd. (Replacing 1-15 A.R.B. Cable).....	14.91
Neptune Meter Ltd. (Partial credit on parts and meters).....	131.68
St. Marys Indian Band (Sale of meter).....	31.64
Journal Voucher (Corporation cocks, lead).....	154.26
Journal Voucher (Hydrants and Standpipes).....	2,568.13
Journal Voucher (Water-Wilmot Park).....	30.00
Journal Voucher (Water-Queen Square).....	500.00
Journal Voucher (Water-Henry Park).....	500.00
Journal Voucher (Water-Wading Pools).....	500.00
Journal Voucher (Water-Fire Department, King Street and MacLaren Avenue).....	<u>300.00</u>
TOTAL.....	\$20,550.39

The Gross Expenditure is made up as follows:-

City Payrolls for Hydrants.....\$	4,244.63
City Payrolls for Meters (Maintenance).....	10,644.29
City Payrolls for Meters (Reading).....	4,022.00
City Payrolls for Water (Installations).....	6,302.56
City Payrolls for Lincoln Road Pumping Station.	1,118.47
City Payrolls for Smythe Street (Booster Station).....	1,009.13
City Payrolls for Montgomery Street (Booster Station).....	1,141.83
City Payrolls for Forest Hill (Booster Station)	1,347.65
City Payroll for Water (Maintenance).....	<u>20,723.02</u>

Total Payrolls.....\$	50,553.58
Material and other charges.....	<u>76,767.11</u>

Gross Expenditure.....\$127,320.69

No water extensions were laid under this heading in 1970. They appear under "Capital Account Water".

The following Sprinkler Systems were installed in 1970:-

Zellers County Fair-----	#460 East Prospect St.
Fredericton Shopping Mall-----	#370 and #430 East Prospect Street
Sobeys-----	#350 East Prospect Street
Canadian Tire-----	#202 East Prospect Street
George E. George-----	#324 Queen Street
Victory Meat Packers (Abattoir)-----	Lot #8 Wilsey Road
J. W. Bird Co. Ltd.-----	Lot P-12 Wilsey Road

1970

5181 Melted
330 Flat rate
2 1/2

1969

4949 Miles
347 lbs
5296

1970

5181

330

Metered
Flat rate

5511

276

Flat

1969

4949

347

761

5296

184

5181

3370

330

1971

5229

276 Meters
Flat rate

5507

2370

317 Flat

There are at present (December 31, 1970), 80 Sprinkler Systems in the City. The City rate for Sprinkler connection demand was \$120.00 per year, charged to "Fire Protection."

There are in the City as of December 31, 1970 - 561 hydrants; 446 on the south side of the Saint John River and 115 on the north side of the Saint John River.

The hydrant rental for 1970 amounted to \$65,640.00 which will appear in this report later and is not included in credits to "Water Ordinary".

Hydrants were installed at the following locations:-

<u>Location</u>	<u>Number</u>
Doone Street and Wilson Row (Carleton Ward)...	3
Prospect Street, Smythe Street to Regent Street (continuation of 1969 contract)...	3
Flemming Road.....	1
Proposed Road in Industrial Area off Wilsey Rd.	6
Parkside Drive (Parkside Development).....	1
TOTAL.....	<u>14</u>

Meters:-

On December 31, 1970 there were 5181 water services on Meters and 330 on Flat Rate, making a total of 5511.

The labor cost per meter for installing, reading, repairing etc. was \$2.83 for 1970.

204 Meters were installed in 1970.

In 1970, 16 discontinued services were excavated and shut off at the main.

In 1970, all meters were read quarterly and billed quarterly during the year.

Meters in Stock December 31, 1970:-

5/8" Meters - repaired and fit for service).....	24
1/2" Meters - repaired and fit for service).....	9
3/4" Meters - repaired and fit for service) Neptune.	2
1" Meters - repaired and fit for service) Meters..	4
1 1/4" Meters - repaired and fit for service).....	3
1 1/2" Meters - repaired and fit for service).....	1
2" Meters - repaired and fit for service).....	1
1 1/2" Meters - repaired and fit for service(Rockwell)	2
2" Meters - repaired and fit for service(Rockwell)	1
1/2" Meters - to be repaired for service (Neptune)	1
5/8" Meters to be repaired for service (Neptune)....	43
1" Meter to be repaired for service (Neptune)....	1
1 1/2" Meters to be repaired for service (Neptune)....	1
New 5/8" Meters (Neptune A.R.B.).....	0
New 1/2" Meters (Neptune).....	0
New 1" Meters (Neptune).....	4
New 1 1/2" Meters (Neptune).....	2
New 2" Meters (Neptune).....	2

Distribution System:-

New Services inttalled in 1970.....	137
Old Services relayed in 1970.....	29
Frozen Services that had to be thawed.....	24

The Fredericton Distribution System consists of 70.42 miles of Water Main, made up as follows:-

18" Main.....	0.98 miles
14" Main.....	0.33 miles
12" Main.....	7.21 miles
10" Main.....	7.45 miles
8" Main.....	16.81 miles
6" Main.....	31.23 miles
4" Main.....	6.14 miles
3" Main.....	<u>0.27</u> miles
TOTAL.....	
70.42 miles	

