



BUREAU OF  
MUNICIPAL  
RESEARCH

*A bulletin issued by the Bureau of Municipal Research*

# CIVIC AFFAIRS

NOV. 1975

2 TORONTO STREET

TORONTO



***FIRE PROTECTION  
SERVICES IN METRO:  
Is Unification the Answer?***

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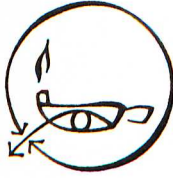
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## INTRODUCTION

During the past year, amalgamation of Metro Toronto's Fire Departments has been proposed by certain sectors of public opinion (e.g. the press) as necessary to upgrade the level of protection across Metro. However, in the course of the debate little data on the actual level of service has been available. Certainly such an assessment is required before supporting or rejecting amalgamation.

The objectives of this BMR study are two-fold:

- (a) To assess the relative quality of service in Metro's fire departments; and
- (b) To determine whether amalgamation would in fact be the most effective way to provide the best level of service for Metro.

Any assessment of whether and how fire protection services of Metro Toronto might be improved must be based on an understanding of the present system. Before talking about solutions we need to know what the problems are. This study begins with a description of existing operations. While the material assembled in Part I is not exhaustive, it does provide a basis for assessing the level of service and for suggesting changes. Factors which have a direct bearing on the quality of fire protection are highlighted.

In our assessment of these factors we found the quality of service to be lower in North York and Scarborough than in any other boroughs, or than in the City. Both boroughs experience long runs and long response times, and in Scarborough's north-east corner there is a serious water shortage. Other boroughs, such as York, seem to require at least twenty more men to upgrade their services. In contrast to the other boroughs, Etobicoke's and East York's services seem to be at a higher level, although not completely on a par with Toronto's.

The City of Toronto has the shortest runs but it also has the highest population density, some of Metro's oldest buildings, and heavier traffic. Although its preven-

tion program is impressive, Toronto experiences the highest per capita loss and the highest fire incidence rate.

Part I gives a detailed description of the operations of each department.

Part II and III deal with ways in which fire services might be improved. Because the proposal for amalgamation has been widely publicized and enthusiastically endorsed we specifically focus on the possible side effects of consolidating the departments. Part II considers whether this kind of reorganization would remove the causes of less than adequate service.

In the final weighting of benefits and costs, the BMR believes that the changes required to provide the best level of service do not demand amalgamation. Amalgamation may even have a negative impact on citizen and firefighter commitment — main components of effective fire prevention and firefighting.

Instead in Part III we suggest specific recommendations in the areas of further assessment by the departments, cooperation among the departments, data collection, manpower deployment, station number and location, prevention and communications.

## PART I

# THE OPERATION OF METRO TORONTO'S SIX FIRE DEPARTMENTS

The main pressure for amalgamation stems from the charge that the quality of service provided by the boroughs is lower than that of the City.

To measure the quality of service in the boroughs, it is important *not* to compare their services with those of the City. Rather, services should be measured in their own right. Effective fire protection is based on services tailored to cope with the distinctive demographic, geographic and structural characteristics of the district. Comparative data can be used where these characteristics are similar or where they are in some way taken into account.

Secondly, quality of service is determined by an interplay of factors. It is not enough to list the number and age of trucks. The number of men who actually go with each vehicle is important. Station location in itself is not an adequate indicator of service; traffic flows, street widths, the age of housing, the number of firefighters, the type of equipment available, are also important.

In the Bureau's assessment of the quality of service, we focus on several, though not all of the factors. Although the data is not totally conclusive, the factors assessed do indicate the level<sup>1</sup> of service. We also compare the data available while accounting as much as possible for demographic, geographic and structural differences.

### a) Indicators of Quality of Service

We addressed these factors:

#### i) Station Location

- number of stations per square mile related to population density
- distance of stations from industrial areas and a comparison of the farthest runs
- response times based on traffic flows

#### ii) Manpower

- number of firefighters per population, compared with other similar-sized municipalities

- number of men per truck compared with recommendations from the American Fire Prevention Association (underwriters)

- men and equipment who respond to similar alarms

#### iii) Training

- subjects covered in initial training of firefighters
- on-duty training activities

#### iv) Ability to Fight Fires

- age of firemen
- number of injuries per fireman

#### v) Prevention

- inspections per year
- fire incidence rate and per capita losses

### i) STATION LOCATION

One measure of quality of service is the number of stations per square mile, related to density. (See Table 1, page 16)

To gain a better sense of the relative densities, we assigned a weighting of "one" to Scarborough's density. Other densities are valued as a multiple of Scarborough's. For example, North York's density is approximately one-and-one-half times Scarborough's and a little over one-quarter the density of the City of Toronto. Even when densities are accounted for, more stations are required in each borough, except Etobicoke, to bring the ratio to a

1 We were unable, for instance, to relate the type of equipment available (its water pumping capacity) with the location of hydrants and water pressure. This requires expertise beyond our scope.

We also tried to tap the resources of the Fire Insurance Association which assesses on a regular basis the quality of service provided by each department. Unfortunately, this assessment is not open to the public.

These very difficulties in collecting sound data suggest the complexity involved in assessing the quality of service provided by the fire departments. They also point to a remoteness from the general public. Services such as the fire departments appear less accountable to the citizens they serve and little encouragement is given to the public to assess the service well.

par with the City's.<sup>1</sup> North York appears to have the least adequate coverage – at least in terms of stations per square mile related to population densities. *A few important considerations not accounted for are travelling time (street widths and traffic congestions), the type of building structures and their age.*

Each Metro municipality is a different mix of residential, commercial and industrial structures as can be seen on Table II page 16. These structures vary in age and in their own internal fire prevention systems (e.g. alarms, heat/smoke detectors, and sprinklers).

By the standard of stations per square mile North York appears underserved. Yet 43.1% of its land is residential and 90.1% of the dwellings were built after 1960. Presumably this should mean less of a fire hazard. (North York, for instance, does not have as much row housing as the City.) A similar case might be made for Scarborough. However one should keep in mind the rapid growth of high-rise apartments in North York where the traditional fire protection systems are sprinkled underground garages, boiler and incinerator rooms, with hoses and alarms on each floor. It is only in 1975 that apartments will be required to have additional protection; auxiliary-run elevators and speakers in hallways and elevators.

Also, one would expect the fire incidence rate to be low in the suburbs where buildings are newer. In fact, the rate is relatively high in North York and Etobicoke (as evidenced in the chart Table III page 17.)

Although North York's population density is half of York's and almost half of East York's, and although the percentage of land used industrially is also lower, the fire incidence rate is higher. Similarly while Etobicoke's density is lower than the other boroughs, with less land (in terms of percentages), used industrially, the fire incidence rate is higher.

This data is not sufficient to make a definitive analysis of this disparity in incidence rate but does suggest the need to improve preventive measures in North York, Etobicoke, and the City of Toronto.

### *Distance from Industrial areas and furthest runs*

According to the National Board of Fire Underwriters (representing insurance companies who are responsible for the regular assessment of fire service), "Stations should be near extensive industrial or business districts and near districts where there is a high life hazard, even though this often appears to be out of line with a plan of uniform distribution".<sup>2</sup> Also, the maximum distance stations should be from a "high value" district is one travel mile for a pumper, or 1-1/4 road-miles for a ladder company.<sup>3</sup> These distances should be smaller if the fire flow (amount of water estimated to put out a fire) is greater.

In our assessment of the coverage provided by Metro's departments we relied on three measures:

- the distance from the closest station to industrial areas;
- the longest runs each department must make (frequently this was the distance from the closest station to the municipality's boundaries); and
- response times to industrial areas and for longest runs, related to traffic flow.

Underwriters and Fire Departments generally consider three minutes to be the maximum time allowable to get to a fire. The response times of each area municipality are assessed in this light.

The estimates are based on our own measurements; the data is one other indicator of service quality. To locate

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1 In fact, the stations required may be higher. These estimates are based on '71 population statistics and '75 station locations.

2 *National Board of Fire Underwriters, Special Interest Bulletin, No. 176* (February, 1963).

3 "High value" districts might be considered a rather weak measure of required coverage, since "values" change, and are a subjective assessment.

Some Fire Chiefs discount the validity of standards set by insurance companies, such as the Board of Fire Underwriters, since it is in the interest of the companies for departments to be required to buy more equipment and hire more men. However, it is difficult for the layman to develop valid criteria for quality of service in a vacuum. The Bureau relies here on an outside body to provide some guidelines for measuring service, although these standards are not conclusive.

industrial/commercial areas we made use of Fire Department maps (provided by the East York & City of Toronto Fire Departments) and the 1971 existing land use map of Metropolitan Toronto and Immediate Region. The distance from the closest station was measured in approximate road-miles. Longest runs were calculated in road-miles from the nearest station.

Response times presented a major difficulty. Neither the City nor the boroughs keeps a computerized record of response times. Frequently these are kept in a filing system but the information is not usually gathered together in any one place for easy recall. This data seemed too much effort for the departments to gather for our study. It is also true that for some departments, such as North York, the data is also unavailable to the Chief and his men on a regular basis as a means of assessing the quality of service. While East York does not have a computerized system, the response times are available. Each morning the Chief or his deputy checks these and investigates any unusual response times.

Since this information was not available to us, we estimated response times according to the traffic flow on major arteries. This was provided by the Metropolitan Toronto Traffic Department. Where exact information on traffic flows was missing, traffic flow on major arteries in the southern parts of Etobicoke, Scarborough and North York was estimated at 22 m.p.h. The northern sectors were measured at 30 m.p.h. The City, York and East York arteries were assessed at 18 m.p.h. when data was absent.

Traffic flow calculations were made for off-peak hours — when response time is slowest (see the City of London Fire Department report). The response times may not be conclusive and it may be argued that fire trucks frequently exceed regular speeds. On the other hand, truck drivers are reluctant to go much faster than traffic flows because of the risks involved. See Tables IV, V, VI pages 17-18.

In both longest runs and runs to in-

dustrial areas, North York again appears to have the longest distances and the longest response times (see Appendix "A" for specific runs to industrial areas, and Appendix "B" for maps no. 1-2 on longest runs, aeriels and pumpers, and aeriels only). Scarborough is a close second. East York's response to industrial fires could also be beyond the maximum 3 minutes. These distances and response times are for the closest station, regardless of whether a pumper or aerial truck is available. Some distances and response times will be even longer in every municipality except York where an aerial is required. East York experiences only a slight increase in the response time for aeriels. Others, such as Scarborough and North York experience a substantial increase in distances and travel times when an aerial is needed.

In some instances, the longest runs (whether pumper or aerial) may appear insignificant; it may be a run to a distant farmfield. However in our calculations (see Table VII page 18) longest runs were to areas such as the new Woodbine Race Track, the Metro Zoo, and Heath Street and Walmer Road.

It should be noted that while Etobicoke's run to Woodbine Race Track is 4 min., the Track is almost totally equipped for fire protection with: fire alarms throughout, the enclosed areas are sprinklered, fire pumper and crew available, heat detectors in stables and hoses and hydrants outside stables.

Also, although the Scarborough Department is some distance from the Metro Zoo, the Zoo has additional protection. There is a resident Fire Marshal who works in cooperation with the Scarborough Prevention Bureau and Training Division. The Fire Marshal is in the process of developing a firefighting team composed of Zoo staff. Further, a Central Communications System connects the Zoo directly with the borough Fire Department and a P.A. system operates throughout the Zoo's exhibit areas. Restaurants at the Zoo are sprinklered, although other exhibit areas are not.

Effective fire prevention faces one major barrier at the Zoo. Water supply



and water pressure is low. (On July 2nd, 1975, there were reports of dry water fountains and the closing of restaurants due to low water supplies.) The Zoo's water supply now comes from Kirkham's Road, just east of the area. The borough is trying to get water from a second source on Finch Avenue.

### *An Overview of Coverage*

By looking at stations per square mile, population density, structural mix, distances and response times,<sup>1</sup> one can get a composite view of the level of coverage provided by each department.

The City of Toronto has the highest ratio of stations per square mile; it has the shortest distances and response times to its furthest points and industrial areas. However, its density of population is greatest, the acres of land given to industrial use is highest and its buildings are the oldest in Metro. The City seems to require the close coverage provided by its large number of stations.

York also has some of the shortest distances and response times. This is despite the fact that its ratio of stations per square mile is below the City's. (York has one station for every 2.3 square miles.) However, York also has a large percentage of land given to industrial use and its buildings are also among the oldest in Metro.

East York has the next lowest distances to travel and fairly low response times. Its ratio of stations per square mile is a bit below York's. At the same time 40 per cent of its structures were built after 1960 (a slightly higher percentage than York's). Its industrial composition is also similar to York's.

Etobicoke's ratio of stations per square mile is almost half East York's; however, so is its population density. Although Etobicoke's distances to industrials and furthest points are slightly longer than East York's, its response times are somewhat less. This is probably due to a decrease in traffic congestion — Etobicoke's wider streets increases the speed at which traffic can flow.

North York has some of the longest

runs and response times. This coincides with its low ratio of stations per square mile. At the same time North York has less land given to industrial use and has areas which are not densely populated. Also, 90 per cent of the buildings were built after 1960. As seen earlier, however there is a high fire incidence rate in North York.

Scarborough also has some long runs and response times, however, on the average these are less than North York's. The percentage of land given to industrial use is the lowest of all the boroughs so the risk of an expensive industrial fire is far less. Also 84 per cent of its structures were built after 1960, and there are still portions of land to be developed. Current fire hazards are probably less in Scarborough than in the other municipalities. However, the borough is faced with a growing population and with lands still unserved. In the north-east corner water is not yet available for firefighting. Natural water resources have been explored and pre-planning for a contingency situation has been completed. The Scarborough Department has an informal agreement with the Pickering Fire Department to use their 1,500 gal. water tanker and this request has been honoured on several occasions. A similar agreement is in effect with the Town of Markham Fire Department.

### *ii) MANPOWER*

The boroughs and city differ in the number of people each department serves. Another measure of the quality of service is the number of men per 1,000 people served. (In this case, the population is based on one's place of residence, not employment.) (See Table VIII Page 20).

The comparison of the manpower complement across Metro, related to U.S. equivalents, shows all the boroughs to be lower in manpower than other U.S. cities. (Unfortunately comparable statistics for

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<sup>1</sup> It is important in assessing these to look both at averages and ranges, and the Appendices "A" and "B". In some cases one department's average response time may appear lower than another's, but it still has a high number of long response times.

Canadian cities were not available). However, we would like to stress the hypothetical nature of this comparison. The U.S. ratios are based on averages from across the States. The difference in geography, climate, industrial and residential mix are not considered. Although by the U.S. comparison North York and Scarborough may be one hundred men short, there is no data on the make-up of the "suburban" U.S. cities used in the comparison.

#### *Number of men per truck*

The ordinary layman feels secure when he sees two pumpers, an aerial truck and chief's car arrive quickly at the scene of a fire. However, unless the trucks are adequately manned, there can be needless delays in actually fighting the fire. Good operating procedure requires the driver of a pumper to remain at the vehicle when pumping. If only two men arrive with the truck, one man is left to enter the building with a hand extinguisher, booster hose, or 1-1/2 inch line. Both men must use valuable time in connecting the pumper to a hydrant.

Progressive fire chiefs state that companies should never be allowed to respond with less than five men for each piece of equipment, and the accepted pattern is four men per pumper, five per aerial.<sup>1</sup> When the assigned crew per vehicle is examined, York is the one borough which appears to lack adequate manpower on its trucks. (See Table IX page 20.)

In York's three stations aerial trucks are under-manned: where five is the accepted complement, three firefighters man one aerial and four men are assigned to each of the other two aerials. The Department relies on its men is a second pumper (see page 21) to help man its aerials.<sup>2</sup> This raises some important questions: What if the pumper does not arrive at the same time as the aerial? Precious time is lost setting up equipment. If pumper manpower is used to raise a ladder, what other firefighting is *not* done at a first alarm fire?

These statistics reflect the men scheduled for duty. They do not account for men who might be absent due to illness, injury

and vacation time.<sup>3</sup>

#### *Men and equipment who are assigned to respond to similar alarms*

From Table X page 21 we can see a discrepancy in the amount of men and equipment which are assigned to respond to a first alarm fire. Etobicoke has the highest response (18-21 firefighters, two pumpers, and one aerial); the City of Toronto has the next highest response (15-18) men; Scarborough and North York's response are almost on a par with the City's with 17 men. The lowest response is from East York (2 pumpers, 1 aerial and 13 men). York's response is second lowest with 15 men.

At a first alarm fire the discrepancy between Etobicoke's, Toronto's, North York's and Scarborough's response is minimal. The differences are greater when one compares the men and equipment who respond.

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1 American Insurance Association recommendations. See Appendix "C" for details.

2 The York Fire Department itself stated that "two men can raise a hydraulic ladder". However, the description of firefighting procedures in Appendix "C" points to drawbacks in this process.

3 This is a major drawback to these statistics. Unfortunately the BMR and the public have little or no means to determine *exactly* how many men do in fact man the equipment. "Down time" — the amount of time a piece of equipment is in repair is also not easily accessible.

In many stations there is older equipment used as spares. The manpower complement has not been related to this since spare equipment would presumably be used for emergencies only, where more men would also be summoned.

to a *second* alarm fire.<sup>1</sup> None of the boroughs respond with the same number of men and equipment used by the City of Toronto.<sup>2</sup> In fact, York, East York and Scarborough's response to a second alarm fire is equivalent to the City's "assist call". What this means is that the boroughs' response to a fire of similar severity in no way matches the City's.

When the situation of a second alarm *and* another separate fire is considered, East York is less equipped to handle this. However, it is also the municipality least likely to have this occur. In fact this situation has not occurred at all since 1967.

The City has the greatest likelihood of having a second alarm and separate fire blazing. It also is most equipped to handle this. Scarborough experiences the next highest frequency, and also appears to be able to handle such an event – although its response to a second alarm is less than the City's.

### *iii) TRAINING*

Training differs in each municipality. Although Etobicoke, North York, Scarborough and Toronto have their own training sites, the other boroughs do not. The City's training is geared to the demands of a downtown core and harbourfront, the borough's to their own needs. Table XI, page 22 gives a brief summary of the *areas new recruits are trained in*, according to each municipality.

#### *City of Toronto*

City of Toronto recruits are trained at the Eastern Avenue Fire Academy. After recruit training, daily in-service training at the station is designed to keep the veteran fireman skilled. Individual units rotate in participating in one-day courses at the Fire Academy as well. There are voluntary company and chief officer courses also available.

#### *York*

In the Borough of York, recruits are on a one-year probation period. After the first four weeks training and experiencing some firefighting, they receive driver and pumping operations training. Recruits do not

simulate flammable liquids fire (these are not allowed in Metro, the City gets a permit for this.), and do not simulate hydro-vault emergencies until after the probation period. Similarly, recruits do not simulate radio active fires. This is taught later.

Training takes place in the station classrooms, and on the tower at the back of the Lambton Avenue Station. On-going training takes place on a daily basis and firefighters *voluntarily* go to Centennial College or the Ontario Fire College for further training. It is not compulsory but those desiring officer positions usually take updating courses.

#### *East York*

East York recruit training takes place at the North York Training Tower, at the fire stations and in a vacant lot in East York's industrial area. All training occurs on an in-service basis.

Unlike the City's policy of training all men (veteran or recruit) on a rotation basis, veteran East York firefighters receive further training (i.e. beyond the 1-1/2 hour training per day) if the yearly performance appraisal indicates a need.

#### *Etobicoke*

Etobicoke recruits train at the Training Tower on Martin Grove Road. Later on firefighters train daily at their stations and every 16-1/2 months they spend one week with their unit at the Training Tower.

#### *North York*

Recruits train at the North York Tower

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1 A second alarm fire is determined by the arriving officer. These factors would constitute a second alarm: the fire is hot and firefighters need relief, or the fire involves almost the entire building and/or has begun to spread to another building, or buildings are set back on the lot requiring extra hose lays, or the hydrant is far away demanding a long hose lay and a pumper. Where there is a large number of row houses (as in the City) the possibility of a fire spreading to another adjacent structure creating a second alarm, is higher than where buildings are separated. On the other hand, buildings that are set further back on the land are common to all the boroughs and even more common to the suburbs. Fires in these structures could also become second alarm fires.

2 The City of Toronto always responds to a second alarm with forty men. This is a standard response all across the City.

(200 Bermondsey Road). Notably lacking in initial training is the simulation of subway emergencies. In-service training is on a rotating schedule for review and new subjects training. Some of the subjects covered have been advanced rescue operations, pumping practices, ventilation practices, breathing apparatus under realistic conditions, multiple hose lays, leadership training and combined crews operations. *Scarborough*

Scarborough Fire Department recruits train at the back of Station no. 10, 4560 Sheppard Avenue. An underground bunker, ladder tower, hydrant, flammable liquids pit and roadway are available for training. Structural fires are also simulated underground.

Because of lack of facilities, the new recruits learn only the theory of tank car fires, natural gas, and radio-active fires, and hydrovault emergencies. While *on duty*, firefighters do some simulation of subway emergencies, but during training they learn what they might expect in such a situation and visit subways on familiarization tours.

Later on, firefighters also receive driver training. They also pre-plan emergencies that might occur at major institutions (e.g. The Metro Zoo). Firefighters train on the North York tower while on duty, Saturdays and Sundays.

To our knowledge, Etobicoke and North York are the only boroughs with a specified rotation of unit training at a particular site.

One of the arguments for amalgamation is that it would standardize the training procedures. From our data there is some indication of a difference in training. The City of Toronto is able to provide more simulations of emergencies in the training of recruits. Scarborough, York and East York lack the appropriate facilities, although despite this East York appears to be able to provide more simulations.

### *Nature of Relationship*

Since 1961 the Training Instructors in Metro have met to share information on

their programs. The Training Instructors Association was founded to help standardize procedures.<sup>1</sup> According to some borough fire officials, "Methods, techniques and experiences with new equipment and practices has flowed across municipal boundaries for years".

Lately there have been charges that the boroughs do not use Toronto's Training Academy. Instead they train at the North York or Etobicoke Tower or use the Ontario Fire College or Centennial College. Although this is substantiated by the boroughs, there are exceptions. Recently, North York Training Staff participated at the Toronto facility in a flammable liquids extinguishment program.

This information indicates that there are some feelings of rivalry between the Departments,<sup>2</sup> primarily between the City and the boroughs. The City feels it provides a better service and has a better training facility which the boroughs do not make adequate use of. The boroughs feel their level of protection is high and their training adequate. They are willing to use Toronto's Academy for staff training but do not see it as "the end all and be all". Although some might argue that this "competitive" spirit helps to maintain strong forces, it is unfortunate that this attitude leads to less than maximum use of each other's resources.

One wonders what the consequences of such a relationship are for department morale and service. Amalgamation may mean a structural unification — but what's at stake here is not only structures. It is also practices, attitudes, traditions, and beliefs which prevent Metro's fire departments from making maximum use of each other's resources.

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1 Several Ontario municipalities other than Metro are part of this Association.

2 This can be seen in their history: In 1963 (seven years prior to the Toronto Academy) North York built the first training tower and sent invitations to the area municipalities to use the facility. East York, Leaside and Scarborough accepted. Most of the other departments stated the Tower was too far away to be used by on-duty firemen.

#### iv) ABILITY TO FIGHT FIRES

One measure of a firefighter's ability to fight fires is his health and physical fitness. *In no case in Metro Toronto's Fire Departments are firefighters required to take physical training.* Some may exercise on their own but it is not considered part of a fireman's duties. In the past a 5 BX (physical fitness) program was introduced into several departments (e.g. York, Scarborough, Etobicoke and Toronto) but it was discontinued because older firemen were straining themselves.

Table XII on page 23 lists the age span of firefighters, the injuries per firefighter in 1974 and the days/nights lost per man when departments are compared. There is a wide discrepancy in the injuries per man. In each department a large percentage of the firefighters are 30 and 40 years old. They are at an age when it is necessary to keep the body in shape, especially when one's livelihood and life depend on it (not to forget the lives of others). The City has the largest number of men in the 50-59 year bracket; many of these men are district/platoon chiefs. This means they would still be very active but would not attend every fire.

It is evident that a physical fitness program should again be introduced in the departments. It should be implemented gradually and designed with the cooperation of the firefighters. Programs should be geared to the physical capabilities of the men so that unnecessary strains do not occur.

#### v) FIRE PREVENTION

Another indicator of the quality of fire protection service is fire prevention. This includes the type of inspections made, and their frequency. In our assessment we relate these factors to fire loss (a five-year average), fire incidence (a five-year average) and structural mix. (See Table XIII page 24.)

In each case *home* inspections are voluntary and there is no check to ensure that suggested changes are made. Homes are usually inspected by on-duty firefighters. Industrial and commercial sites are inspected by members of the fire prevention bureau.

There seems to be a correlation between

property values and fire loss. Fire loss is high where property has higher industrial values. This is the case with the City of Toronto which has the highest fire loss, higher industrial values and older buildings. The City's fire prevention needs appear greater than the boroughs.

The Toronto Fire Department, like the other departments, inspects plans for new buildings or alterations to existing structures. On completion the building is inspected. It also has had since 1964 a Fire prevention education program for junior school children. Further, the Department gives classroom instruction and live fire field demonstrations to industrial employees. (In 1974, ninety-four lectures were given to 6,227 people.)

In order to carry out inspections effectively the City is divided into 28 districts, with fourteen inspectors and three Captains assigned to carry out routine inspections of all industrial, commercial and multiple residency building units.

In contrast to the City, East York's fire incidence is low, so too is fire loss, and the borough has low industrial values. East York trains plant fire brigades, nursing home staff and hospital personnel. In addition, the department conducts an extinguisher demonstration. Approximately 500 invitations are sent annually to industrial and commercial owners, hospitals and nursing homes and the borough's Works Department.

East York which has the largest percentage of residential values, has also decided to increase home inspections to once every two-and-one-half years.

North York has the second highest fire incidence rate while its losses are relatively low. It seems to experience more fires with less dollar loss per capita. One wonders why the incidence rate is so high when almost 90 percent of the structures were built after 1960.

With the increase in high rise and town-house complexes North York has shifted its personnel to pre-fire planning and inspection of these buildings. The inspection of homes has been deferred temporarily. Home inspections are still carried out on a

request or complaint basis.

As with the other boroughs, North York advises and trains industrial, hospital and nursing home staffs.

More inspections of industry (bringing this up to every year) and of individual stores and homes on a regular basis might help lower the fire incidence rate. (We recognize the limitations of existing personnel but suggest there might be ways of utilizing existing personnel to better advantage.)

While a large number of building fires are in apartments and many of these are caused by hot grease on a stove, children playing with matches and careless smoking, none of the Departments demand fire prevention training of apartment superintendents (for purposes of licensing).<sup>1</sup> Scarborough and Etobicoke do specifically train superintendents — on a voluntary basis. Obviously too, these three major causes of fires require more citizen education. Scarborough does conduct programs to educate apartment dwellers on these three hazards. The City of Toronto, as noted earlier, and North York conduct programs in the schools. We are uncertain, however, of the extent to which this is made a regular, formal part of schooling or whether there are simply "special visits" from the Departments.

In East York, the Department relies primarily on information delivered to each home, to educate the public.

#### *By-Laws*

Another crucial factor in effective fire prevention are the municipality's building by-laws. These by-laws are designed and adopted at the municipality's discretion. Council can decide what parts of the National Building Code (or the Ontario Building Code) it wishes to adopt.

In 1975 the National Building Code suggested new regulations for the construction of high-rise buildings. The code provides several options:

- a totally sprinklered building with smoke free exit stairs
- a building partially sprinklered with "access panels" on the exterior of the

building

— a building less than 250 feet tall can be unsprinklered (except for the basement garages and boiler and laundry rooms) if there are specially vented staircases that can be kept free from smoke.<sup>2</sup>

Most of Metro's municipalities were awaiting this code, so they could better design their by-laws. In the meantime, Etobicoke moved ahead by passing through Council on May 4, 1971, a regulation stipulating that all high-rise office buildings had to be sprinklered on every floor, and in high-rise apartments every unit had to be sprinklered. (It was not written into the actual by-law but was encompassed by a clause which allows building regulations brought down through the Chief's discretion with the support of Council.) The City of Toronto Council passed legislation in 1974 requiring smoke detectors in multiple dwelling units. Since this by-law, 832 of these buildings have been inspected; 228 detectors installed.

With the present code there are options available from which each municipality can choose. In the Bureau's opinion municipal by-laws should demand totally sprinklered high rises, with escape panels, vented staircases, an auxiliary powered elevator and alarms and speakers on each floor. We realize this means an increased expense to the builder (and possibly tenants). Unfortunately such precautions might mean only a maximum 10 percent reduction in insurance premiums so little savings are available in this area. However,

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1 York statistics for 1974:

High rise apartment fires — 23.7% of total building fires.

Apartment building fires — 20.6% of total building fires.

18.3% of building fires were caused by grease.

Scarborough '73 statistics: 38% of building fires were in apartments (this was the largest number of fires)

33% of building fires caused by children playing with matches; 11% caused by hot grease.

2 The National Building Code for 1975. The Ontario Building Code is based on this, with some changes. It is presently being passed by the Ontario legislation.

we feel total precautions should be seriously considered.<sup>1</sup>

#### vi) SUMMARY OF VARIATIONS IN QUALITY OF SERVICE

##### City of Toronto

The Toronto Fire Department has the highest ratio of stations per square mile and the shortest distances and response times to its furthest points and industrial areas. However, its density of population is greatest, the acres of land given to industrial use is highest and its building are the oldest in Metro.

In contrast to other departments the City has a higher ratio of assigned men per population and its response to a second alarm fire is unmatched by the other departments.

The City provides the most extensive training for recruits at its Fire Academy. Individual units rotate on a one-day course basis.

The average age of firemen is higher in the City than the boroughs (the City fire department has been operating longest). A larger percentage of men (26%) are in the 50 and over bracket. Although many of these would be District and Platoon Chiefs, these men would still be involved in strenuous work.

Although the City has a comprehensive fire prevention plan, industrial/commercial sites are inspected only every 1-1/2 – 2 years (compared with annually in some boroughs). Its per capita fire loss over a 5-year period is the highest.

##### York

York also has some of the shortest distances and response times and its structures seem to indicate the need for this coverage.

In responding to a first alarm fire, its response seems adequate. However, its 2nd alarm response does not compare with the City's. To a fire of similar severity in York, York sends the equivalent of the City's "assist call". Furthermore, there is another indicator of the need for more men in the ratio of men per 1,000 population and in the number of men who are assigned to

man aerials. (If 4 men are assigned to an aerial, there is a chance that only 3 men would be available.)<sup>2</sup>

Training is in stages. *Recruits* do not simulate radio active fires, flammable liquid fires, hydro vault emergencies, high-rise, natural gas or tank car fires. These are taught later after the first four weeks of training. Also on-going training is ad hoc – not on a rotation basis.

York's average firefighter age is next highest in Metro, however, fewer men are in the 50+ bracket. Although its injury rate is 3rd highest and the number of days/nights lost is *very* high in comparison with other departments. This high rate of lost time would also have an impact on the number of men actually available (as opposed to assigned) to man York's trucks.

##### East York

East York has the lowest distances to travel and fairly low response times.

However, its manpower is also lower than the City's. This is evident in the ratio of men per 1,000 population and in the response to 1st and 2nd alarms. East York's response to a 1st alarm is the lowest across Metro. Its response to a 2nd alarm is also low – again, it is the equivalent of the City's "assist call". East York is also the least equipped to handle a separate 1st alarm while a 2nd alarm is in progress, but the possibility of this occurring is rare.

The borough has minimal training facilities. Training takes place at the North York Tower, at the fire stations and in a vacant lot in East York's industrial area. Training of on-duty firefighters occurs on an appraisal basis – not on a rotating system.

Injuries per man for East York are the third lowest, as are the days/nights lost

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1 Insurance premiums are already low for residential high rises which meet the present standards. It may be in the interest of life safety for insurance companies to increase the premiums for buildings which do not meet the new by-laws. A reduction in premiums for a totally sprinklered building might encourage the renovation of older buildings. However, again this is a questionable approach. The higher premium cost would probably be passed onto the tenant – and at a time when rentals are already high.

2 This is due to sickness, holiday time, etc.

due to injury.

In fire prevention, East York is stepping up its home inspections. Its fire incidence rate and per capita loss is among the lowest of the area municipalities.

### **Etobicoke**

Etobicoke's ratio of station per square mile is almost half East York's; however, so is its population density. Although the distances to furthest points and industrial areas are long, its response time is less than East York's.

Although there is some indication of the need for more men in the firefighters per 1,000 population table (Table VIII) this is not substantiated in the numbers of men assigned to respond to first and second alarms. Etobicoke's response to a first alarm is on a par with the City's while its response to a second alarm is more than any other borough's and almost half of the City's. At the same time, Etobicoke, appears most capable of handling a separate, simultaneous first alarm.

Recruit training takes place at the Training Tower on Martin Grove Road. All the standard simulations — except hydro vault emergencies are carried out. After recruit training, firefighters *do* train on a regular, rotation basis. (As well as the usual daily training at the Station.)

Etobicoke has the third highest fire incidence rate and the second highest per capita loss. At the same time it has the second highest percentage of industrial/commercial property values.

It states that industrial inspections are made every 1-1/2 years, and commercial inspections every 2 years. However, the number of recent inspections indicates this frequency may be much less.

### **North York**

North York has some of the longest runs and response times, corresponding with its low ratio of stations per square mile.

It appears to lack some manpower. This is indicated both in the firefighters per 1,000 population ratio (Table VIII) and in the number of men who respond to a second alarm fire. North York's response to a second alarm is less than Etobicoke's by

one aerial and 8-10 men. (This lack of manpower is brought out further in Appendix B where it is evident that a new station in the Bathurst and Finch area is required, with more men to staff this.)

Recruits train at the North York Tower on Bermondsey Road. However, they do not simulate subway emergencies, tank car fires or hydro vault emergencies, or receive driver training in this initial stage. After the initial period, in-service training does occur on a rotation basis.

North York has one of the lowest average age for firefighters but its injury rate per man is the highest. From our data we were unable to determine why this is so.

North York has the second highest fire incidence rate while its losses are relatively low. While it has stepped up inspections of high-rise and townhouse developments and has a fire prevention program now in the North York schools, industries are inspected only every three years.

### **Scarborough**

Scarborough also has some long runs and response times but on the average these are less than North York's.

In its effort to keep up with emerging needs, Scarborough faces a serious water shortage in its north-east corner. It relies on 1,500 gal. pumpers from Markham and Pickering to help meet this demand and exploration for other water sources is underway.

Scarborough also experiences some lack of manpower. This is evident in the ratio of firefighters per population and also in its response to second alarms. Its first alarm response is almost on a par with the City's, however, its second alarm response is only the equivalent of the City's "assist call". The frequency of second alarms, however, is far below that of the City's.

Recruits train at the Sheppard Avenue Station. Because of lack of facilities new recruits learn only the theory of some emergencies. On-duty firefighters pre-plan fires and receive driver training. This staging process of training is similar to York's, East York's and North York's.

Next to the City, Scarborough has the



least number of injuries per man, and has the least number of days/nights lost due to injury. Scarborough also has the largest percentage of men in the 20-29 year bracket.

Although its fire incidence rate was the lowest, its per capita losses were third highest. In its effort to prevent fires, Scarborough trains plant brigades and is conducting a program for apartment dwellers and superintendents on the hazards of grease fires, careless smoking and children playing with matches.

### **b) Problems of the Existing Decentralized System**

#### *BORDER CALLS & RESPONSE TIMES*

Since time is crucial in firefighting, the Departments need to investigate ways to reduce the response times. This is particularly true for those locations on the edges of municipal borders. The irregularity of borough/City boundaries means that there are several situations where it is easier for the closest station in a neighbouring municipality to respond than for the department responsible. (See Table XIV page 25.)

Presently, the Metro Fire Departments regularly run border calls. Joint plans are designed by several departments to respond to specific areas on two or three borders. For example, the Humber Memorial Hospital is on the border of York and North York. Both departments have a planned, coordinated response.