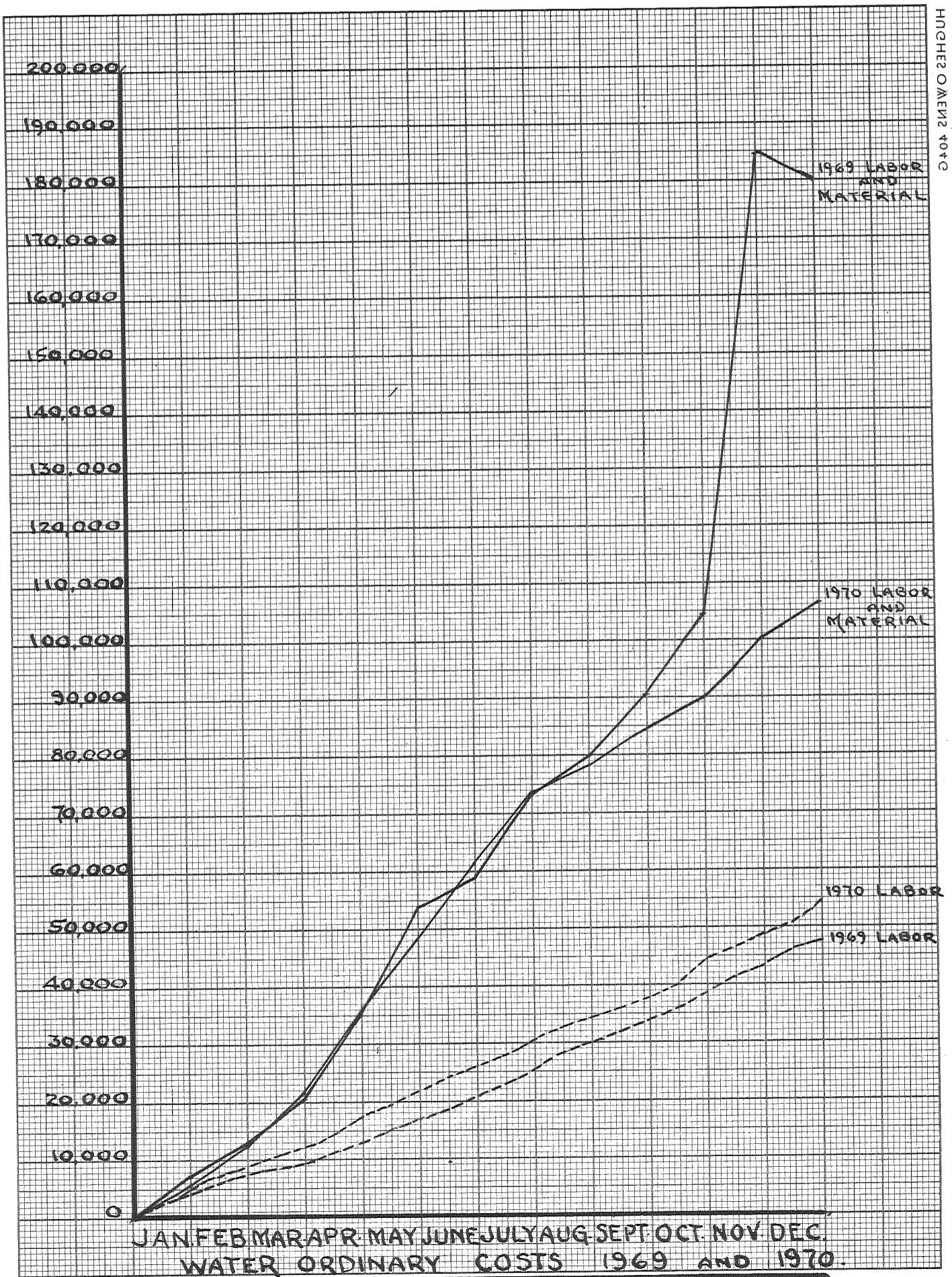
This does not include the water mains installed by the National Defence at the Exhibition Grounds, University of New Brunswick, St. Annes Point Barracks, (so called) on Woodstock Road, and the low rental housing development in Carleton Ward.

The supply system consists of 0.36 miles of 14" Cast Iron Pipe, extending from the Well site at Wilmot Park to the Pumping Station; 0.16 miles of 12" Cast Iron Pipe extending from the Well on the North bank of the Saint John River on Woodstock Road to the Well site of #1 Well at Wilmot Park, and 0.10 miles of 15" Street Pipe extending from the Intake Pier in the Saint John River to the Pumping Station. This latter supply has not been used for Domestic consumption since 1957.

Also included in the above expenditure was the purchase of the following meters from Neptune Meters Limited and Rockwell Manufacturing Company:-

From Neptune Meters Limited:-

100 - 5/8" x 3/4" Trident Seal, Frost Proof Cold Water Meters, Imperial Gallons with A.R.B. Register, outside Receptacle and 15' cables, coupling sets - straight tubes one threaded and one for Type "K".
3 - 2" Trident Seal Frost Proof Cold Water Meters, Imperial Gallons with A.R.B. Register, outside Receptacle and 15' cables, flanges.
3 - 1½" Trident Seal Frost Proof, Cold Water Meters, Imperial Gallons with A.R.B. Register, outside Receptacle and 15' cables, flanges.
10 - 1" Trident Seal Frost Proof, Cold Water Meters, Imperial Gallons with A.R.B. Register, outside Receptacle, 15' cables, coupling sets - straight tubes one threaded and one for Type "K".



From Rockwell Manufacturing Co:-

- 1 - 4 " Compound Water Meter c/w single register,
flanged connections, readings in Imperial Gallons.
- 1 - 3" Compound Water Meter c/w flanged connections,
readings in Imperial Gallons.

Following is a list of vehicles used and charged
to "Water Ordinary" showing a comparison of repair charges
for 1969 and 1970, including tires and tubes:-

Name of Vehicle	Year Purchased	Repairs 1969	Repairs 1970
Dodge 1/2 Ton #5	1967	\$204.39	\$ 893.54
Chevrolet 1/2 Ton #2	1969	202.68	362.98
Ford 1/2 Ton #32	1966	<u>351.39</u>	<u>193.81</u>
TOTALS.....		<u>\$758.46</u>	<u>\$1,450.33</u>

2). Water Administration (Salaries & Office Equipment).