There is presently a high level of cooperation existing between the departments. It may be that this cooperation needs only to be formalized. Also, traffic problems, as on Lawrence Avenue, would have to be considered in the step to formalizing the response to border areas.

#### *COMMUNICATIONS*

Finally, the present communications system raises some questions. In a recent and tragic fire in North York, citizens complained they could not get through the central emergency number 361-1111.

At an October 14th, 1974 meeting of Metro Mayors and Fire Chiefs several proposals were made to improve the

communications system.<sup>1</sup> These included:

1. Change the listing of fire and other services in the front cover of the Bell Telephone Book: (for example) "You are in the Borough of \_\_\_\_\_," "Your fire department number is \_\_\_\_\_,"
  - Central Metro Police number.
  - Central Ambulance number.A different page would be printed for each municipality.
2. Public telephones should be decaded with the local fire department number.
3. Bell Telephone provide a simple map inside the telephone book designating each Metro municipality and boundaries clearly, with the six fire department numbers.
4. The elimination of duplicate street names or street names that sound similar over the telephone.
5. The training of telephone operators in handling emergency calls.
6. Reduce and simplify the fire department telephone numbers of each Metro municipality to three digits for quick recall; numbers could be similar such as 911 in Toronto, 912 for North York, 913 for York and so on. (However, this proposal proved to be unfeasible since Bell Canada has plans to use exchanges for other public services.)

At the same meeting Mayor Mel Lastman (North York) recommended a) a central fire emergency number for all Metro residents; and b) the development of a system by which the nearest station would respond to calls, regardless of municipal boundaries.

Although many of the above improvements could be made without too much difficulty, only the first and fifth have been instituted. Bell Canada does in fact train its operators to handle emergency calls, and Bell has included individual department numbers in the front page of its telephone directory.

The sixth improvement does not appear feasible. Bell Canada is prepared to provide a three-digit emergency number – '911' – for the entire Metropolitan Toronto area.

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<sup>1</sup> Minutes of Meeting of Metro Mayors and Fire Chiefs, October 15, 1974.

This can be done eighteen months after the municipalities request it, and must be used to contact all three services: police, fire and ambulance. According to Bell such a "universal" emergency number does not require amalgamation. However, Bell is not prepared to make similar three-digit numbers available for *each* department. '911' is presently being reserved continent-wide as an emergency number. Further, such exchanges must be planned well in advance since for every three-digit exchange used, 10,000 potential channels are lost. Also, Bell has plans to use similar three-digit numbers for other public services.

A '911' system has additional advantages:

– When an emergency occurs people panic, they need to be able to call for help easily. Often there is precious time lost between the detection of an emergency and contacting the proper service. A '911' system would reduce this time lag.

– '911' is quick to dial, yet not easily dialed by children (accidentally).

– with a '911' system it is possible to trace calls and to detect "crank" calls.

A '911' system for Metro Toronto will mean that all emergency calls go through a central communications office. The number of calls would increase substantially because at least three basic emergency services would be involved. However, contrary to a popular notion, the '911' system would *not* be limited to one incoming line. The central communications system would have as many incoming lines as required to serve the Metro area. It would not simply be an enlargement of the present central emergency (EMI-1111) system but would require a redesigning of that system. (For example, the present Empire system does not allow tracing of calls; the communications centre would be redesigned to handle this.)

The use of this system by the public would involve several steps:

1. Person detects emergency, dials '911'.
2. A central communications attendant answers call.

3. A central communications attendant puts call through to appropriate service – Police, Fire, Ambulance – and monitors the line until the switchover is complete.

4. The Fire Department dispatcher (in this case) sends the required units; through the radio system all members of that department know what vehicles were sent to what fire.

What remains uncertain is whether the dispatching time increases, and whether this increase offsets any time gained in the person dialing the service quickly. If the dispatching time does increase, either a better way of organizing to use the system must be found, or the '911' system should not be used.

The London Ontario Fire Department is currently using a '911' system, and is also in the process of testing its effectiveness. This assessment will provide important information for Metro's Chiefs and politicians in deciding the pros and cons of '911'. To date, London has found no increase in response times – but London also has only one Fire Department. One source of concern is that a Police constable answers the '911' calls. As a result, Police are usually dispatched before the Fire Department. This has caused some hard feelings among Fire Department personnel. One solution proposed by the London Fire Chief is to have a civilian operator.

The same fears have been voiced by Metro Chiefs. Of course the "problem" could become an "opportunity" if there was a spirit of *cooperation* between Police and Fire Departments. Police could arrive on the scene ahead of the Fire Department. They could clear the roadways and make it easy for the Fire Department to get to the scene.

In the end, these considerations remain:

- Will the '911' system in fact decrease response time (i.e. from the detection of an emergency to arrival at the scene)?
- If so, will the fire departments accept a central emergency number either within the present federated system or within an amalgamated one? Under either system how will they organize to gain maximum

benefit from a central emergency number?

- Are police, fire and ambulance willing to cooperate in this area?

### *Costs of Services*

Unlike some other services which may involve large capital expenditures (e.g. transportation), 90 percent of a fire department's costs is in personnel – salaries and benefits.<sup>1</sup> Equipment, clothing and vehicle maintenance make up the other 10%.

These costs are usually compared as “per capita costs”. See Table XV page 25. In making this comparison, it is important to keep in mind the level of services provided. Frequently the taxpayer only hears that the City of Toronto pays more for its fire protection than the boroughs do. Although North York citizens may pay less for their services, the quality of service also appears comparably lower. (Which is at least in part a reflection of their lower needs.) The City residents may pay more but the service provided is higher and more complex. The argument has been made that because many borough citizens work downtown and during the day are protected by the

Toronto Fire Department, the boroughs should help bear this cost. On the other hand, borough residents bring money into the City. Further, the large industrial/commercial complexes are taxed to carry the burden of the extra protection they demand. While the City may state it has more demands for, and provides more complex fire protection, its tax base is equally large.

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#### 1 East York's 1973 Financial Statement :

Salaries – Firefighting	\$1,808,665.72
Medical	200.00
Pension & Insurance	204,176.00
Salary – Chief, Deputy, Clerk	48,144.00
	<u>\$2,061,185.72</u>

New Equipment	743.00
Clothing	16,375.24
Vehicle Maintenance	15,808.00
	<u>\$ 32,926.24</u>

TOTAL BUDGET \$2,094,111.96

In this case personnel & benefits make up 95% of the total budget. Approximately an additional \$50,000 was budgeted for debt charges, supplies, etc.

North York's 1974 Financial Statement:

Staff – salaries, benefits, etc.	\$8,114,608.48
Office & Miscellaneous	199,722.83
Vehicles – equip. & main.	151,847.14
Buildings – equip. & main.	143,308.11
	<u>\$8,609,486.56</u>

In North York's case 94% of the budget is taken up by salaries, pensions, and benefits.

**TABLE I** **STATION COVERAGE**

Municipality	DENSITY, Pop. per sq. mile (to nearest 1,000)	Ratio: one Station per . . .	Residential Density Factor <sup>2</sup>	To raise Borough's ratio to a par with City's, requires <sup>3</sup>
Toronto	19	1.39 sq. mi.	4.0	
York	16	2.30 sq. mi.	3.1	1 more station
East York	13	2.70 sq. mi.	2.5	1 more station
Etobicoke	6	4.35 sq. mi.	1.2	
North York	7	6.20 sq. mi.	1.5	8 more stations
Scarborough	5	6.00 sq. mi. <sup>1</sup>	1.0	1 more station

<sup>1</sup> When Station no. 13 is opened this will increase Scarborough's ratio to: one station for every 5.5 sq. miles.

<sup>2</sup> Although only the residential night-time population is considered here, the day-time composition of the boroughs is accounted for in later charts on residential, industrial and commercial mixes.

<sup>3</sup> This estimate was arrived at by mathematically calculating what the coverage should be if density is considered. For example, Scarborough's population density when compared with Toronto's is 5/19 or almost 1/4. The City's coverage is one station per 1.38 sq. miles. Scarborough's coverage could be almost four times less than this, (actually 3.8 x 1.38) or 1 station per 5.24 square miles. In fact its coverage is one station per 6.00 square miles. It needs one more station to bring the ratio to 1 per 5.24 square miles — on a par with City's when density is calculated. This is purely a numerical way of considering the impact of density on required station coverage.

**TABLE II** **STRUCTURAL MIX**

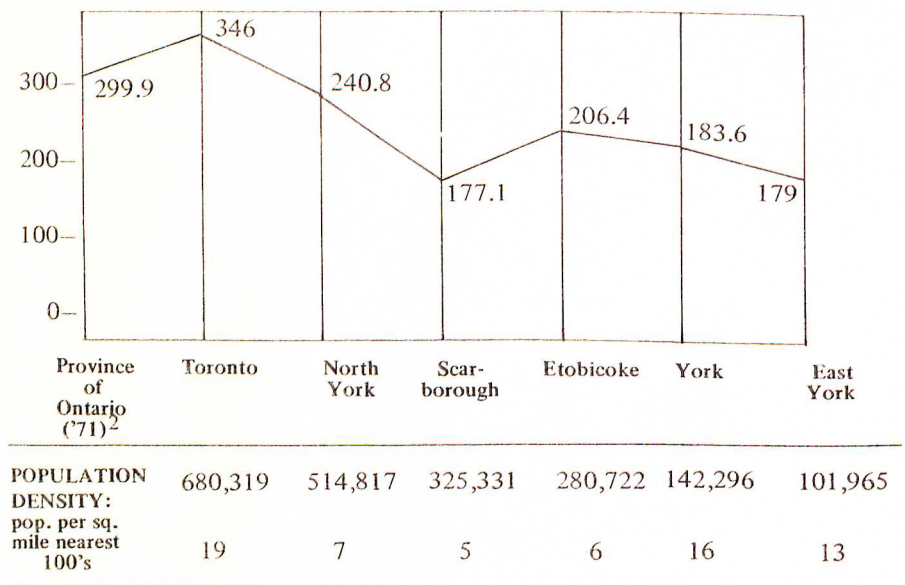
Municipality	ACRES <sup>1</sup>		RESIDENTIAL DWELLINGS		
	% Commercial/Industrial	% Residential	Number built Before 1946	Number <sup>2</sup> Built After 1960	% <sup>3</sup> Built After 1960
City	18.1	48.8	149,305	40,155	20.0
York	15.7	54.5	29,905	8,165	21.5
East York	15.7	51.1	14,680	10,105	40.8
Etobicoke	14.8	38.8	11,110	28,425	71.9
North York	11.6	43.1	8,060	72,815	90.1
Scarborough	8.5	30.4	6,705	35,430	84.0

<sup>1</sup> The remaining land is used by institutions, transportation and communication facilities, open space and vacant land. *Metroplan, Preliminary Impressions of the Urban Structure, 1971* (Metropolitan Toronto Planning Board, 1974).

<sup>2</sup> *Statistics Canada; Census Tract '71*. Only 1/3 of the population was polled for this data. The percentages are representative of present structures.

<sup>3</sup> This percentage is based on the totals of units built before 1946 and after 1960. The dwellings built between 1946 and 1960 are not accounted for.

**TABLE III FIRE INCIDENCE RATE per 100,000 pop.<sup>1</sup>**



1 Report of the Dominion Fire Commissioner *Fire Losses Canada* – 5 yr. Average

2 1971 Report of the Ontario Fire Marshal

**TABLE IV OVERALL DISTANCE & RESPONSE TIME TO INDUSTRIAL AREAS<sup>1</sup>**  
(Pumper or Aerial)

MUNICIPALITY	DISTANCE		RESPONSE TIME	
	RANGE Miles	AVERAGE Miles	RANGE Minutes	AVERAGE Minutes
City	.15–1.9	.9	.36–5.5	3.0
York	.1–2.2	.99	.16–6.6	2.9
East York	1–1.5	1.3	2.3–4.6	3.6
Etobicoke	.85–3.0	1.8	1.7–6	3.7
North York	.4–3.3	1.7	.9–6.9	3.6
Scarborough	.26–5.7	1.9	1.2–7.2	3.3

1 For East York, this includes commercial districts.

TABLE V

**DISTANCE & RESPONSE TIME  
LONGEST RUNS  
(Pumper or Aerial)**

MUNICIPALITY	DISTANCE		RESPONSE TIME	
	RANGE Miles	AVERAGE Miles	RANGE Minutes	AVERAGE Minutes
City	.81-1.8	1.2	2.82-5.9	3.5
York	.85-2.1	1.3	2.8-6.2	4.1
East York	.75-2.5	1.6	2.5-6.3	4.8
Etobicoke	.7-2.4	1.8	2.3-5.7	4.0 <sup>1</sup>
North York	2.3-3.5	2.9	3.5-7.8	5.8
Scarborough	1.1-5.7	2.6	2.28-10.6	5

<sup>1</sup> The range and average do not always correspond to the maps in Appendix "B". Departments were free to adjust these assessments. In Etobicoke's case, based on *that* Department's data, the average response time is 4 minutes.

TABLE VI

**DISTANCE & RESPONSE TIME  
LONGEST RUNS  
(Aerials Only)**

MUNICIPALITY	DISTANCE		RESPONSE TIME	
	RANGE Miles	AVERAGE Miles	RANGE Minutes	AVERAGE Minutes
City	1-2.7	1.6	3.3-7.9	4.7
York	.85-2.1	1.3	2.8-6.2	4.1
East York	1.1-2	1.9	3.7-6.2	4.9
Etobicoke	1.6-3.0	2.3	3.0-5.5	4.2
North York	3.1-6.4	4.3	7.4-11.7	8.5
Scarborough	2.3-10.6	5.5	4.5-19.8	10.9

**TABLE VII**                      **LONGEST RUNS – SPECIFIC**

STATION	DESTINATION	DISTANCE	TIME
<b>York Fire Department</b>			
Oakwood Station	Heath St. & Walmer Road (high value, residential)	1.9	6.1
Jane Street Station	Scarlett Rd. & Humber River	1.6	5.0
<b>East York Fire Department</b>			
McRae Drive Station	William Morgan Dr. & Overlea Blvd. (industrial)	2	6.3
	Governors Rd. & Douglas Crescent	2	6
<b>Etobicoke Fire Department</b>			
Station # 11	New Woodbine Race		
Humberline Drive	Track	1.8	4.0
<b>North York Fire Department</b>			
Keele & Finch Station	Steeles & Bathurst	4.3	7.1 <sup>1</sup>
Yonge and Princess	Steeles & Lauraleaf Rd. S. (just east of Bayview)	3.5	7.4 <sup>1</sup>
<b>Scarborough Fire Department</b>			
Station # 12	Metro Toronto Zoo	3.9	7 <sup>2</sup>

1 On April 17, 1975 *The Toronto Star* published a story on a stall in the plans for a Bathurst-Finch station in North York. The Borough's Board of Education was refusing to sell a plot of land for the station. According to Jack Chambers, Real Estate Commissioner for the borough, homes are up to 3.8 miles away from one of the three fire stations serving the area. From our estimates a station in this area is vital.

2 On December 26, 1974 six camels were lost in a fire just north of the Metro Toronto Zoo in a barn near Kirkham's Road and Finch. (*Globe and Mail* December 27, 1974)

TABLE VIII

## MANPOWER COMPLEMENT

Municipality	Firefighters per 1,000 pop. <sup>1</sup>	Ratio for U.S. Central & Suburban Municipalities <sup>2</sup>	Manpower required to raise ratio to comp. level
City of Toronto	1.82	1.7 (Central)	—
York	1.26	1.7 (Central)	65
East York	1.29	1.7 (Central)	43
Etobicoke	1.32	1.4 (Suburban)	37
North York	1.09	1.4 (Suburban)	156
Scarborough	.89	1.4 (Suburban)	171

1 Population figures are from the '71 Census; '75 manpower figures of firefighters, not administration officers (e.g. Fire Prevention).

2 When the ratios are compared simply on population size, and not "central", "suburban", American municipalities similar in population size to Etobicoke, North York and Scarborough in fact have a higher ratio at 1.7 firefighters per 1,000 population. *1975 Municipal Year Book* (Washington, 1975) p. 46 Table 1/10.

Below are listed the stations with the number of men on duty in one shift to man specific equipment. It is not a complete listing of men and equipment but focuses on areas where there appears to be a lack of manpower.

TABLE IX MANPOWER ASSIGNED PER VEHICLE

Station	Number of men on one shift	Equipment to be manned	Manpower needed to bring number of men per truck upto standard
York			
#2, Lambton Ave.	4 firefighters	Aerial Truck	5 more men
#3, Jane Street	4 firefighters	Aerial Truck	5 more men
#4, Weston Road	3 firefighters	Aerial Truck	10 more men
			TOTAL: 20 more men <sup>1</sup>

1. This complement is based on the fact that there are four shifts, thus to increase the complement by *one* man requires *four* firemen, *plus one* man to cover time lost due to sickness, holidays etc.



KEY TO TABLE X - P = Pumper; A = Aerial  
 ME = Miscellaneous Equipment (e.g. Rescue Squad, Emergency Truck); S = Supervisors (District Chief or Platoon Chief or other)

RESPONSE TO SIMILAR ALARMS

TABLE X

MUNICIPALITY	FIRST FIRE		SECOND FIRE		MEN & EQUIPMENT REMAINING	FREQUENCY
	First Alarm	Second Alarm	First Alarm			
TORONTO	PPA 15 - 18 men 1 S	PPPPAA 40 men 2 ME 3 S	PPA 18 men 1 S	22 P 14 A 5 ME 228 men can effectively man remaining equipment		40-50 2nd Alarms per year. Another separate call occurs frequently.
YORK	PPA 15 men 1 S	PA 8 - 10 men	PPA 15 men 1 S	1 P 1 A 2 - 4 men can man only one pumper		N/A
EAST YORK	PPA 13 men 1 S	P 4 men	PPA 13 men	1 P 1 ME (Van) 5 men can man either a pumper or van, but not both.		The possibility of a separate fire while a second alarm is blazing is rare. Only exception in 1967.
ETOBICOKE	PPA 1 ME 18-21 men 1 S	PPA 1 ME 18-22 men 2 S	PPA 13-16 men 1 S	5 P 1 A 29 men can effectively man the equipment		10 2nd Alarms in 1974. A separate call while 2nd alarm is in process is easily possible.
NORTH YORK	PPA <sup>2</sup> 16 men 1 S	PP 1 ME 13 men 1 S	PPA 16 men 1 S	12 P 2 A 75 men can effectively man equipment		statistics not maintained
SCARBOROUGH	PPA <sup>3</sup> 1 ME 17 men 1 S	PP 8 men (or whatever District Chief requests)	PPA 12 men	6 P 43 men can effectively man equipment		24 2nd Alarms in '74. Of these, 15 had separate fires.