Gross Expenditure-----\$76,905.17
Credit-----13,657.56

Net Expenditure-----\$63,247.61

The above credit is made up as follows:-

Addressograph Multigraph-Payment re used
machine.....\$ 650.00
Credit re - Jur-na-rols for Treasurers Dept.... 7.56
Salaries for Water (Engineering Dept. Staff).... 13,000.00
TOTAL....\$13,657.56

Expenditure for Billing and Collecting was \$46,800.57
and was made up as follows:-

Capital Free Press (Window envelopes)....\$ 133.06
Pitney-Bowes Ltd. (Meter Ink, inspection on
machine tapes, rental on posting machine)... 248.33
Burroughs Ltd. (2 rolls CLT 22" paper, repair
to machine F-2000, ribbons).... 237.58
To cost of certifying cheque.... .75
National Cash Register (Water and sewer bills,
ribbons, cartoons, Jur-na-rols, trays,
blank inserts).... 2,044.84
Industrial Acceptance (Payment to N. C. R. 400).... 4,726.18
Minister of Finance (S. S. & E. tax re - 1968-
1969 Audit).... 32.87
Atlas Building Supplies (Door stop).... 1.43
Petty Cash (Making keys, parcel from National
Cash).... 8.25
Receiver General (Postage).... 1,000.00
To credit Treasurer's Office for 3 boxes staples 1.87

W. L. Barrett (Expenses to A.W.W.A. Meeting).....	\$ 100.00
C.N.R. Express (Cartage on Jur-na-rols).....	3.75
C. W. Hall & Co. (Typewriter ribbons, index cards)	10.70
N.C.R. Co. (Paper, Ledgers, petronic file trays, carton Jur-na-rols).....	1,216.69
Paul Burden Ltd. (Rubber stamp, index cards, repairs to Precisa Multiplier).....	30.36
Unipress (Water notices).....	122.54
C. P. Express (Cartage).....	7.45
Olivetti-Underwood (Ribbons).....	19.44
City Sales & Service (Humidifier).....	162.00
Consolidated Supply Co. (Air conditioner).....	315.74
Stan Cassidy (Cable for air conditioner).....	3.35
Visirecord (Cards).....	439.91
Journal Voucher (5,000 sheets paper 8½" x 11")..	23.35
Rental for Office Space for 1969.....	4,800.00
Rental for Office Space for 1970.....	3,832.00
Insurance on Water Works Plant.....	128.94
Journal Voucher (City labor).....	4,224.00
Salaries.....	<u>23,582.75</u>

Gross Expenditure-----\$47,458.13
Credit----- 657.56

Net Expenditure-----\$46,800.57

3). Hydrant Revenue

Hydrant and Sprinkler revenue amounting to \$74,440.00 (Hydrants \$65,640.00 and Sprinklers \$8,800.00) was rental on Hydrants and Sprinklers in the City of Fredericton, charged to the Fire Department at \$120.00 per hydrant per year.

4). Water Pumping Station

Gross Expenditure-----\$80,717.56
Credits----- 38.34

Net Expenditure-----\$80,679.22

The above credits are as follows:-

To transfer N. B. Telephone invoice for Bridge Street Pump.....	\$ 11.34
Petrofina Canada Ltd. (Return of steel drums) ..	14.00
Imperial Oil Ltd. (Credit return of Oil).....	10.76
W. J. Beirsto (Chlorine tablets).....	<u>2.24</u>

TOTAL....\$ 38.34

The above expenditure is divided as follows:-

City Payrolls for salaries of employees at Pumping Station.....	\$35,139.07
Work done by City employees in and around the Pumping Station.....	776.54
Work done by City employees at Cameron Court Pump and Well.....	941.47
Work done by City employees at Carleton Ward Pumps.....	2,031.11
Material charges.....	<u>41,791.03</u>

TOTAL.....\$80,679.22

The material cost of \$41,791.03 is made up as follows:-

Item #1 - Light and Power supplied by New Brunswick Electric Power Commission....	\$11,542.63
Item #2 - Light and Power supplied by New Brunswick Electric Power Commission at Wells.....	9,419.77
Item #3 - Heating (5829.60 gallons furnace Oil) ..	840.79
Item #4 - Diesel Fuel (3000 gallons).....	436.50
Item #5 - Liquid Chlorine (2700 lbs.).....	467.55
Item #6 - Oil (4 cases #10 HDX)---\$56.36 (5 Gals. Teressa #43)-----\$ 6.86 (1 Barrel Esstic Oil)-----\$39.85.....	103.07
Item #7 - Maintenance and repairs to buildings and equipment.....	2,627.58
Item #8 - New Installations (1 Patterson Centrifugal Pump).....	1,617.84
Item #9 - Supplies, packing rags, lamps, tools, etc.....	503.31
Item #10- Stationery forms, charts, chemicals, ink, etc.....	246.33
Item #11- Workmen's Compensation.....	475.00
Item #12- E. W. Hagerman (City Analyst Salary)...	2,100.00
Item #13- Province of New Brunswick (Taxes).....	1,663.35
Item #14- Carleton Ward Pumping Stations..... Journal Voucher (Cement, sand)..... Journal Voucher (gas, oil)..... Journal Voucher (City Machinery)..... Journal Voucher (Pension contribution). Miscellaneous (Uniforms, dues, telephones, keys, etc.).....	6,365.73 5.88 3.57 73.50 2,099.26 <u>1,237.71</u>
	TOTAL.....\$41,829.37
	Less Credits as previously shown..... <u>38.34</u>
	<u>Net Expenditure.....\$41,791.03</u>

Item #3 - Heating:-

Following is the yearly consumption and costs of heating at the Fredericton Pumping Station Plant for the last ten years:-

Year	Gallons Furnace Oil	Cost
1961	4,513.8	\$ 709.01
1962	5,079.1	763.10
1963	5,592.8	822.48
1964	5,355.4	762.55
1965	5,067.2	707.75
1966	5,583.1	769.80
1967	3,961.7	539.84
1968	6,121.5	837.63
1969	6,032.6	869.90
1970	5,829.6	840.79

Item #7 - Maintenance and Repairs - Water Pumping Station:-

In reference to Item #7, the following is included:

Shut off valve installed on boiler, 4 feet copper pipe to supply hot water for thawing hydrants.

New check valve installed on boiler.

Three new valves installed on Fairbanks Morse Exhaust Cooling System.

New thermostat installed on hot water tank.

New gate valve, copper elbow and union, one foot copper pipe installed on post chlorinator. The same was installed on pre-chlorinator.

Installed new High Lift Service Pump replacing No. 1 Pump and repaired floor around installation.

New P. Trap installed on sink in chlorine room.

Basin repaired and new hot water tank installed for Mr. Hagermans Laboratory from New Brunswick Electric Power Commission (City Analyst Room).

New exhaust pipe on Dorman Diesel.

Return pump float repaired and points checked.

All pumps were checked, cleaned and packed.

Two fluorescent lights were installed in front of the flow watch meters. The one that had been there was removed and installed by the Dorman Diesel (Pump) Motor.

Old filtration building dismantled.

Shingles replaced on pattered roof that were broken when old chimney dismantled.

Floors painted in compressor room, pump room, boiler room, entrance room, also filter room stairs.

The Pumping Station Plant at the present time has Wells #1, #3 and #4 operating automatically on demand, and Well #5 and Cameron Court Well operating manually. The Saint John River supply operates manually and the supply must pass through the Filter Plant for purification. This supply will only be used in an emergency; that is, when the Wells are not operating due to failure, etc. or when the demand for water is higher than the Wells can produce or during a prolonged electrical interruption, probably longer than 24 hours.

During a 24-hour interruption, the 2,000,000 Imperial Gallon Reservoir will supply the system unless there is a serious break or a fire when a high consumption of water is required.

COMPARISON OF WATER PUMPED AND COSTS
FOR SOUTH SIDE OF RIVER
FOR LAST NINETEEN YEARS

Year	Imperial Gallons Produced	Production Expenditures	Production Costs per 1000 Gallons
1952	339,330,000	\$40,476.10	11.9 cents
1953	351,310,000	36,179.74	10.3 cents
1954	388,540,000	40,403.81	10.4 cents
1955	376,591,000	48,063.07	12.7 cents
1956	448,096,000 (13 months)	41,351.18	9.2 cents
1957	469,185,000	42,465.50	9.0 cents
1958	454,765,000	42,888.56	9.4 cents
1959	487,704,000	47,923.19	9.8 cents
1960	520,081,000	50,280.09	9.6 cents
1961	510,250,000	45,081.88	8.8 cents
1962	499,880,000	48,298.53	9.7 cents
1963	519,168,000	48,441.10	9.3 cents
1964	544,650,000	52,431.23	9.6 cents
1965	605,170,000	50,915.76	8.4 cents
1966	634,501,000	50,519.49	8.0 cents
1967	688,514,000	52,749.40	7.9 cents
1968	735,296,000	64,617.14	8.8 cents
1969	730,089,200	69,831.20	9.5 cents
1970	796,421,300	72,282.38	9.1 cents

The columns in the preceding comparison, showing Imperial Gallons produced, does not include water used from Wells in Carleton Ward.

The total consumption from Wells in Carleton Ward for 1970 was 160,291,400 gallons.

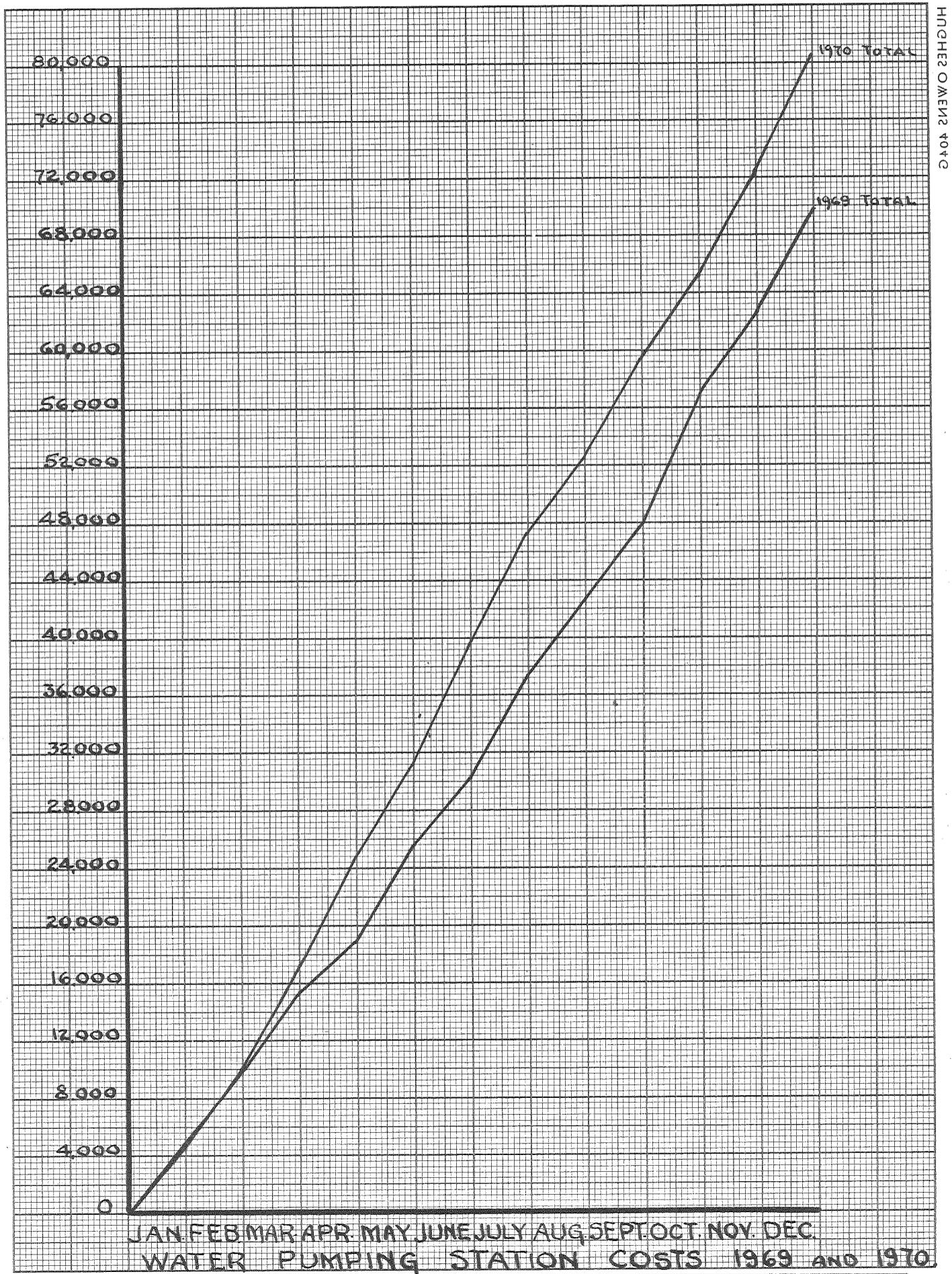
The total amount of water pumped from January 1, 1970 to December 31, 1970 therefore, for the whole City is 956,712,700 Imperial Gallons.