1. This is *additional* men and equipment sent.

2. This is for residential fires. For industrial/commercial/institutional fires add 3 more men and one rescue truck.

3. This is standard for a house/factory fire; for school and hospital fires add 1 pumper and four men to each 1st and 2nd Alarms. A total of two pumpers and one aerial respond from a minimum of two stations (three if S.C.A.T. is called to respond).

TABLE XI

RECRUIT TRAINING

TRAINING AREAS	CITY	YORK	YORK	EAST YORK E	ETOBICOKE	NORTH YORK	SCARBOROUGH
1 Driver Training . . . . .	✓			✓	✓		
2 Teamwork with unit . . . . .	✓			✓	✓		
3 Pumper operations . . . . .	✓	✓	✓	✓	✓	✓	✓
4 Mask Training . . . . .	✓	✓	✓	✓	✓	✓	✓
5 Rescue procedures . . . . .	✓	✓	✓	✓	✓	✓	✓
6 Aerial ladder operations . . . . .	✓	✓	✓	✓	✓	✓	✓
7 Ladder drill . . . . .	✓	✓	✓	✓	✓	✓	✓
8 Hydraulics . . . . .	✓	✓	✓	✓	✓	✓	✓
9 Resuscitation . . . . .	✓	✓	✓	✓	✓	✓	✓
10 Use of Fire extinguishers . . . . .	✓	✓	✓	✓	✓	✓	✓
11 Rules, regulations . . . . .	✓	✓	✓	✓	✓	✓	✓
12 Recog. emergency electrical sources . . . . .	✓	✓	✓	✓	✓	✓	✓
13 Foam in firefighting . . . . .	✓	✓	✓	✓	✓	✓	✓
14 Salvage practices . . . . .	✓	✓	✓	✓	✓	✓	✓
15 Forcible entry . . . . .	✓	✓	✓	✓	✓	✓	✓
16 Use of combustible gas detectors . . . . .	✓	✓	✓	✓	✓	✓	✓
17 Recog. arson fires . . . . .	✓	✓	✓	✓	✓	✓	✓
18 Portable pumps use . . . . .	✓	✓	✓	✓	✓	✓	✓

SIMULATIONS

1 Fire house . . . . .	✓			✓	✓	✓	✓
2 Fire tower . . . . .	✓		✓	✓	✓	✓	✓
3 High-rise fire . . . . .	✓		✓	✓	✓	✓	✓
4 Flammable liquids. . . . .	✓		✓	✓	✓	✓	✓
5 Tank car fire . . . . .	✓		✓	✓	✓		
6 Portable turrets . . . . .	✓		✓	✓	✓		
7 Natural gas fire . . . . .	✓	✓	✓	✓	✓	✓	✓
8 Oil fire . . . . .	✓	✓	✓	✓	✓	✓	✓
9 Hydro vaults emerg. . . . .	✓		✓	✓	✓		
10 Subway emergency . . . . .	✓	✓	✓	✓	✓		
11 Radio active fire . . . . .	✓		✓	✓	✓		
12 Knots, hose lays . . . . .	✓	✓	✓	✓	✓	✓	✓
13 First aid . . . . .	✓	✓	✓	✓	✓	✓	✓
14 Ventilation . . . . .	✓	✓	✓	✓	✓	✓	✓
15 Heliport emerg. (Sick Children's Hospital) . . . . .	✓						✓

TABLE XII  
AGE SPREAD, INJURIES PER MAN AND TIME LOST

MUNICIPALITY	AVG. AGE	20-29	30-39	40-49	50-59	60+	INJURIES <sup>1</sup> PER MAN 1974	DAYS/NIGHTS LOST DUE TO INJURY (PER MAN)	FIREFIGHTERS 1,000 POP.
TORONTO	39	9%	30%	35%	24%	2%	.34	1.71	1.82
YORK	38	16%	44%	31%	6%	3%	.83 <sup>2</sup>	4.06	1.26
EAST YORK	36	10%	50%	32%	7%	1%	.67 <sup>3</sup>	.57	1.29
ETOBICOKE	N/A	19%	38%	35%	6%	2%	1.08	1.27	1.32
NORTH YORK	35		largest %				1.3	2.4	1.09
SCARBOROUGH	N/A	25%	33%	33%	7%	2%	.37	.87	.89

1 Includes recurring, compensable and non-compensable injuries.

2 York had no recurring injuries in 1974.

3 East York had no injuries due to smoke inhalation; all men are required to wear air masks when entering a fire. We are uncertain what the cause of discrepancies in injuries per man might be. Factors might include stress or over-work of firefighters. However, the City and Scarborough both register similar injury rates; Scarborough's manpower ratio is lower and in some areas, firefighters would respond to the same number of alarms.

TABLE XIII

## FIRE PREVENTION INDICATORS

MUNICIPALITY	INDUSTRIAL	FREQUENCY OF INSPECTIONS COMMERCIAL HOMES	DESCRIPTION	FIRE INCIDENCE RATE PER 100,000	PER CAPITA FIRE LOSS	PROPERTY VALUES % Ind/Comm	% Res
Toronto	Every 1-1/2-2 yrs.	Every 1-1/2-2 yrs.	Inspections of homes are voluntary. They are performed by on-duty Firemen. There is no check to ensure changes are made.	346	\$9.69	59%	41%
York	Every year	Every year	Homes are inspected by on-duty Firefighters.	183.6	\$7.10	31%	69%
East York	Every year	Every year	Homes are inspected by on- duty Firefighters.	179	\$3.33	28%	72%
Etobicoke	Every 1-1/2 <sup>1</sup> years	Every <sup>1</sup> 2 years	On-duty Firefighters inspect homes and stores. Stores are inspected during the summer.	206.4	\$7.76	44%	56%
North York	Every 3 yrs.	Every year	Plazas are inspected annually small stores are inspected on a routine basis; homes are inspect- ed on request. High rise bldgs. & townhouses are inspected every two years.	240.8	\$5.31	34%	66%
Scarborough	Every <sup>2</sup> yr	Every year	The focus is on education through exhibits at malls; 2 Fire- fighters attend. Home inspections occur in conjunction with shopping plaza exhibits and community education.	177.1	\$7.26	33%	67%

<sup>1</sup> Although the Department stated that industrial inspections occurred every 1-1/2 years, in 1974 only 20% of the industrial sites had been inspected. At this rate an industry might only be inspected every 5 years. Similarly, in 1974 only 28.5% of the commercial sites had been inspected. This could mean that in actual fact these are inspected every 3 years. However, Etobicoke trains plant brigades to help prevent industrial fires.

<sup>2</sup> Scarborough also trains plant brigades. Industrial sites are inspected by members of the Fire Prevention Bureau and commercial inspections are carried out by on-duty crews.

TABLE XIV

## BORDER CALLS &amp; RESPONSE TIMES

Station Responsible	Destination	Dist.	Time	Closest Station	Dist.	Time
<b>North York</b>				<b>York</b>		
Jane & Wilson	Weston Rd. & Maple Bush	2.3	7.4	Weston Rd.	1.1	3.2
<b>Bayview &amp; York Mills</b>				<b>City</b>		
	Broadway (between Bayview & Corinth Gdns.)	2.7	4.2	Montgomery Rd	1.0	2.8
<b>York</b>				<b>City</b>		
Oakwood Stn.	Heath St. & Walmer Rd.	1.4	6.5	Balmoral Rd.	1.1	3.6
<b>East York</b>				<b>City</b>		
Woodbine Stn.	Danforth & Thyra	1.9	5.8	Main & Gerrard	.7	2.4
<b>Etobicoke</b>				<b>York</b>		
Islington Ave.	Scarlett Rd. & Dixon Rd.	2.2	3.5	Weston Road	1.2	2.6 <sup>1</sup>

1 However, during rush hours (7 am - 9:30 am and 4 pm - 6:30 pm) traffic problems occur on the Lawrence Avenue bridge and would lengthen York's response time.

TABLE XV

## PER CAPITA COSTS

MUNICIPALITY	1972 <sup>1</sup>	1973 <sup>2</sup>	1974 <sup>2</sup>	AVERAGE
Toronto	\$27.05	\$28.12	\$31.78	\$28.98
York	17.96	20.58	20.00	19.51
East York	18.99	20.44	21.48	20.30
Etobicoke	15.93	17.08	19.60	17.53
North York	12.55	13.99	15.84	14.12
Scarborough	12.84	12.23	N/A	12.53

1 '72 figures 1973 *Handbook of Municipal Fire Protection in Ontario*.

2 Figures supplied by Fire Departments.

## PART II POSSIBLE ADVANTAGES & DISADVANTAGES OF AMALGAMATION

In Part I we saw that there was a significant variation in the quality of fire protection services across Metro. Some of the factors indicating this are: the need for more men, more equipment and better sharing of training resources. The question arises: Could amalgamation change any of these factors? Would it increase the level of service without increasing expenditures?

Before answering these questions, one has to understand *why* the level of protection is lower in some of the boroughs. What are the underlying causes?

In North York where there are some very long runs and response times, the building of a new station has been delayed not by ignorance but through haggling for over three years over a piece of land. In some cases, again this is true for North York, some relevant information is not readily available for an on-going assessment of service. There is no record of responses over three minutes, of their destination and related traffic flows. While a large number of building fires are in apartments, not one of the municipalities has taken steps to license superintendents, where licensing would be based on a sound understanding of fire prevention and fire extinguishment.<sup>1</sup> Although many domestic fires are caused by hot grease on the stove, careless smoking and children playing with matches, the education of young people in fire prevention is primarily on an ad hoc basis and directed towards grade school children.

In these last two examples education of adults, young people and children emerges as a key factor in fire prevention.

The causes for lower level services then seem to include:

- lack of understanding and/or commitment on the part of municipal Councils to grant more funds;
- newer departments require time to build up services, especially to catch up with rapid growth; are they growing gradually as the tax base allows?

- poor data collection, and use of the data in assessing, not only performance of companies but better ways to prevent fires and reduce response times, fight fires and locate stations;
- lack of education of apartment dwellers, superintendents, and young people; and
- lack of cooperation between the borough and City departments in using each other's training centres. (Borough's tend to use each other's centres but not the City's.)

This list could go on. Our purpose here is to illustrate that there are no doubt underlying causes for the differences in quality of service. The question is, would amalgamation remove these causes and increase the level of service? What impact would it have on increasing manpower and station strength? Decreasing response times? Making better use of data? Education of the public? Cooperation between the departments? Would it in fact increase the quality of service? What other impacts might it have on costs, the firefighters themselves, and organization structure? Would there be disadvantages?

### a) Some Limitations of the Amalgamation Concept

Amalgamation is primarily a structural solution – one out of many that can be used to increase an organization's effectiveness. It would create a structurally centralized organization: although it might be administratively decentralized (as with the Metro Police Force) decision-making and responsibility would be centralized. This lack of effective power at lower levels (e.g. at the division level) has impact on citizen understanding, involvement, participation and commitment to prevent fires.

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<sup>1</sup> North York is in the process of considering this. This year the City of Toronto began licensing rooming houses for this purpose.

There are other structural considerations. In the effort to determine how municipal services can be most efficiently provided, political scientists have suggested a useful rule of thumb. The formula proposes that each public good be assigned to that level of government whose territorial jurisdiction matches the area "over which the spillovers from the good are internalized."<sup>1</sup> Using this formula one can determine the optimal "catchment area".<sup>2</sup> That level of government whose jurisdiction could contain the external impact or spillover effects of the public service would be responsible.

Using this guideline, it has been argued that services such as Fire Protection, Refuse Collection, Playgrounds, and Parks, Streets and Sidewalks, and Health Education and Maternal Child Care, where the spillovers are minimal, are best handled on a relatively small scale.<sup>3</sup> In this sense Fire Protection differs significantly from other safety/emergency services such as Police and/or Ambulance. Both Police and Ambulance services have sufficiently widespread external impact to warrant larger scale organization.<sup>4</sup>

When one uses a structural approach (such as amalgamation) to a problem the assumption is, of course, that the basic cause of the problem lies in the organization's structure. The danger of this assumption is that it makes consolidation, that is a simpler and tidier structure, very appealing but does not lead to meaningful reform.

There are other approaches to increasing an organization's effectiveness, which include changing:

- the legal base (also part of a structural change);
- the economic base (this might result from amalgamation if a larger tax base is made available for increased services);
- the people in charge; and
- the ineffective practices of organization members.

With respect to the response times over three minutes, and the lack of manpower per truck in some areas, the *causes* for these may be station location and the need

for more men. On the other hand, none of the departments to our knowledge have begun a systematic examination of present operations. This would include using monthly data on response times and destinations related to traffic flows to determine the nature of those high response times, and ways to reduce these. Although in Toronto, York, East York and Etobicoke the Chief may use this information to monitor the effectiveness of units, the same information is not readily available to the men - the firefighters responsible. Constant involvement of the firefighter is necessary in searching for better ways to fight fires make possible equipment changes, determine the response of men and equipment needed in a certain area.

Amalgamation might force a certain standardization of its own, it would not automatically bring about practices such as ongoing evaluation which are prerequisite to improving the level of service.<sup>5</sup>

## b) Potential Benefits and Costs of Amalgamation

What are the benefits and costs of amalgamation?

### *Benefits*

1. Cost reduction in bulk buying of equipment and clothing. These items make up a little less than 10% of the budget, and on many items maximum economies are already

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1 Dr. Anne Golden "The Form of Local Government: What Are The Options for Metro", *Metro Toronto Under Review: What Are The Issues?* (Toronto, 1975) quoting J. Stephan Dupré.

2 The catchment area is the maximum area for which the service can be provided without substantial spillover effects.

3 J. Stephen Dupré "Intergovernmental Relations and the Metropolitan Area" (Toronto, 1976) p. 36 Appendix.

4 *Ibid.*

5 For a complete understanding of effective organization change see *Involve-ment, Participation and Commitment*, C.M. McIntosh (Quetico Centre, 1974).

being realized.<sup>1</sup>

2. All the forces combined might more easily put pressure on a Council to supply more men and equipment.

3. Increased centralization in a para-military structure could mean more control from the top.

4. Easy application of a '911' emergency number.

5. Facilities, equipment and specialists (e.g. in fire prevention) can be more efficiently allocated and utilized. Borders would be eliminated. The station nearest would respond to the call. An overall view of all equipment and its location would be readily available.

6. Standardized training program.

7. Fewer supervisory people – only one Chief, one Deputy, and one Assistant Deputy. (However, it is doubtful that three men would manage a 3,000 man department. More supervisory staff would be required and at higher salaries. Most cost savings would be neutralized).<sup>2</sup>

#### Costs

1. No reduction in the amount of manpower. Amalgamation usually increases citizen expectations for standardized service. (The issue is not whether this is logical, but rather that this is a natural response. It occurred in New York City.)<sup>3</sup> Ninety per cent of the budget is in salaries and benefits. Also, supervisors are usually reluctant to lay off fellow employees, even when amalgamation may point to this. The tendency is to keep people on staff and to find them work.<sup>4</sup>

2. Increased per capita costs for all of Metro. With amalgamation, wages, pensions and benefits would be brought in line with the highest level. At this point in time some boroughs do not offer the same amount in benefits and pensions. In some cases this would mean picking up these for the past 20 years. Even if the standard of service remained essentially unchanged, wages and benefits would raise the per capita costs. However, in our data collection there is also evidence to support the need for more men. Amalgamation would also mean additional costs in

increased manpower.

3. Services would not easily be tailored to the needs of specific districts. (Among the arguments for *decentralizing* New York City's government, was the need for flexibility and matching services with specific areas.)

4. Less citizen involvement and commitment.<sup>5</sup> This has consequences particularly for a fire department which relies on citizens to do some of their own fire prevention. Departments require the cooperation

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1 In an open letter from the BMR in 1950, amalgamation was recommended, assuming there would be "economies of scale". Then the population of Toronto and its area municipalities was 200,000. Amalgamation made sense. The times have changed however; Metro Toronto's population is approaching the three million mark. Savings that might have been made with amalgamation are now not achievable. This is further substantiated in Peter Lyman's paper "Efficiency in Urban Government: Economies & Diseconomies of Scale", *Metro Toronto Under Review: What Are the Issues* (Toronto, 1975) and in the study of the amalgamation of the City of Thunder Bay.

In the *Report and Recommendations: Lakehead Local Government Review* (1968) the Commissioner stated in section 128, (p. 39)

"Economies of scale are a by-product of increased volume which in turn permits production line techniques and mechanical aids to facilitate work output. As long as a government service can be organized to make volume an advantage, economies of scale should result. As growth proceeds, however, the problems of maintaining well ordered administration increase. Time spent on organizing, reporting, clarifying, checking, becomes greater. The growing economies of scale may be increasingly offset by an increase in such costs which is proceeding at a faster rate than the rate of growth of services. Eventually the point can be reached where economies of scale disappear and what are called diseconomies of scale take over."

2 For example, the Metro Police Department is one Department with 5 Districts, subdivided into Divisions. Each District & Division has an upper echelon of staff.

3 Farr, Walter G.; Liebman, Lance, Wood, Jeffrey S., *Decentralizing City Government A Practical Study of a Radical Proposal for New York City*. (New York, 1972).

4 This was true in the amalgamation of the City of Thunder Bay. Civic employees were placed in a "resource pool" until all found jobs within the City.

5. Farr, Walter.G. et al.



of citizens in removing fire hazards — poor electrical wiring, flammable rags, rubbish, etc. With a larger organization, further removed from the citizen, there is increased reliance on the Department to do the fire preventing.