The total net water expenditure (operating) for the City from January 1, 1970 to December 31, 1970 is \$187,449.52.

Therefore the net cost to pump and deliver to the customer 1,000 Imperial Gallons of Water from January 1, 1970 to December 31, 1970 is ---

$$\frac{187,449}{956,712} = 19.6 \text{ cents}$$

All the preceding costs shown under "Water Pumping Station" and "Water Ordinary" do not include bond payments or sinking fund charges.



WATER AND SEWER REVENUE 1970

Water:-

	Revenue	Net Expenditure	Credit
Water Pumping Station		\$ 80,679.22	
Water Ordinary	\$405,987.73	106,770.30	
Hydrants (Private)	6,480.00		
Sprinklers	8,800.00		
Hydrants (City Owned)	59,160.00		
Water Office			
Administration		46,800.57	
Salaries		16,447.04	
Principal & Interest		183,058.48	
TOTALS.....	<u>\$480,427.73</u>	<u>\$433,755.61</u>	<u>\$46,672.12</u>

Domestic Sewer:-

Sewerage Domestic	\$153,826.35	\$ 35,240.65	
*F.P.C.C. Accs. P.		35,000.00	
Principal & Interest		61,019.46	
TOTALS.....	<u>\$153,826.35</u>	<u>\$131,260.11</u>	<u>\$22,566.24</u>

* Fredericton Pollution Control Commission Sewage Treatment.

The cost of 1000 gallons of water delivered including principal and interest, was as follows:-

Total Cost of Water Per Thousand Gallons:-

$$\frac{433,755.16}{956,712} = 45.3 \text{ cents}$$

Principal and Interest Costs:-

$$\frac{183,058.48}{956,712} = 19.1 \text{ cents}$$

Administration and Operating Costs:-

$$\frac{250,697.13}{956,712} = 26.2 \text{ cents}$$

The Water Pumping Station was under the supervision of Plant Superintendent, Mr. George Parker.

Accompanying this Report is the Report of Mr. E. W. Hagerman, City Analyst on the Fredericton Water Supply from January 1, 1970 to December 31, 1970.

Respectfully submitted,

W. J. Parker
CITY ENGINEER.

FREDERICTON WATER SUPPLY

YEAR 1970

JANUARY 1st TO DECEMBER 31st

The Saint John River cuts Fredericton in an East and West direction which results in a North and South Water System.

Four gravel Wells, generally working in pairs, pump approximately 2,200,000 imperial gallons per day into the mains and reservoir of the southern part of the City.

A fifth Well, bored in rock and located in Cameron Court about two hundred feet south east of Hanwell Road, supplies several houses in the Court and a strip development along Hanwell Road. This Well has its own pump house, chlorinator, 100,000 gallon reservoir and pipe grid. The chlorine dose applied to this supply is from 0.2 to 0.3 parts per million, which diminishes to 0.1 to 0.2 parts per million in the reservoir. Water from the Hanwell system does not pass into the main City system.

The three oldest Wells are, #1, #3 and #4 (#2 was abandoned because of excess manganese). They are located in Wilmot Park, almost in a line, which is approximately 200 feet south of and parallel to Woodstock Road. The latest Well, #5 (in service June 21, 1969) is on the bank of the River, almost on the projected line of Rockwood Avenue.

Numbers 1, #3, #4 and #5 Wells pump to the Old Filter Plant where their waters are mixed and chlorinated so that a residual varying from 0.1 to 0.15 parts per million of free chlorine persists in the effluent entering the pipe system and reservoirs.

Although the Well water is almost sterile it is general practice to carry a chlorine residual as far into the mains as possible. Here it is a safe-guard against bacterial invasion which might occur through a break in a pipe line or from faulty plumbing. At present, the pipe grid has extended so far from the point of chlorine application that little or no residual persists to these distant points.

Carleton Ward on the north side of the Saint John River depends on two Wells bored in rock formation on the hill side and a third is on the river flat and about one quarter mile from the end of the bridge. A fourth Well is under construction on Maple Street near St. Mary's Street.

The daily pumppage for Carleton Ward is about 439,000 gallons per day. Water is pumped to Carleton reservoir and by gravity from here to the system. Chlorine is added at St. Mary's pump house. The dose here goes up to 0.25 parts per million.

The hardness of the water varies in both systems depending on the combination of the Wells in use.

Water hardness is of concern to all consumers because soap consumption rises with hardness increase. Fredericton water is moderately soft in the classification of potable waters.

Generally two Wells are operated together and sometimes in different combinations resulting in effluents of varying hardness. When Well #1 and Well #5 are working together and pumping at the same rate, a water of approximately 63 ppm hardness will result whereas a mix of Wells #3 and #4 will give a water of around 96 ppm hardness. A figure of 4 to 6 grains per U. S. gallon should supply the information required by housewives and salesmen. In Carleton Ward the hardness figures might vary from 82 to 102 parts per million which is approximately 5 to 6 grains per U. S. gallon. There seems little difference in the waters of the two systems when the hardness is expressed in grains.

From recorded data it does not seem likely that water hardness will be a limiting factor of ground water supply in the Fredericton area.

Manganese in its various forms is a limiting factor in the choice of underground water supplies. The City has already abandoned large sources of water because of excess of this element.

Number 5 Well, of the South system, is high in Manganese. It averages 0.21 ppm of this element and so must be diluted to be usable. When mixed half and half, with water from #1, #3 or #4 Wells, a water testing around 0.13 ppm of Manganese is produced. This water is being used but is still high. It causes brown deposits at points near its entry to the system. These stains appear to decrease in intensity as the distance from the pumping station increases. It is due to local precipitation of Manganese by chlorine. A chlorine residual check should be undertaken to see how far the residual is measurable in the system.

The manganese problem seems to be about the same in the Carleton Ward system. Bridge and Carleton Wells test less than 0.1 ppm of Manganese while St. Mary's carries 0.13 ppm. The new Well not yet fully finished on Maple Street tests about 0.12 ppm. When the water demand increases in Carleton Ward, more water from the high manganese Wells will be necessary. This will result in a higher manganese water being delivered to the customer.

Attached will be found summaries of Hardness and Manganese content of the Wells and also curves of numbers 1, 3 and 4 Wells for hardness. Also attached is the copy of U. S. Treasury Standards applicable to coliform tests made in 1970. Samples were taken at the various points listed.

It may be noticed that no positive results were found at these points although one was found by the Department of Health on March 20th at Carleton Ward Fire Station.

HARDNESS OF FREDERICTON WELL WATERS - FEB. 1971

SOUTH FREDERICTON

Well Name or No.	1.	3.	4.	5.	Hanwell
Date into System	July 29 1955	March 1960	Oct 28 1961	June 21 1969	July 1966
Average Hardness ppm.	60.5	119	74.3	65.2	80.0
Number of Samples in Average	12	11	24	13	2

NORTH FREDERICTON
OR
CARLETON WARD

Well Name or No.	St. Mary's	Bridge	Carleton	Maple
Date into System	Old	1960	1964	Not Finished
Average Hardness ppm.	90	115	74	134
Number of Samples in Average	2	5	18	9

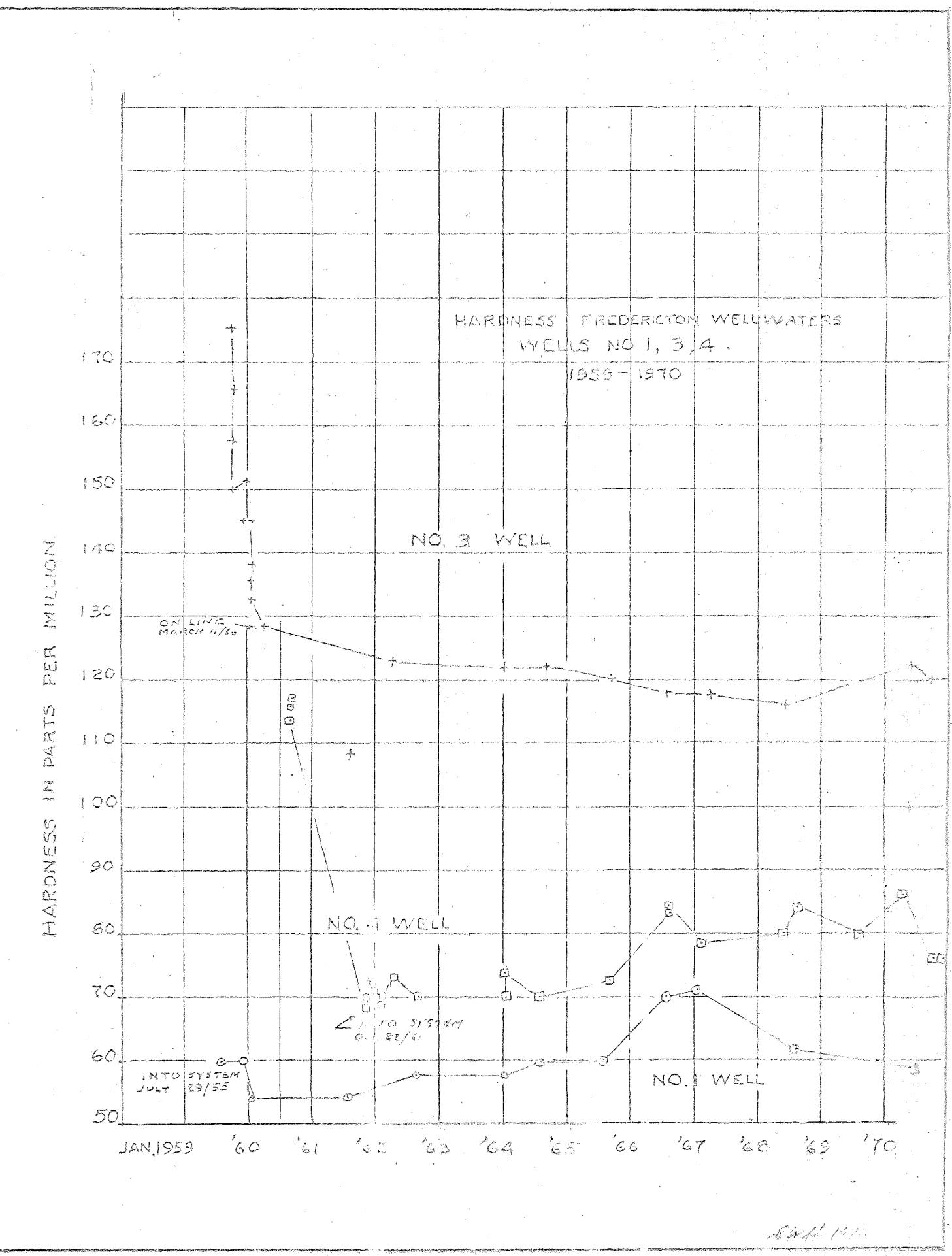
MANGANESE IN FREDERICTON WELL WATERS - FEB. 1971

SOUTH FREDERICTON

Well Name or No.	1.	3.	4.	5.	Hanwell
Date into System	July 29 1955	March 1960	Oct. 28 1961	June 21 1969	July 1966
Average Manganese ppm.	0.03	Nil	0.01	0.21	Nil
Number of Samples in Average	13	24	14	22	2