5. With centralization, there is an increased fragility built into the system. If *one* element goes, a whole city is affected.<sup>1</sup>

6. Decrease in firefighter morale and commitment. In our discussions with firefighters, several have said that amalgamation would have a definite impact on morale. Firefighters identify strongly with their own departments and the people they serve. Amalgamation can lessen their commitment. In a job where there is a 50-50 chance of injury (a higher rate than that for a policeman) the employee is not working solely for the money; commitment to the citizens is an essential motivator.<sup>2</sup>

7. Less understanding of the impact of personal/community demands on costs.

There are at least two popular ways to control costs:

- restrictions made by the boss, or person in charge, and
- budgeting according to last year's budget with a small percentage increase.

Seldom is it recognized that the person himself must see the impact of his behaviour on costs. In this case, the citizen needs to know how his demands for increased services has impact on his taxes. Then he can begin to modify his demands.

As cities amalgamate, financial statements which represent the city's activities become more cumbersome.

Rather than providing information on a particular area, only an overall view of the metropolitan area is given. As a result, citizens have less opportunity to see the impact of their particular demands on increased costs. The ordinary citizen cannot know how services provided for his particular district add to these costs. Consequently, his demands for services increase.<sup>3</sup>

The same can be said for Fire Protection services. Under the present system it would at least be possible for citizens to

understand how their fire preventive actions or the lack of these add to increased costs in manpower, and equipment, as well as affecting lives.

8. With an amalgamated department seniority becomes a major issue. Some men, with several years of service in a borough department who are coming up for promotion would be moved laterally, or even downward in an amalgamated department. This would create hard feelings, particularly among borough firefighters.

### *Summary of Benefits*

From the listing of Benefits and Costs it appears that there are three major benefits to be gained from amalgamation:

1. With the elimination of borough boundaries, the closest station would respond to those areas now on the border. An amalgamated system would allow an overall view of the number and location of trucks all across Metro for easy deployment.
2. A centralized '911' system can be more easily implemented than in the present six-city system.<sup>3</sup> An amalgamated system might force Council members and Chiefs to upgrade services.

### *Other Ways to Achieve Benefits*

The question is, given the other disadvantages of amalgamation, can the above major benefits be gained in other ways? It appears so.

1. It could become a *formal* policy that the closest station respond to a fire regardless of boundaries. This is already done informally. Fire departments frequently cross borders.

The borders could be realigned so that irregular boundaries are smoothed out, and

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1 One wonders too whether the increased size of an organization has consequences for a sense of identity and commitment. Are the strikes of firefighter's in Montreal also an indication of the impact of large impersonal organizations?

2 Again, in the arguments for decentralizing New York City, identification with an area was considered an essential part of effective service delivery.

3. In the New York case, this was another argument for decentralizing.

the nearest station responds. (e.g. the York area around Heath and Walmer)<sup>1</sup>

2. There doesn't seem to be difficulty with deployment of men and equipment. Departments can reorganize to meet their present demands. The problem seems to be in the need for more men and equipment in some areas. The Departments currently do function under a Mutual Aid program. Plans for coping with a Metro-wide or national emergency are worked out with the Departments and the Department of Emergency Services.

3. A centralized '911' system has yet to be proved to contribute to a decrease in overall response time. Although it is most easily implemented under an amalgamated system, it can also be implemented with the present structure. What is required is better organization and planning on the part of the Fire Departments and the operators. The crucial factor would be in ensuring that appropriate fire departments are notified immediately and that each department knows where its men are.

4. It is uncertain whether the barrier to gaining required manpower and equipment is at the Council level – because of lack of understanding or lack of funds – or at the management level of the Departments because of lack of sound, up-to-date data on fire response, or lack of commitment to upgrading services. While amalgamation might force an upgrading of service, similar pressure might be brought to bear by the fire department, or the Committee of Council responsible, or the public.

(While the Ontario Fire Marshal's Office can recommend needed changes, it cannot force a department to change things. Each fire department is responsible only to Council. Its actions are monitored by the Fire Marshal and the Underwriters Insurance Association.) As stated earlier, amalgamation will not change practices of lack of communication, poor use of data, or ensure continual involvement of firefighters in designing more effective ways to prevent or fight fires.

### c) The Experience of New York City

In some cases a quick view of how

other cities have managed amalgamation is helpful. As can be seen in our footnotes, New York City has experienced the impact of amalgamation in the extreme. It is 73 years since the formation of the five boroughs of the City of New York.<sup>2</sup> The City's expenditures have tripled in the last ten years; except for health and welfare benefits, personnel costs make up most of the budget.<sup>3</sup> It seems that as numbers and density increase, costs of services to be provided also increase. Further, these problems are now being experienced:

- Lack of program variation to reflect local needs. The problems and needs of the City's neighbourhoods are different and require a tailored service delivery. Yet with amalgamation, for ease of management and to achieve economies of scale, city-wide standards are used.
- Lack of local understanding of costs and consequences of decisions. Financial statistics are developed across New York. The ordinary citizen cannot know how the services provided for his neighbourhood contribute to these costs. Overall City expenditures are so large, they are almost meaningless; everyone assumes that cost increases can be made up by reduction of services to someone else. Since the citizen doesn't understand how his neighbourhood and lifestyle influence cost, his demands for services continue to

1 York's statistics for '74 border calls read:

Municipality	Number	Percent of Total
Etobicoke	4	.16
Toronto	22	.93
North York	6	.25
<b>TOTALS</b>	<b>32</b>	<b>1.34%</b>

2 Farr, Walter G. et al.

3 In 1961 the Fire Department budget was \$127 million. By 1973 it was \$375 million. "Improving The Deployment of Firefighting Resources", *The Fire Journal* (July, 1973).

One might argue that New York City is not a good example, since it is currently experiencing bankruptcy due – at least in part, to too many employees. On the other hand, the proliferation of jobs and employees – expanding beyond what is needed to do work – is a prime characteristic of increased bureaucracy and an indirect effect of amalgamation.

increase; there is less likelihood that he personally will cut back.

— Lack of citizen cooperation with government services. Clean streets and sidewalks, enjoyable parks and playgrounds, *efficient fire prevention and firefighting services* and neighbourhood security all depend as much on the behaviour and attitudes of neighbourhood residents as on efficiency of services. There is an increasing low level of cooperation; lack of understanding or identification with the municipal government must be a substantial contributing factor.

As a result of these dissatisfactions, New York is now moving toward decentralization.

### PART III TOWARDS MORE EFFECTIVE FIRE PROTECTION IN METRO – WITHOUT AMALGAMATION

Given the short-comings of amalgamation, we do not believe that it would improve services at the same or lower costs. In fact, although services could become more standardized, they could no longer be tailored as easily to the different districts – an aspect more crucial in fire protection than in most other services. At the same time per capita costs would rise – perhaps without an increase in the level of services.

Instead, the BMR makes the following recommendations:

1. That borough and City chiefs meet to openly assess the quality of service now available, to determine the most effective means for improving the service, and to plan specific action steps.
2. That the borough and City fire departments adopt a standard computerized information retrieval system which records the response times of each unit, the number of trucks and men who respond, and the destination. This data should be available monthly in a complete, concise form and used by the chief, his deputy, the district and platoon chiefs as a means of determining:

- effectiveness
- causes for delays
- ways to decrease response times
- ways to improve prevention.

The Departments should also determine what further data should be included in this system.

3. That more effective ways to use *present* manpower be considered:

a) In the York Department where aerials are undermanned, a pumper is now used as a S.C.A.T. unit (Supplementary Combat Attack Team). This process needs to be assessed to ensure that the S.C.A.T. – pumper-arrives at the same time as the aerial. This solution should also be seen as only a temporary measure.

or

b) Manpower could be realigned to meet present demands. York's Station no. 1 res-

ponded to 981 alarms in 1974 as compared to Station no. 3 with 391 alarms. Yet Station no. 1 has only one firefighter more than no. 3. Four firefighters and a pumper might be transferred to Station no. 3. (See Appendix "D")

Similarly, East York's Woodbine Station responds to twice as many alarms as the other two stations. Either 4 firefighters and one pumper could be moved from the McRae Station to the Woodbine Station; or a S.C.A.T. unit might be utilized to increase the number of firefighters in the Woodbine area.

For both York and East York the question of whether there is sufficient space to move these men would have to be considered.

c) Also where there are Stations of high activity and those of low activity, firefighters can be rotated within an area they know. After several shifts in a high activity station, firefighters change with those in a low activity station. This can be an effective way to ensure that firefighters are kept active and share the workload more evenly.

This would apply especially in North York where Station no. 2 with 2 pumpers and 10 firefighters responded to 925 alarms in 1974. In contrast at station no. 10 with one pumper and one aerial and 11 firefighters, there were 1,530 alarms. While North York is waiting for the construction of Station no. 13 (which will ease the load on no. 10 Station), this method of rotation would help to share the workload. (See Appendix "D").

4. That the York Department consider hiring more men to better man its aerials and to release its pumper manpower for more effective fire fighting.

5. In most municipalities there are still some very long response times due to traffic flows. To help reduce response times we suggest that:

a) Lights on major arteries be controlled either from within the fire trucks or from

a borough traffic control centre; fire departments should be able to switch street lights to allow trucks to pass through easily.

b) Sirens be mounted at major intersections. These could sound along the route to be taken by a fire truck, warning citizens ahead of time to clear the road.

6. In North York and Scarborough there are some long runs and there is evidence of some strain on present personnel.<sup>1</sup> The problem of strain on present manpower can be temporarily alleviated by the use of S.C.A.T. units. Scarborough already uses one S.C.A.T. unit and has had some success in increasing its manpower at the scene of a fire. An additional S.C.A.T. planned for 1976 and 1977 will also help alleviate this problem. The S.C.A.T. would arrive almost simultaneously with the first vehicle on the scene. However, the problem of response *time* remains. Station no. 13 which is soon to open in Scarborough will help reduce some of its response times.

a) In North York where Stations no. 10 and no. 1 handled 1,530 and 1,680 alarms respectively last year and where it can take 8 minutes to get to Steeles and Bathurst, a new station is definitely needed. We support the construction of Station no. 12 proposed for Bathurst and Finch. The Station would cut response times in that area in half.

b) We also suggest that North York determine the number of alarms in the Bayview, Steeles area and the Humber River, Steeles area in 1974. If there have been a large number of alarms in these areas, a roving S.C.A.T. unit or pumper might be placed in each of these areas. This would reduce present response times of 8-9 minutes.

c) In Etobicoke it can take over 5 minutes to reach Clairville. The Station to be completed this year in Clairville will reduce response times to a few minutes. Etobicoke also has stations proposed for: no. 12 Coronet Rd. and East Mall (this would reduce response time to the Bloor, Etobicoke Creek area — now almost 5 minutes)

no. 13 Carlingview and Disco Road (this would reduce response time to Woodbine race track — now over 6 minutes)

We support these plans for future development.

d) As Scarborough, North York and Etobicoke continue to grow, new demands for

service will emerge. We suggest that future station locations be determined by

— the number of alarms recorded in any area

— the distances aeriels and pumpers will have to travel

— the traffic flows.

7. That departments, by involving their firefighters and reviewing the municipality's history of fire, determine the past locations of fires requiring large numbers of men and equipment. The likelihood of a similar response being required in the future should be tested. Based on their own past experience, firefighters can help designate the areas requiring a low response of men and equipment and those requiring a greater response.

8. The boroughs also experience long response times to some border areas. We suggest that border areas better served by the closest station become the *regular* response area for that station, regardless of boundaries:

Such areas include:

— Broadway between Bayview and Corinth Gardens

— Heath and Walmer Road area

— Weston Road and Maple Bush area

— Danforth and Thyra

— Scarlett Road and Dixon Road.

We realize that there may be times (e.g. rush hour) when in fact, because of traffic conditions the Station normally responsible, should respond. Departments would have to work together to determine when this would be so. They would also have to be ensured that the other Department had enough men and equipment available at the closest station (equipment can be "out of order", or men sick).

9. a) That the training of firefighters (not recruits) take place while out of service — not while on call and at specific training facilities. That in York, East York, Scarborough and North York, firefighters be required to train on a rotation system (e.g. one week out of every six months).

b) That the boroughs use the Toronto Fire Academy for the purposes of simulating those emergencies now only studied in theory by recruits.

10. a) That a physical fitness program designed by the firefighters and their

<sup>1</sup> Compare maps on Longest Runs, Appendices "A", "B" and "D". Strain is evident by the large number of alarms responded to by some stations.

captains and training officers, be introduced in all departments. The program should be tailored to the needs of the individual firefighter, and be brought in gradually.

11. a) That North York step up inspection of homes and individual stores; homes every four years, stores annually.

b) That the City of Toronto increase its inspections of industrial and commercial sites to once *annually*; of homes to once every 2-1/2 years, to be accomplished with existing men and equipment. If from the experience of other municipalities it is evident that more people are at home Saturdays and evenings, North York and Toronto on-duty firefighters could make inspections at this time.

c) That a systematic method of home inspection be designed through the cooperation of all the departments. The method should ensure that:

- people will be home when the firefighters arrive;
- citizens become more aware of fire hazards and of effective ways to handle an emergency;
- suggested changes can be checked; and
- those who cannot afford the changes be eligible for assistance from public funds. One approach might be to meet residents at malls or civic centres where fire department displays are available. Appointments could then be made for an inspection.

d) That Toronto, York, East York, Etobicoke, North York and Scarborough enact municipal building by-laws requiring (i) that every floor and apartment unit of a high-rise building be either sprinklered or have a sprinkler and smoke/heat detector system, (ii) that staircases be vented so they can be smoke free; (iii) that one elevator run on auxiliary power; (iv) and that there be speakers on each floor.

12. That before implementing a central emergency number (911), the experience of London Ontario's Fire Department be utilized; if the '911' system *does not* decrease the time from when an emergency is detected to when help arrives, it should not be implemented.

13. That the City of Toronto drop its charge of \$1,400 per hour per truck; that instead the departments together search for ways to share each other's costs incurred. For example, borough and city departments could keep track of border calls and the cost of services to them. At the end of the year, this information could be shared to see if, in fact, one department remained in debt to another.

Another area for cost sharing is the Fireboat. Since the Fireboat does cover Etobicoke, the City of Toronto and Scarborough, we suggest that these three municipalities share the cost of the boat. The cost sharing could be based on the value of commercial/industrial/residential property covered in each area — or the tax base available to each municipality from waterfront properties.

14. That the committee of Council responsible for Fire Protection receive monthly data on response times, destinations, the numbers of men who man each piece of equipment, the number of alarms in each area; so as to better monitor the quality of service provided by the department.

If this is not an effective way to monitor the level of service, perhaps the Ontario Fire Marshal's Office should be given *power* to enforce an increased level of service.

15. Although Metro's Fire Departments do visit the grade schools to talk on fire prevention, frequently this is on an ad hoc basis. Fire prevention and fire safety should be taught as part of the regular grade school and high school program.

16. In our report we did not deal with the impact of highly flammable furniture and insulation. However, a basic step in prevention is getting at the source of problems. It is common knowledge that much of the furniture made today is highly flammable, and in fires these items give off toxic gases. Also, flammable insulation is on the market. We recommend that through legislation, manufacturers be encouraged to stop production of such items.

## IN CONCLUSION:

None of these recommendations require amalgamation, yet all of them would increase the quality of service provided by the Metro Fire Departments. The recommendations (or similar ones) do demand the commitment of each area municipality's Fire Department and elected Council. While amalgamation might force some forms of upgrading (e.g. more manpower per truck, more stations) it is primarily a structural solution. On its own it will not change ineffective department practices such as poor use of data on response times. It would not automatically bring cooperation between the departments. (There are examples in other amalgamated municipalities where remnants of rivalry, and hard feelings continue to block a department's effectiveness.)

However, the need for upgrading should not be delayed. Although present service gaps may not appear significant, the situation is not a stable one. North York, Scarborough and Etobicoke will continue to grow as Metro's population increases. In thirty years time the recently built

high-rise apartments will be that much older; the life risk in buildings built before the 1975 Building Code will have increased.<sup>1</sup> These growing needs will have to be met.

In the light of these increased demands, our recommendations become more important. A delaying of service improvement now, means even lower quality protection in the future. This will be felt especially in North York, Scarborough and Etobicoke where development will focus in the coming years.

Having said this, and recognizing the limitations and costs of amalgamation, the Bureau makes this final recommendation — if needed improvements are not implemented within the next two years, some authority should be given the power to ensure that the appropriate reforms are made — either through amalgamation or by expanding the role of the Ontario Fire Marshal.

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1 As mentioned earlier, only in 1975 will high-rise apartments have to have auxiliary run elevators, voice-to floor communications, sprinklered dwellings or escape panels, with vented staircases.

# **appendix a**



**DISTANCE & RESPONSE TIMES TO  
INDUSTRIAL AREAS**

**TORONTO**

STATION	DESTINATION	DISTANCE IN MILES	TIME IN MINUTES
#1	Railway Yards, east of Spadina, South of Front Street	1.6	3.8
#2	Fleet and Bathurst Streets	1.3	4.6
#5	Jarvis and Lakeshore Blvd.	.74	3.8
#7	Dundas and Parliament	.15	.36
	Don Roadway and King Street East	.67	2.4
#8	Manning and College Streets	.4	2.3
#10	Marlborough and Yonge Streets	.8	3.0
#12	Eastern Avenue and Booth	1.2	4.5
#14	Dupont and Lansdowne	.4	1.2
#15	Bloor, east of Dundas	1.1	3.9
#16	Queensway and Windemere	1.2	3.6
#20	St. Clair Avenue and Keele Street	.8	2.5
#23	Davenport (between Bathurst and Christie)	.2	.7
#24	Merton and Mt. Pleasant	.95	3.0
#26	Leslie and Ivy	.7	2.2
#27	Weston Road and Northland Avenue	1.9	5.5

**DISTANCE AND RESPONSE TIMES  
TO INDUSTRIAL AREAS**

**YORK**

STATION	DESTINATION	DISTANCE IN MILES	TIME IN MINUTES
# 2	CN Tracks and Rogers Road	1.3	4.1
	Northwestern Ave. & Kincort St.	2.2	5.5
	Kodak Property, Eglinton Ave. W.	.76	1.9
	Industry Street	1.1	2.9
	Rotherham and Hyde Ave.	.9	3.1
# 3	Dundas and Jane Street	.1	.16
	Dundas and Runnymede Road	.6	1.6
	Dundas and Scarlett Road	.6	1.5
# 4	Lawrence Ave. and Rosemount	.47	1.4
	Pine St. and Lawrence	.76	2.2
	Weston Road and Jane Street	1.2	3.4
	Clouston Avenue and Centre Road	1.1	2.9
# 1	Dufferin and Castlefield	1.1	4.1
	Castlefield and Caledonia	1.7	6.6

**DISTANCE AND RESPONSE  
TO INDUSTRIAL AREAS**

**NORTH YORK**

STATION	DESTINATION	DISTANCE IN MILES	TIME IN MINUTES
# 1 Yonge	Yonge St. & HWY 401	1.1	3.2
	CNR Tracks and Sheppard	2.3	4.0
# 3 Finch	Steeles and Weston Road	1.6	4.4
	Weston Rd. and Toryork Rd.	.7	1.9
	CPR south of Steeles	2.8	6.9
# 4 Jane	HWY 401 and CPR	1.1	3.0
	HWY 400 and Sheppard	1.9	2.5
	Wilson Avenue and Murray Rd.	2.1	5.9
# 5	York Mills and Don Mills	.9	2.5
# 7	Immediate area	.4	.9
# 8	Trethewey and Jane Street	1.7	3.4
# 9	Steeles and Woodbine	2.4	4.8
	Between Sheppard and HWY 401 east of Woodbine	3.3	5.7
# 10	Finch and Dufferin	1.4	2.7
	Steeles and CNR tracks	1.8	2.8

**EAST YORK**

STATION	DESTINATION	DISTANCE IN MILES	TIME IN MINUTES
McRae	The Centre of Industrial Park, Overlea Blvd.	1.0	2.3
	Industrial Park furthest point	1.5	4.6
Woodbine	Northline Road and Dohme Avenue	1.5	3.9

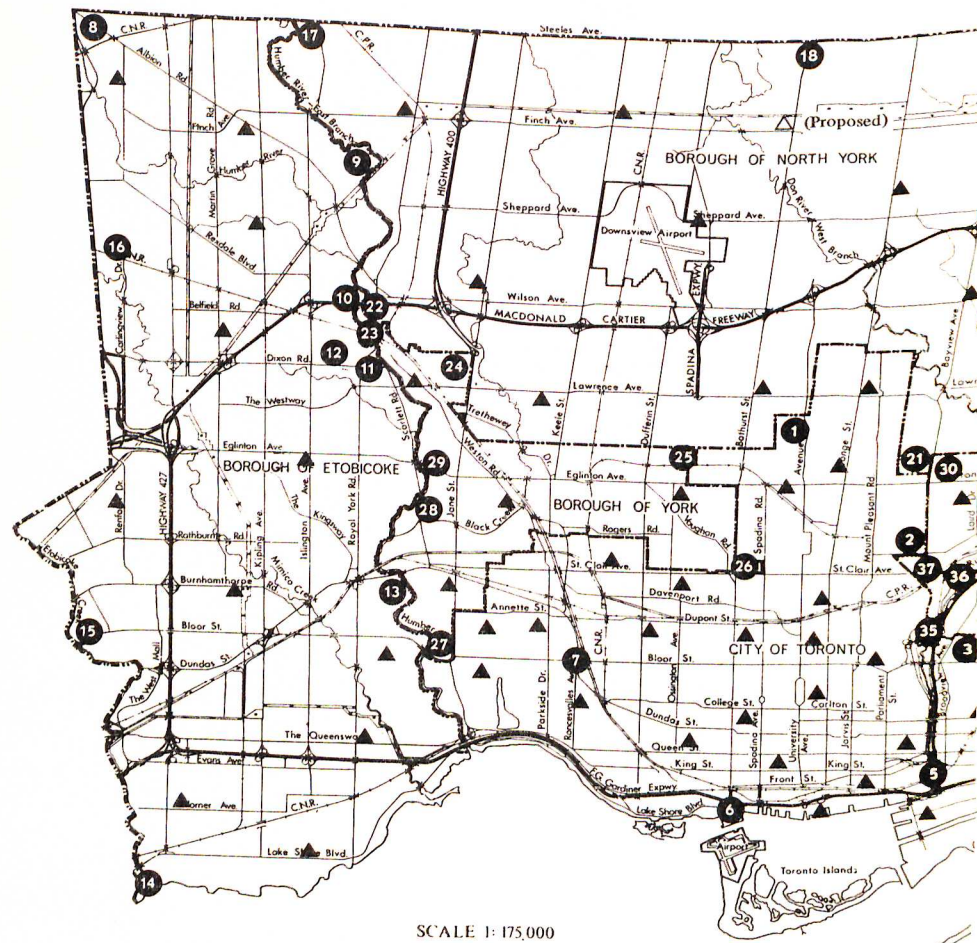
**ETOBICOKE**

STATION	DESTINATION	DISTANCE IN MILES	TIME IN MINUTES
# 1 Royal York Rd.	Lakeshore Blvd. and Mimico Creek	1.4	2.7
# 2 Kipling Avenue	Rexdale Blvd. and Islington	1.6	3.8
# 3 Burnhamthorpe	Dundas and Kipling	1.6	3.1
# 4 Horner Avenue	West Mall and CPR Tracks	2.4	4.9
	Lakeshore and Brown's Line	.85	1.7
# 7 Martin Grove	Carlingview Drive and Meteor Dr.	2.0	4.0
# 11 Humberline Dr.	Carlingview and Atwell	3.0	6.0

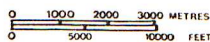
# SCARBOROUGH

STATION	DESTINATION	DISTANCE IN MILES	TIME IN MINUTES
# 1, 351 Birchmount	Danforth and Mack Avenue	.7	1.7
# 3 Warden	Birchmount and Eglinton	.9	1.7
	Underwriters and Crouse	1.8	3.5
# 5 Sheppard	Birchmount and HWY 401	.6	1.2
# 6 Birchmount	Birchmount and Lawrence	.9	1.4
	Birchmount and Ellesmere (Rolork Dr.)	.7	1.6
# 7	Bellamy and Ellesmere	1.7	3.7
# 9 Coronation	Manse Rd. and Copperfield	1.3	3.6
# 10 Sheppard	Middlefield Rd. and Finch	1.9	3.7
	Progress and Bellamy	1.7	2.3
	Passmore and Midland	3.6	7.2
# 12	Sewell's Rd. and Steeles	5.7	7.1
	Meadowvale and Sheppard	3.1	4.2

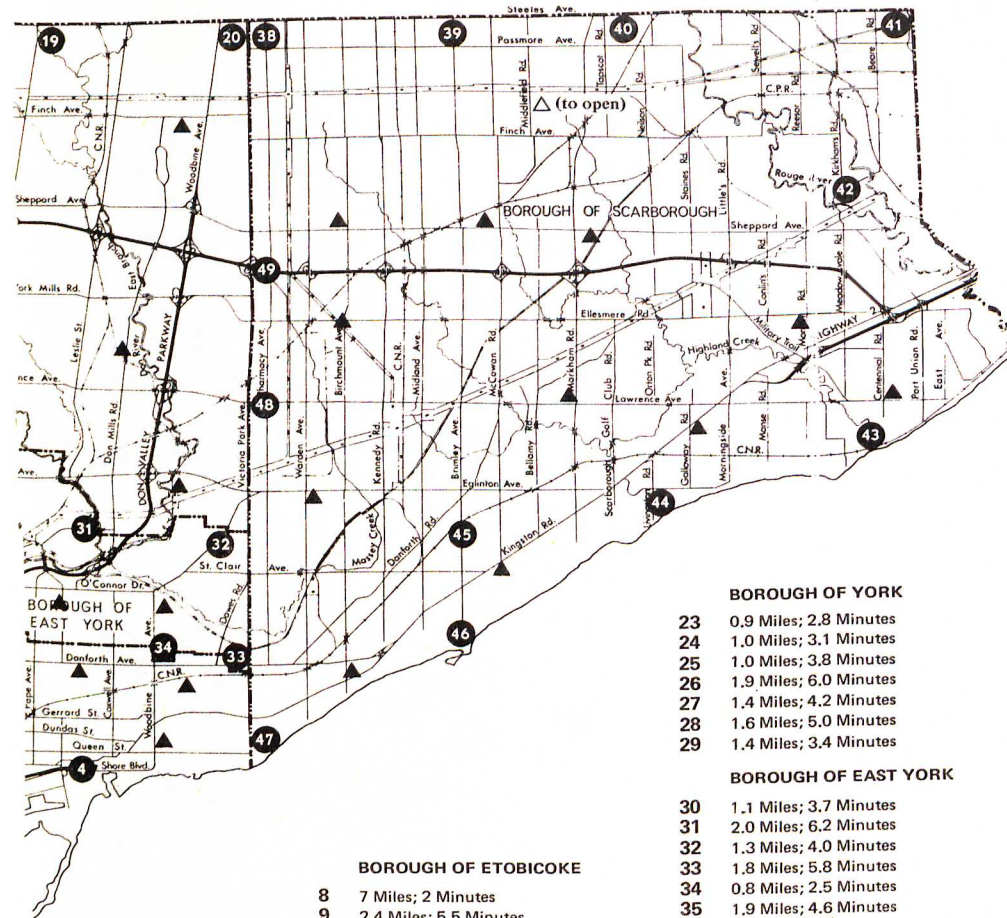
# **appendix b**



SCALE 1:175,000



- ▲ Fire Station
- Longest Run from Closest Fire Station



- BOROUGH OF YORK**
- 23 0.9 Miles; 2.8 Minutes
  - 24 1.0 Miles; 3.1 Minutes
  - 25 1.0 Miles; 3.8 Minutes
  - 26 1.9 Miles; 6.0 Minutes
  - 27 1.4 Miles; 4.2 Minutes
  - 28 1.6 Miles; 5.0 Minutes
  - 29 1.4 Miles; 3.4 Minutes

- BOROUGH OF EAST YORK**
- 30 1.1 Miles; 3.7 Minutes
  - 31 2.0 Miles; 6.2 Minutes
  - 32 1.3 Miles; 4.0 Minutes
  - 33 1.8 Miles; 5.8 Minutes
  - 34 0.8 Miles; 2.5 Minutes
  - 35 1.9 Miles; 4.6 Minutes
  - 36 2.0 Miles; 5.9 Minutes
  - 37 1.6 Miles; 5.5 Minutes

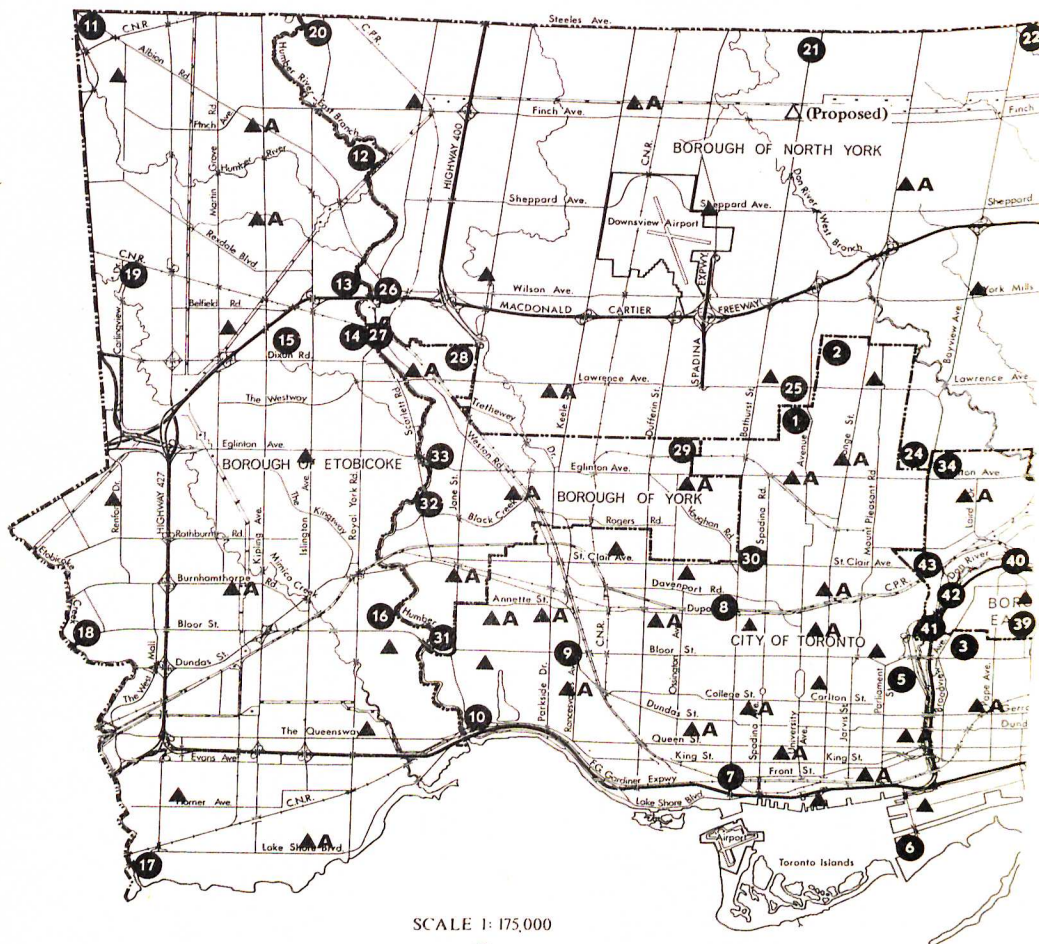
- BOROUGH OF ETOBICOKE**
- 8 7 Miles; 2 Minutes
  - 9 2.4 Miles; 5.5 Minutes
  - 10 1.9 Miles; 4.2 Minutes
  - 11 2.4 Miles; 4.8 Minutes
  - 12 2.0 Miles; 3.6 Minutes
  - 13 1.1 Miles; 2.3 Minutes
  - 14 1.6 Miles; 3.6 Minutes
  - 15 1.9 Miles; 4.6 Minutes
  - 16 2.0 Miles; 4.0 Minutes

- BOROUGH OF NORTH YORK**
- 17 2.6 Miles; 7.0 Minutes
  - 18 3.4 Miles; 7.8 Minutes (from station 1)
  - 19 3.7 Miles; 5.9 Minutes (from station 10)
  - 20 3.5 Miles; 7.4 Minutes
  - 21 2.3 Miles; 4.9 Minutes
  - 22 2.4 Miles; 4.0 Minutes
  - 23 2.3 Miles; 3.5 Minutes

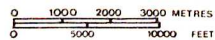
- BOROUGH OF SCARBOROUGH**
- 38 4.3 Miles; 10.6 Minutes
  - 39 4.0 Miles; 7.4 Minutes
  - 40 4.5 Miles; 5.3 Minutes
  - 41 5.7 Miles; 6.8 Minutes
  - 42 3.9 Miles; 7.0 Minutes
  - 43 2.0 Miles; 4.0 Minutes
  - 44 1.9 Miles; 4.5 Minutes
  - 45 2.3 Miles; 5.5 Minutes
  - 46 1.6 Miles; 3.3 Minutes
  - 47 2.4 Miles; 6.5 Minutes
  - 48 2.3 Miles; 4.5 Minutes
  - 49 2.1 Miles; 4.7 Minutes

- MAP KEY CITY OF TORONTO**
- 1 1.1 Miles; 3.0 Minutes
  - 2 1.8 Miles; 5.9 Minutes
  - 3 1.2 Miles; 3.0 Minutes
  - 4 1.6 Miles; 5.4 Minutes
  - 5 1.2 Miles; 3.8 Minutes
  - 6 1.2 Miles; 3.0 Minutes
  - 7 1.5 Miles; 3.0 Minutes

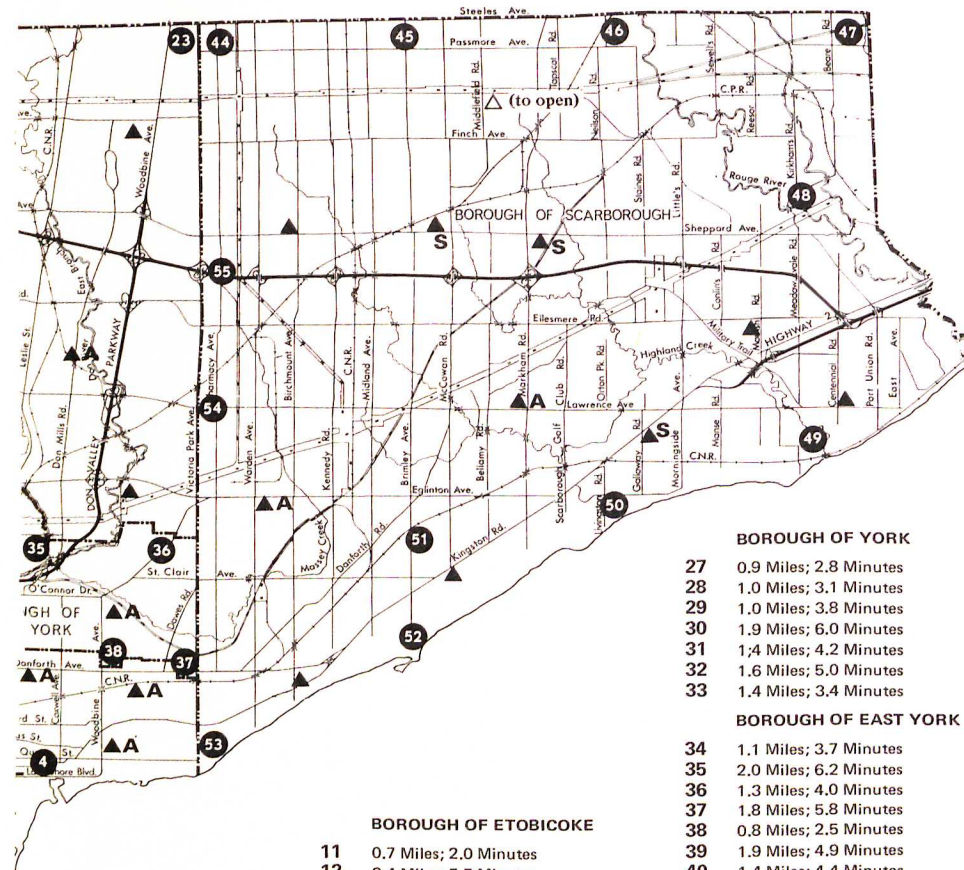
MAP 1  
LONGEST RUNS – AERIALS & PUMPERS