NORTH FREDERICTON
OR
CARLETON WARD

Well Name or No.	St. Mary's	Bridge	Carleton	Maple
Date into System	Old	1960	1964	Not Finished
Average Manganese ppm.	0.13	0.07	0.06	0.12
Number of Samples in Average	2	8	18	8



EXTRACTS FROM UNITED STATES TREASURY STANDARDS
APPLICABLE TO FREDERICTON WATER SUPPLY

- 1). A minimum sample of 100 millilitres is collected.
- 2). Five 10 millilitre portions of this sample are tested.
- 3). Primary plantings are made in Lactose Broth.
- 4). Portions forming gas in lactose broth are confirmed in 2% Brilliant green bile.

APPLICATION OF TEST

- 1). Of all the 10 ml. portions examined per month, not more than 10% shall show positive (i.e. make gas).
- 2). When less than 20 samples per month are examined, one sample may show three positive portions.
- 3). Using a standard sample of five 10 ml. portions, provides for an estimation of the MOST PROBABLE NUMBER (M.P.N.) of Coliform bacteria per 100 ml. of sample as shown in the table below.

<u>Negative</u>	<u>Positive</u>	<u>When five 10 ml. portions are tested</u>
5	0	Less than 2.2 organisms per 100 is MPN
4	1	2.2 organisms per 100 is MPN
3	2	5.1 organisms per 100 is MPN
2	3	9.2 organisms per 100 is MPN
1	4	16 organisms per 100 is MPN
0	5	More than 16 organisms per 100 is MPN

FREDERICTON WATER SUPPLY

YEAR 1970

JANUARY 1st TO DECEMBER 31st

Following is a list of sampling points used in 1970:
The Test divided the 5 portions as positive or negative, for use with table on previous page.

Date of Sample Origin of Sample

January

Mon. 12	701 Albert Street	Blank in this column
Mon. 12	Regent St. Reservoir	indicates negative test,
Sun. 18	Hanwell (raw) Well	coliforms absent.
Fri. 23	127 Charlotte St.	

February

Tue. 3	Bridge St. (raw well)	Big Thaw
Wed. 4	Hanwell (raw Well))
Mon. 9	U.N.B. Engineering	Bldg.
Fri. 20	York Struct. Steel	Wilsey Road
Mon. 23	Savages-99 York St.	
Mon. 23	Bridge St. (raw well)	

March

Wed. 4	R. B. Palmer,	911 Canterbury Dr.
Sat. 14	H. Bailey,	99 Smith St.
Tue. 17	Centennial Bldg.	
Wed. 25	U.N.B. Eng.	Bldg.

April

Wed. 1	731 Irvine St.	
Thur. 16	Bridge St. (raw well)	
Thur. 23	99 Smith Street	
Sat. 25	U.N.B. Children's Hut	
Sun. 26	Bridge St. (raw well)	

May

Mon. 4	U.N.B. Engineering	
Fri. 8	Beaverbrook Hotel	
Mon. 11	377 Gibson St. (Greer & Lawson)	
Mon. 18	849 Union St.	
Wed. 27	66 McKeen St. (R.A. Malloy)	

June 2 Pony Club, Odell Park

Thur. 11	479 Union St. (Union Motors)	
Mon. 15	Hanwell Well (raw)	
Wed. 17	120 Carleton St.	Some growth, no Coliform
Tue. 23	120 Carleton St.	No growth
Tue. 30	Hanwell (Raw Well)	4 Late gas Formers (Not Coliform)

July

Mon. 6	Rural Cemetery	
Sat. 18	894 Barker St.	
Wed. 22	U.N.B. Engineering	
Mon. 27	York Structural Steel-Wilsey Rd.	

FREDERICTON WATER SUPPLY

YEAR 1970

SAMPLING POINTS CONTINUED

The Test divides the 5 portions as positive or negative, for use with

Date of Sample - Origin of Sample - table on previous page

August

Tue.	4	377 Gibson St.
Tue.	11	Pony Club (Odell Park)
Tue.	18	Forbes St. Test Well
Fri.	28	99 Smith St.

Sept.

Sat.	5	Agricultural Hall, Exhibition Bldg.
Tue.	8	Fire Sta. - College Hill
Thur.	17	525 Smythe St. (Shell Service)
Sat.	26	277 Gibson St. (D. D. Pringle)
Tue.	29	MacLaren Ave. Fire Station

October

Tue.	6	835 Churchill Row
Wed.	14	128 Prospect St. (A-Z Rental)
Mon.	26	99 Smith St.
Mon.	26	York Structural Steel-Wilsey Rd.
Tue.	27	190 Clark St. (Seven-Up Sussex Ltd.)