SCALE 1:175,000



- Longest Runs From Closest Stations with aerials
- ▲ Fire Stations with Pumpers only
- ▲ A Fire Stations with Aerials and Pumpers
- ▲ S Fire Stations with Snorkels



**BOROUGH OF YORK**

- 27 0.9 Miles; 2.8 Minutes
- 28 1.0 Miles; 3.1 Minutes
- 29 1.0 Miles; 3.8 Minutes
- 30 1.9 Miles; 6.0 Minutes
- 31 1.4 Miles; 4.2 Minutes
- 32 1.6 Miles; 5.0 Minutes
- 33 1.4 Miles; 3.4 Minutes

**BOROUGH OF EAST YORK**

- 34 1.1 Miles; 3.7 Minutes
- 35 2.0 Miles; 6.2 Minutes
- 36 1.3 Miles; 4.0 Minutes
- 37 1.8 Miles; 5.8 Minutes
- 38 0.8 Miles; 2.5 Minutes
- 39 1.9 Miles; 4.9 Minutes
- 40 1.4 Miles; 4.4 Minutes
- 41 2.0 Miles; 6.0 Minutes
- 42 2.9 Miles; 5.9 Minutes
- 43 1.6 Miles; 5.5 Minutes

**BOROUGH OF ETOBICOKE**

- 11 0.7 Miles; 2.0 Minutes
- 12 2.4 Miles; 5.5 Minutes
- 13 1.9 Miles; 4.2 Minutes
- 14 2.4 Miles; 4.8 Minutes
- 15 2.1 Miles; 5.3 Minutes
- 16 2.6 Miles; 6.6 Minutes
- 17 2.1 Miles; 5.8 Minutes

**SCARBOROUGH**

- 44 7.4 Miles; 19.8 Minutes
- 45 7.9 Miles; 13.0 Minutes
- 46 6.6 Miles; 10.5 Minutes
- 47 10.6 Miles; 17.8 Minutes
- 48 7.1 Miles; 13.8 Minutes
- 49 3.6 Miles; 7.1 Minutes
- 50 3.3 Miles; 7.4 Minutes
- 51 4.4 Miles; 8.9 Minutes
- 52 4.4 Miles; 8.9 Minutes
- 53 4.1 Miles; 9.2 Minutes
- 54 2.3 Miles; 4.5 Minutes
- 55 3.9 Miles; 10.5 Minutes

**MAP KEY CITY OF TORONTO**

- 1 1.1 Miles; 3.0 Minutes
- 2 1.6 Miles; 5.2 Minutes
- 3 1.2 Miles; 3 Minutes
- 4 1.6 Miles; 5.4 Minutes
- 5 1.0 Miles; 3.3 Minutes
- 6 2.7 Miles; 7.8 Minutes
- 7 1.2 Miles; 3.0 Minutes
- 8 1.4 Miles; 5.5 Minutes
- 9 1.5 Miles; 3.0 Minutes
- 10 2.6 Miles; 7.9 Minutes

**BOROUGH OF NORTH YORK**

- 20 5.7 Miles; 8.3 Minutes
- 21 3.4 Miles; 7.8 Minutes (from station 1)
- 22 3.7 Miles; 5.9 Minutes (from station 10)
- 23 3.5 Miles; 7.4 Minutes
- 24 6.4 Miles; 11.7 Minutes
- 25 4.3 Miles; 10.8 Minutes
- 26 2.4 Miles; 5.3 Minutes
- 27 3.1 Miles; 7.4 Minutes

MAP 2  
LONGEST RUNS – AERIALS

# **appendix c**

# American Insurance Association

ENGINEERING AND SAFETY DEPARTMENT

85 John Street, New York, N. Y. 10038

January, 1969

Special Interest Bulletin No. 319

## FIRE DEPARTMENT MANNING

### ON DUTY STRENGTH

A study of manning in the full paid fire departments of cities surveyed by the American Insurance Association reveals that in general company strength has gradually decreased over the years. Many cities studied have grown in both population and built-on area which has necessitated additional coverage by the fire force. Fire protection engineers are concerned about this continued reduction in the on-duty company manning and are of the opinion that the minimum manpower capable of offering even a fair degree of protection has been reached in many cities and in some cities it has already fallen below this minimum.

Except for the fire departments in a few of the larger cities, none are adequately manned, with the result that in many instances, the on duty fire force may not be able to control a serious fire without the assistance of off duty members or outside aid.

The working hours for fire fighters have been reduced over the years. Many cities, however, grant reduced working hours without a compensating increase in the fire force; this has resulted in fewer members on duty with existing fire companies and even the elimination of some companies.

Obviously, when working hours are reduced it takes more men to keep the same number on duty; 168 hours a week divided by the hours worked per week equals the number of firefighters needed to keep one on duty. Relief men must also be provided for those on vacation and sick leave, details, etc. if department efficiency is to be maintained. This applies to company and chief officers as well as to drivers and firefighters. Temporary measures, such as transferring men from one company to another in order to equalize company strength, do not improve the overall manpower available in the department.

Extensive redevelopment programs are under way or accomplished in many cities across the country. Although these programs have resulted in the removal of thousands of hazardous buildings, most cities continue to have congested districts in which serious individual or group fires can occur, and in many cities fires involving one or more blocks are possible. A well manned department is needed to combat fires in these areas.

The conservation of human lives and material resources is a duty and responsibility of all the people. Destruction by fire each day of many human lives and of property worth several million dollars, much of which

occurs in individual fires of large magnitude, is cause enough to justify reasonably adequate manning of individual fire companies.

### COMPANY STRENGTH

What constitutes a fire company? Certainly no chief or fire administrator will agree that one driver and an apparatus represents a fire company. An exception would be in small communities where paid drivers respond with apparatus and volunteer firefighters, call men, or other men subject to fire duty arrive at the fire scene by other means of transportation.

Many fire protection engineers are of the opinion that an apparatus with even 2 paid men on duty should not be classed as a fire company.

Many times chief officers have to send in multiple alarms for a fire in order to get more men; this would not be necessary if the companies responding on the first alarm were properly manned. When this happens even though some of the apparatus at the fire may not be used, these additional companies are not readily available to furnish protection in case of another fire.

It is recognized that one man by himself can drive most apparatus to the fire scene, but this procedure is not entirely satisfactory from the standpoint of safety on the highway during an emergency run. The work that one man can perform upon arrival at the fire scene is limited to the use of small stream appliances and minor tools. It is surprising how many cities are operating one or more apparatus with one paid operator normally on duty thus giving a false sense of security to the citizens.

As working hours are decreased the practice of operating companies with only 2 or 3 firefighters on duty is increasing. Until such times as adequate and reliable remote control facilities are developed, accepted good operating procedure requires the driver to remain with his apparatus when pumping at a fire. In the case of a 2-man company, this leaves only one man to enter the building with a hand extinguisher, booster hose, or 1½ inch line. Both men must use valuable time connecting the pumper to a hydrant, an operation which is necessary in most cities. A firefighter operating alone in a burning building is contrary to good standard operating procedures which recognizes the need to work in groups of 2 or more. The driver of a ladder truck normally works with other company members after he has placed the apparatus in proper position. Two firefighters work-



## APPENDIX "C" cont'd

ing as a team can carry on some rescue operations, raise the shorter ladders, accomplish some ventilation, and perform limited salvage work, but the operations that might be required in the early stages of a fire cannot be carried on simultaneously. In undermanned departments members assigned to a ladder company frequently must assist in laying and operating the first 2½-inch line.

It is granted that the majority of reported fires require only hand extinguishers or small lines for extinguishment, and that 2 or 3 men can easily handle this work. If conditions in a city were such that no fire could develop to the extent where large or multiple lines would be needed, or where there would be no delayed discovery, alarms, or response, companies with this manning might be acceptable. Practically every city or rural fire district contains numerous buildings of inferior construction and of sufficient size and hazardous occupancy to present serious fire problems; the entire fire force would have to work at capacity to combat a fire in these structures if they are partially or fully involved by fire upon the arrival of the fire department. Many incipient fires, which could be easily extinguished by 1 or 2 men if they were immediately available, become serious fires before the first company arrives at the scene. A fair sized grass or brush fire, and these are numerous, cannot be controlled by 2 men. Furthermore, an engine company can be out of service for over an hour while the 2 men on duty replace a hose load.

The company responding with 3 men also has limited capabilities at the fire scene. Two men, including the officer, are available for fighting the fire when the driver is left at the apparatus. These men are generally limited to the use of a booster or 1½-inch line and cannot do effective work at a large fire. Company officers are too busy handling lines to efficiently size up the fire situation. The excessive time required for undermanned companies to prepare powerful stream devices for operation may have a serious effect on the control of a large fire. A 35-foot extension ladder is the longest that 3 men can readily and safely raise.

Four men on duty with each engine and ladder company should be the absolute minimum of every fire department, although this number does not represent an adequately manned company. An engine company of 4 men can lay a 2½-inch line while connecting to a hydrant and a ladder company force of 4 men can raise a 40-foot extension ladder and start to carry out ladder company work simultaneously with engine company operations. Relief must be provided for members on vacation, sick, days-off, or otherwise off duty to insure that 4 men respond with apparatus at all times.

Progressive fire chiefs are of the opinion that companies should never be allowed to respond with less than 5 men each. A company of 5 men can carry 2½-inch hose lines for some distance and can quickly advance a line up a stairway; they can handle simultaneous operations, such as laying a hand line while attaching a

second line to a siamese connection supplying a sprinkler system. The apparatus can be quickly connected for pumping at a hydrant or at draft. Five men can handle most extension ladders, and the crew is large enough to promptly begin rescue of trapped persons. Company officers have some freedom to size up the fire situation.

Six or seven men on duty are recommended for companies which respond to areas where the hazard is above normal. This number permits speedy operations immediately upon arrival at the fire scene and provides sufficient men to rapidly advance lines up fire escapes and aerial ladders and to place powerful stream appliances into use. Several operations can be carried on at the same time if necessary.

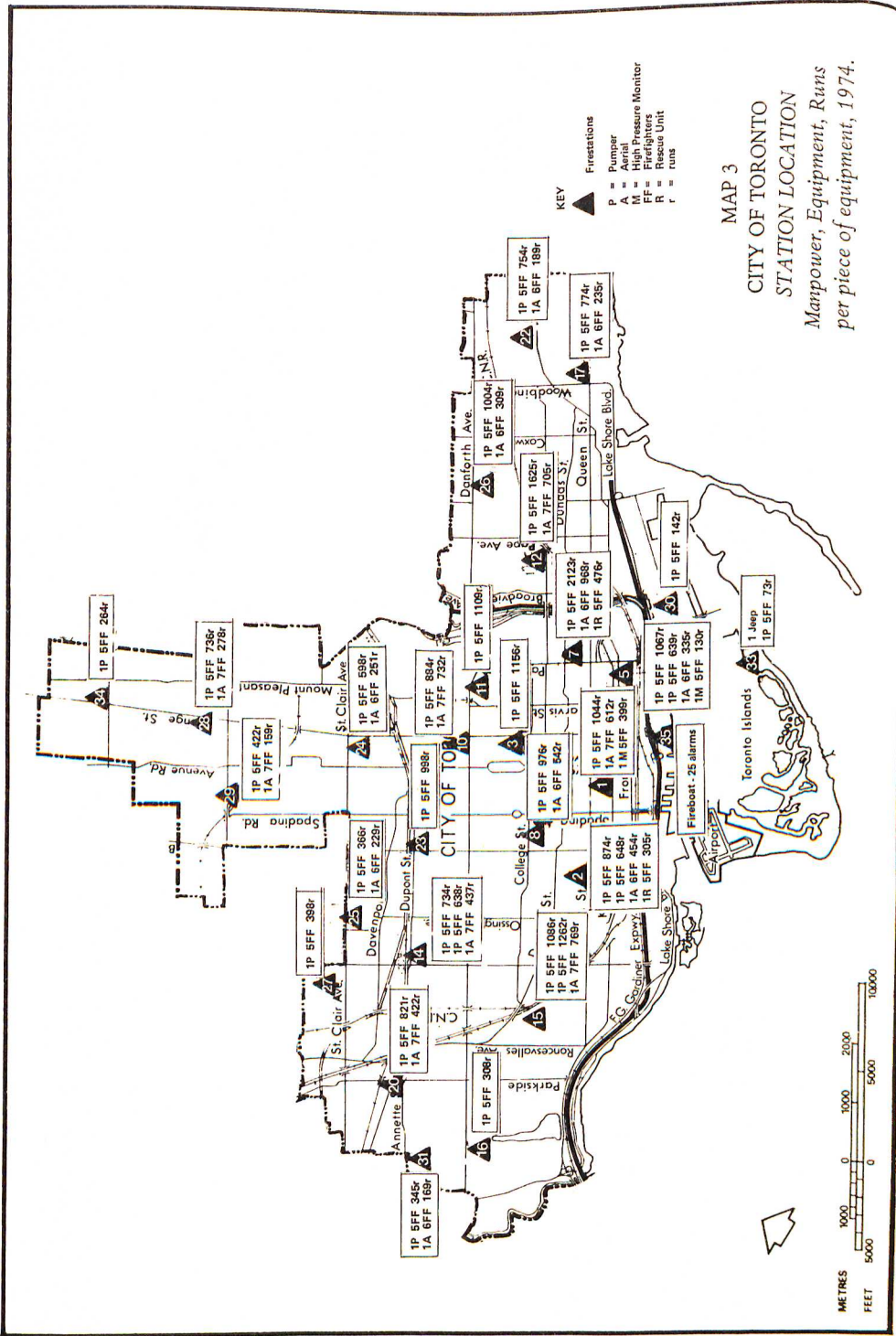
Although it generally has been the practice to provide a larger number of men on duty with the downtown companies than with the outlying companies, the development of commercial, industrial, and institutional districts in many parts of our cities has resulted in proposals for uniform manning of companies irrespective of location. In addition to providing added strength to outlying companies responding to high hazard complexes in their territory as well as to fires outside their territory on multiple alarms, uniform manning of companies enables uniform operating procedures to be established throughout the department. This gives the chief much greater flexibility not only in the day-to-day administration of the department but also in making command decisions at multiple alarm fires. For many years our Association has been recommending 6 men for all companies in certain cities where the local conditions indicated that uniform manning of companies could provide the best protection.

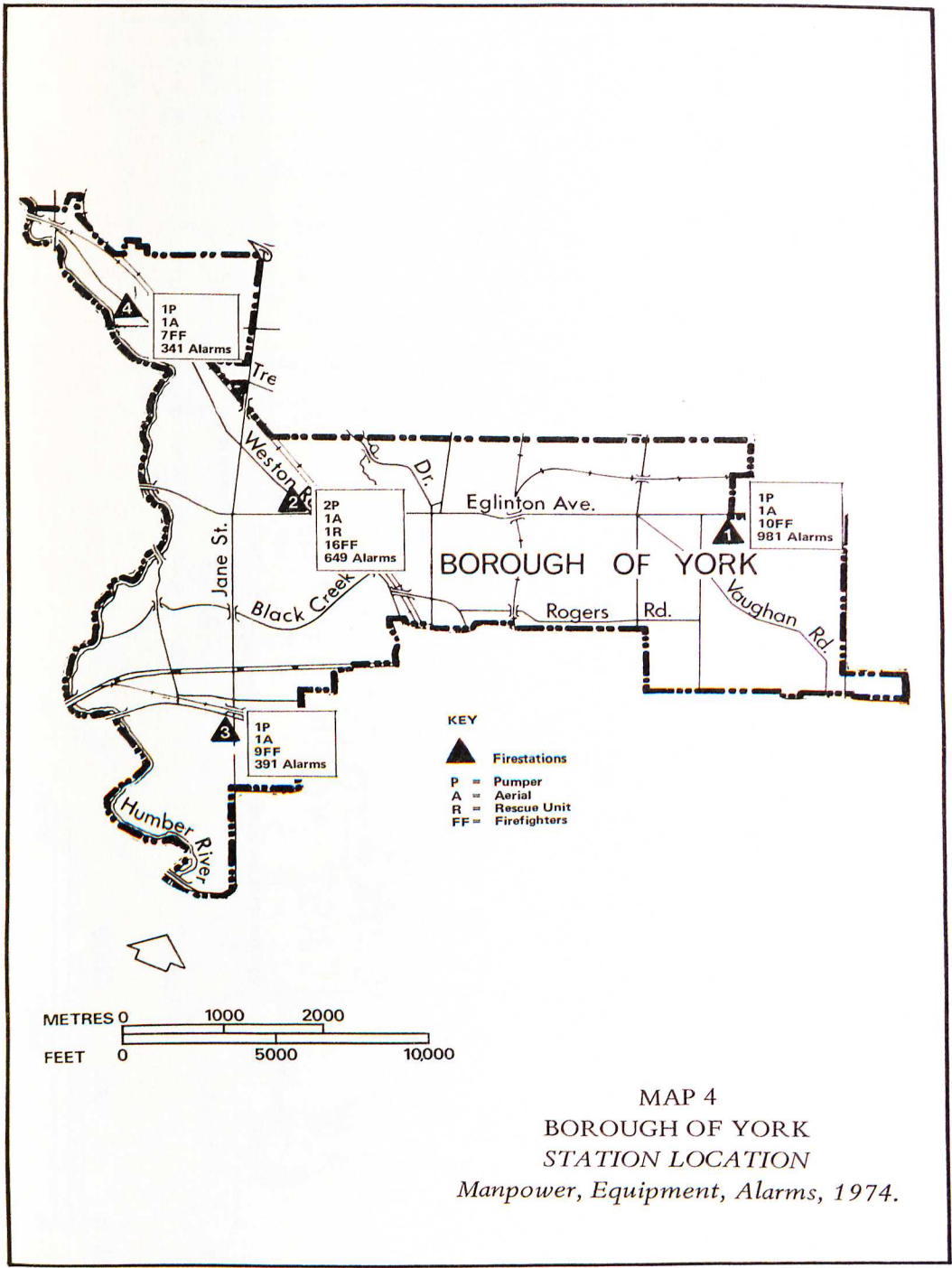
Reducing the total number of companies in order to increase the manning on the remaining companies is not the proper way to provide adequate fire protection in all sections of the city. This could result in some areas within the city being too far from the nearest company to get the prompt response necessary in order to extinguish fires in their incipient stages, and reduces chances of saving life. Considerable time usually elapses before off-duty men or outside aid companies reach the fire scene, and this time delay must be considered when relying on this type of assistance.

Serious fires still occur and many severe fires have occurred in modern 1-story buildings. A well-trained, adequately manned company can accomplish prompt extinguishment of most fires, but an undermanned company, even if well-trained, is limited in the extent to which it might be able to control a fire, since it usually has to wait for the arrival of additional men before efficient operations can be developed.

NOTE: This bulletin replaces Special Interest Bulletins No. 230, Fire Department Manning—On-duty Strength, and No. 231, Fire Department Manning—Company Strength, both dated September, 1959.

# **appendix d**





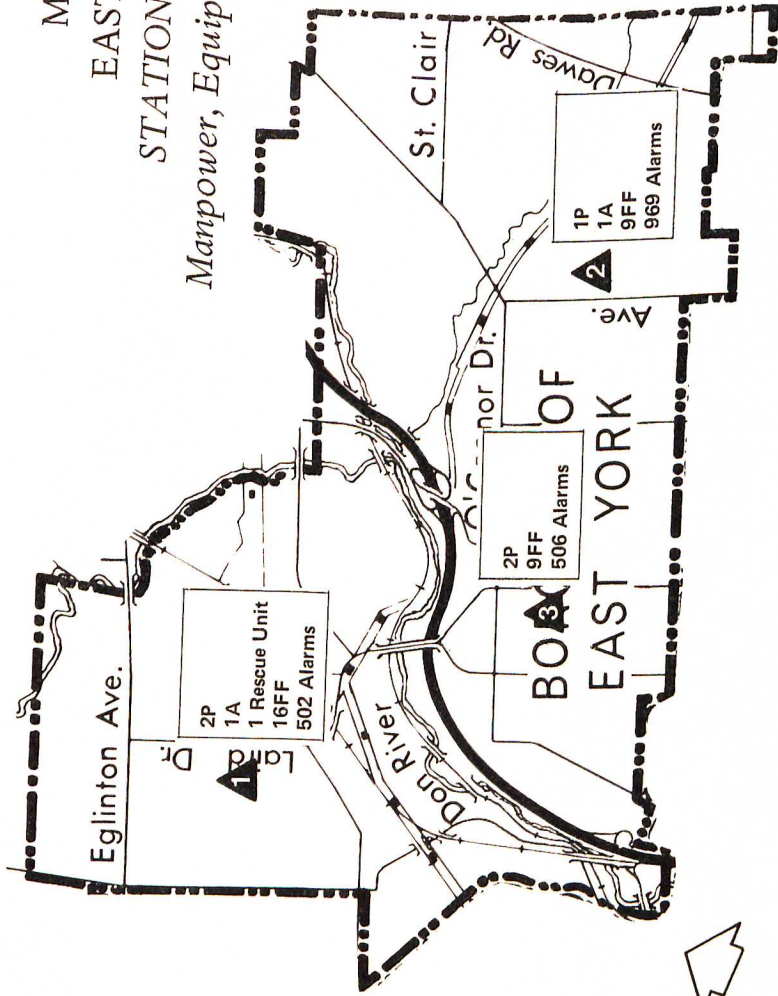
**KEY**

- ▲ Firestations
- P = Pumper
- A = Aerial
- R = Rescue Unit
- FF = Firefighters

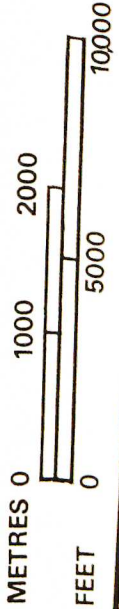
METRES 0 1000 2000  
 FEET 0 5000 10000

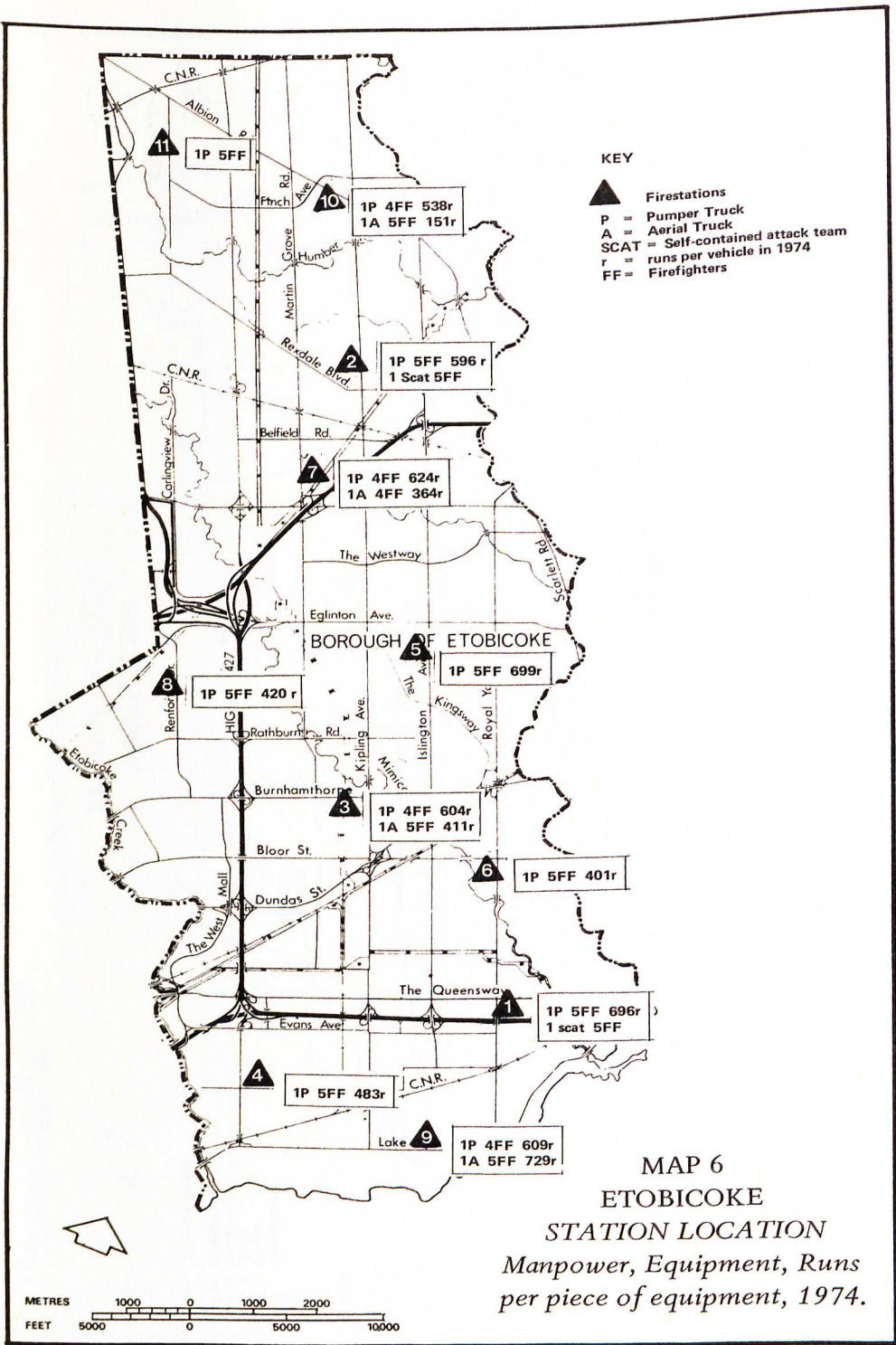
MAP 4  
 BOROUGH OF YORK  
 STATION LOCATION  
 Manpower, Equipment, Alarms, 1974.

MAP 5  
 EAST YORK  
 STATION LOCATION  
 Manpower, Equipment, Alarms, 1974.

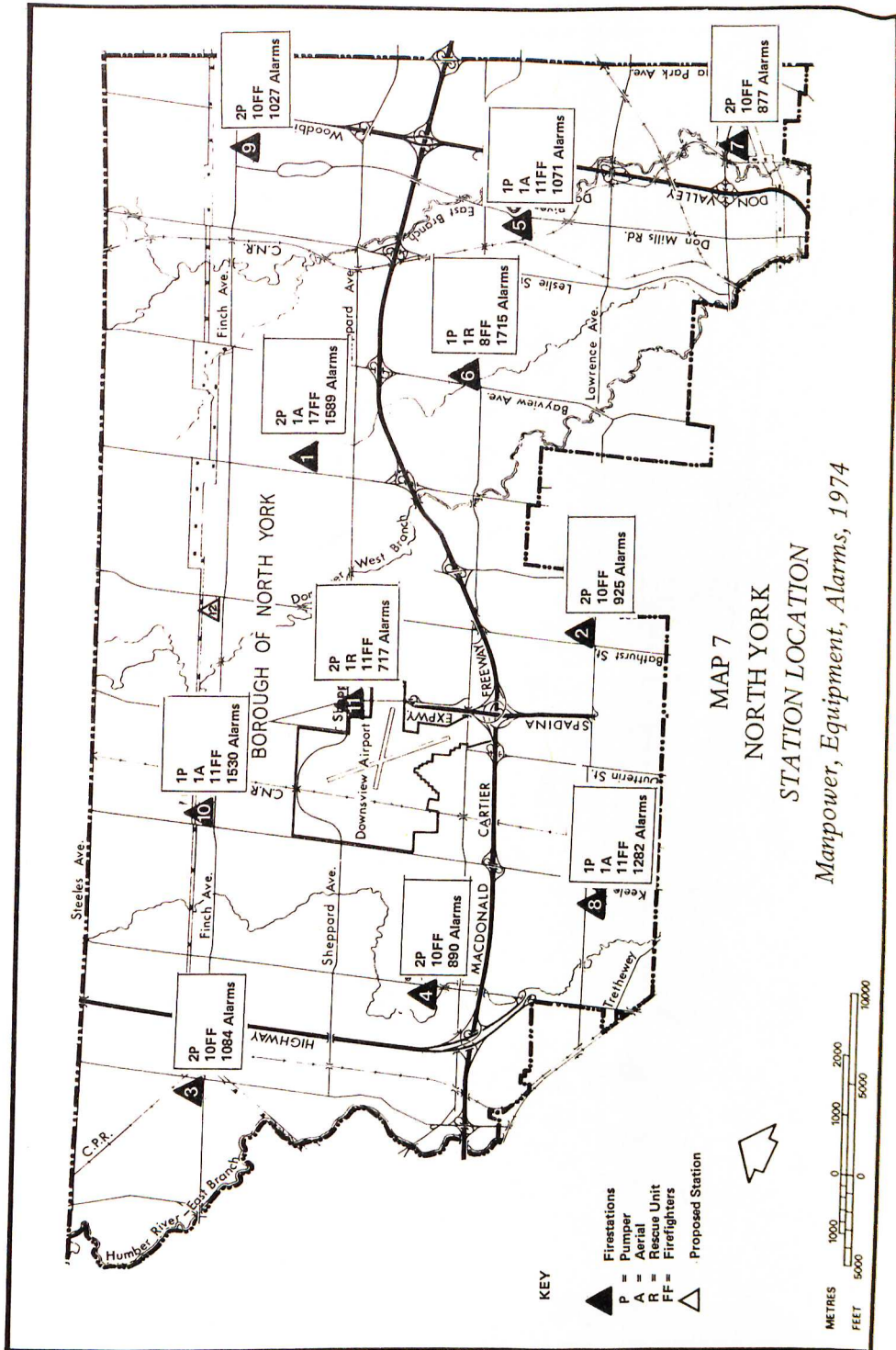


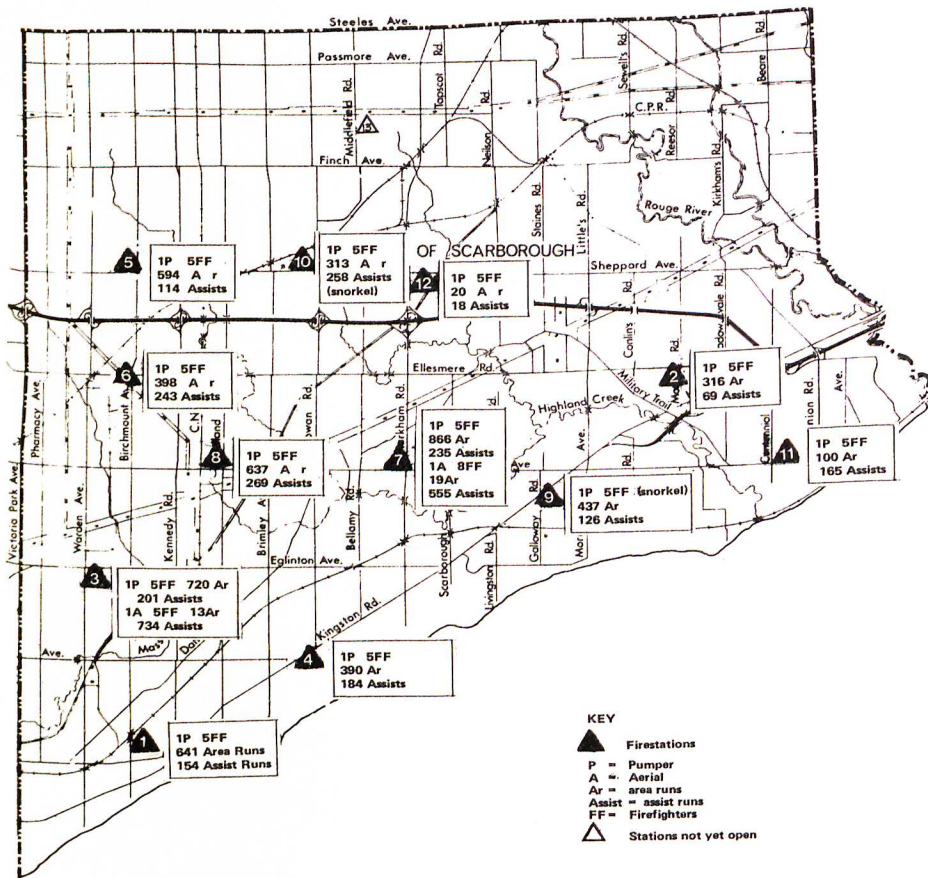
- KEY:
- ▲ Firestations
  - P = Pumper
  - A = Aerial
  - FF = Firefighters



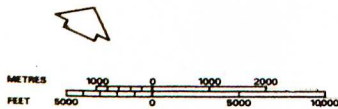


**MAP 6**  
**ETOBICOKE**  
**STATION LOCATION**  
*Manpower, Equipment, Runs*  
*per piece of equipment, 1974.*





MAP 8  
 SCARBOROUGH  
 STATION LOCATION  
 Manpower, Equipment, Alarms, 1974





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The Bank of Nova Scotia  
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Bramalea Consolidated Developments  
Cadillac-Fairview Limited  
Canada Malting Co. Ltd.  
Canada Packers Foundation  
Canada Permanent Trust Co.  
Canada Wire & Cable Ltd.  
Canada Hanson Ltd.  
Canadian Freehold Properties Ltd.  
Canadian Imperial Bank of Commerce  
Canadian National Railways  
Confederation Life  
Consumers' Gas Co. Ltd.  
Crown Life Insurance Co.  
Dominion of Canada General Insurance  
Dominion Securities Corp. Ltd.  
Falconbridge Nickel Mines Ltd.  
Gilbey Canada Ltd.  
Group R  
GSW Appliances Ltd.  
Gulf Oil Canada Ltd.  
The Imperial Life Assurance Co. of Canada  
Imperial Oil Ltd.  
International Business Machines Co. Ltd.  
Jackman Foundation  
Independent Order of Foresters  
A. E. LePage Ltd.  
Lever Brothers Ltd.  
McLean-Hunter Publishing Co. Ltd.  
Montreal Trust Co.  
Moore Corporation Ltd.  
National Trust Co.  
Neptune Meters Ltd.  
Northern and Central Gas Corp.  
Parking Authority of Toronto  
Procter and Gamble Co. of Canada Ltd.  
Redpath Sugar  
The Royal Bank of Canada  
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Union Carbide Canada Ltd.  
Waterloo Regional Health & Social  
    Planning Study  
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Aird, Zimmerman & Berlis  
Armstrong & Molesworth  
Blake, Cassels & Graydon  
John Bousfield Associates  
Clarkson, Gordon  
Mary Collins Consultants Ltd.  
Damas and Smith Ltd.  
Deleuw, Cather & Co.  
Dilworth, Secord, Meagher & Associates  
Giffels Associates Ltd.  
Govan, Kaminker, Architects & Planners  
Eric Hardy Consulting Ltd.  
IBI Group  
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Mackie & Slavik  
Marshall, Macklin and Monaghan  
Murray V. Jones & Associates  
Osler, Hoskin and Harcourt  
Peat, Marwick and Partners  
Price Waterhouse & Co.  
Proctor and Redfern Group  
Thorne, Riddell & Co.  
Touche, Ross & Co.  
Webb, Zerafa, Menkes, Housden  
Weir and Foulds  
Woods, Gordon & Co.

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Borough of Etobicoke  
Burlington  
Reg. Mun. of Hamilton-Wentworth  
Kingston  
Kitchener  
Metropolitan Toronto  
Ministry of State for Urban Affairs  
Ministry of T.E.I.G.A.  
Mississauga  
Reg. Mun. of Niagara  
Borough of North York  
Oshawa  
Reg. Mun. of Ottawa/Carleton  
Reg. Mun. of Peel  
Peterborough  
Richmond Hill  
St. Catharines  
Sudbury  
Reg. Mun. of Sudbury  
Toronto  
Vaughan Township  
Windsor  
Borough of York  
Reg. Mun. of York

### LABOUR

Ontario Federation of Labour  
Sudbury and District Labour Council  
Labour Council of Metropolitan Toronto



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