November

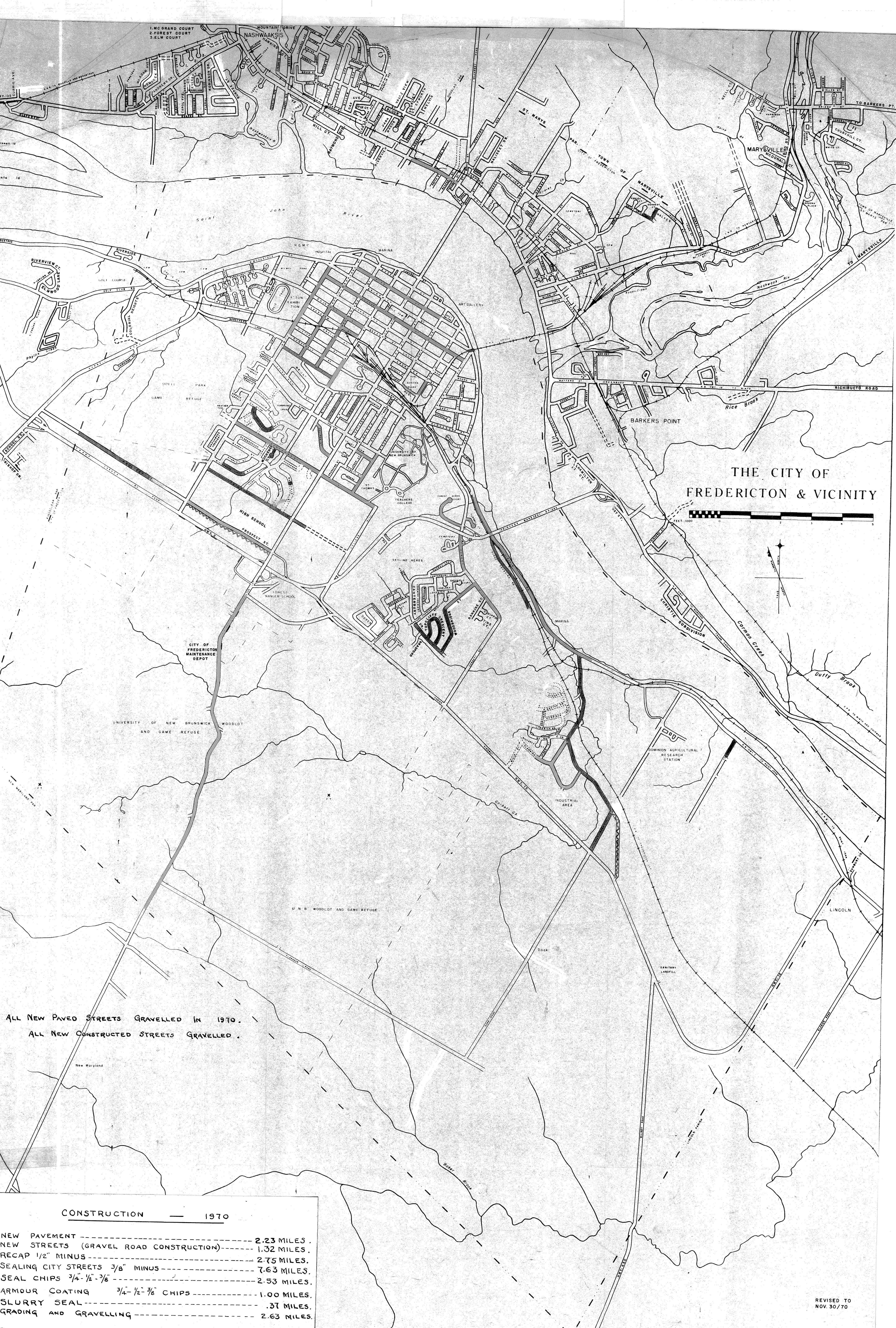
Tue.	3	127 Charlotte St.
Thur.	12	Centennial Bldg.
Tue.	17	99 Smith St.
Thur.	19	Colonial Heights Some growth, No coliforms.
Fri.	27	377 Gibson St. (Greer & Lawson)

December

Mon.	7	277 Gibson St. (D. D. Pringle)
Fri.	11	York Structural Steel
Fri.	18	Fire Station-College Hill
Wed.	23	Pony Club (Odell Park)
Mon.	28	Shell Service, Wilsey Road.

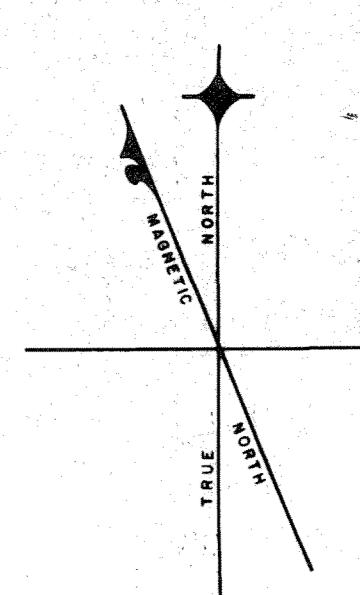
**THE CITY OF
FREDERICTON & VICINITY**

Scale: 1 mile = 1000 feet



**THE CITY OF
FREDERICTON & VICINITY**

FEET 1000



CONSTRUCTION 1970

SURFACE SEWER

DOMESTIC SEWER

WATER

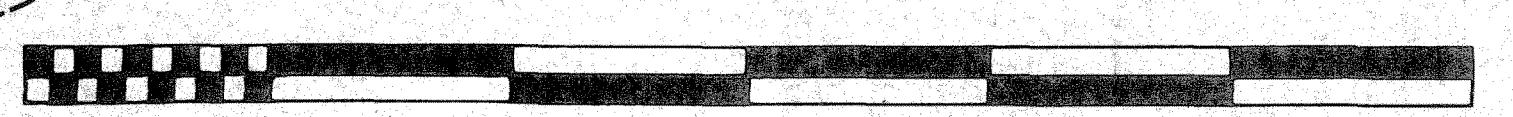
DOMESTIC SEWER		WATER	
36"	30"	24"	18"
592	227	196	1671
10"	8"	12"	10"
597	1815'	3594'	3556'
846	2312'	3127'	843
308	485		

CITY OF
FREDERICTON
MAINTENANCE
DEPOT

UNIVERSITY OF NEW
BRUNSWICK WOODLOT
AND GAME REFUGE

DOMINION AGRICULTURAL
RESEARCH STATION

THE CITY OF
FREDERICTON & VICINITY



CONSTRUCTION 1970

— CURB & GUTTER
CONCRETE WALKS

4.23 MILES
1.76 MILES

UNIVERSITY OF NEW BRUNSWICK WOODLOT
AND GAME REFUGE

CITY OF FREDERICTON
MAINTENANCE DEPOT

DOMINION AGRICULTURAL
RESEARCH STATION