THE EFFECTIVENESS OF LAND USE CONTROLS IN CURBING URBAN SPRAWL. A CASE STUDY IN RICHMOND, B. C.

by

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ABSTRACT

The movement of population from rural to urban areas has been accompanied in North America by the explosive dispersal of the urban population into suburban areas. Much of the resulting low-density suburban residential growth has developed in an uncoordinated, inefficient pattern destroying the amenities and appearance of, and interfering with, the agricultural and recreational use of the countryside, yet not providing adequate urban amenities. This phenomenon of "urban sprawl" is undesirable since it devours vast areas of land in an uneconomic pattern, creates problems for both the residential and agricultural use of the land in urbanizing areas, and compromises future urban development. The most direct means of minimizing urban sprawl and promoting better land use is the strict enforcement of rational land-use controls.

It is essential to examine the applicability of specific land-use controls to the urban sprawl problem, and to test the effectiveness of these controls in specific situations in order to arrive at a municipal policy for curbing urban sprawl. Since social and economic circumstances influence the use of and development on land, a comprehensive view must be taken of the function and application of land-use controls, and their inter-relationships to combat urban sprawl. Although

controls directly applicable to the use of land appear to influence the pattern of its development most significantly, a number of "indirect" controls may be of use in guiding the pattern of development and the use of land. Although the causes of urban sprawl and their relationships are many and still under discussion and study, it is generally acknowledged that the lack of control over land use and development is the most significant, permissive, cause of urban sprawl. The hypothesis is advanced "that the responsibility for curbing urban sprawl lies with the Provincial Government, which should ensure that its municipalities implement a comprehensive land development policy".

Following a general review of land-use controls and urban sprawl, direct land-use controls, such as residential and agricultural zoning, subdivision regulations, and municipal servicing policies, are examined with the intention of incorporating them in a municipal policy aimed at curbing urban sprawl. To arrive at a method for evaluating the effectiveness of selected land-use controls for their normal, designed purpose, potential indicators of the incidence of and changes in the character and location of urban sprawl are discussed. A simplified method is then proposed and applied to an urbanizing area to evaluate the effectiveness of its land-use controls in curbing urban sprawl.

It is found that the waste of land and the pattern of land uses characteristic of urban sprawl have serious

implications for the future as well as for the present. Urban sprawl, a regional phenomenon, requires a regional, coordinated land development policy; zoning subdivision regulations and servicing policies can be used to curb urban sprawl on a local scale. The complex interrelationships found to exist between controls directly and indirectly influencing the use of land make further study necessary and, to a degree, frustrate the attempt to devise a methodology for investigating the effectiveness of direct land-use controls in curbing urban sprawl.

It is concluded that remedial provincial and municipal legislation can be drawn up immediately on the basis of experience gained so far with urban sprawl. However, a policy directed at curbing urban sprawl ought to be a component part of a larger policy having the objective of promoting desirable forms of urban development. The Provincial Government is fully and solely responsible for provincial affairs and therefore has the solemn duty to ensure that urban sprawl is curbed effectively and immediately.

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URBAN DEVELOPMENT
AND THE LAND USE PROBLEM OF URBAN SPRAWL

Throughout the world, the rapid accumulation of an increasing proportion of the population in urban areas and substantial increases in the population have created one of the most critical problems today: planning the use of land. Especially in highly industrialized and relatively wealthy North America, the process of urbanization has been accompanied by an "urban explosion", the dispersal of the urban population into the countryside. Much of the resulting low-density development is taking place in fragmented and uncoordinated fashion, destroying the openness, appearance and land use pattern of the countryside unnecessarily and compromising both the present and the future use of land, yet providing neither the amenities and atmosphere of a rural setting nor urban amenities. Such a pattern of development, known as "urban sprawl", is both undesirable and uneconomical. That sprawl can occur is due primarily to the political and administrative unpreparedness of, and lack of coordination between, the large number of local governments in protecting their communities' interest in the most rational use and development of their land. This thesis is based on the assumption that there is no satisfactory alternative to the

most rational use of the limited land resources available if the objectives of community planning are to be realized.

Much attention has been devoted to the phenomenon of urban sprawl by various governments, research institutions and professionals concerned with the development and control of urban land. Urban sprawl is so wasteful of land resources that most regional and metropolitan plans invariably draw attention to this fact and urge public authorities to curb it. It would appear that dealing with the problem of urban sprawl calls for a comprehensive approach to urban development; this requires cooperation and coordination, within the branches of a local government, and between neighbouring local governments, and Federal and Provincial authorities, in formulating, administering and adjusting a land development policy. More specifically, a "comprehensive approach" refers to a public land development policy aimed at curbing urban sprawl and promoting the development of a community on a rational and desirable basis. Constitutionally it is the duty of the Provincial Government to protect the resources of and to promote sound development generally in the Province. From the point of view, also, of administration, financial resources and basic policies regarding urban development, the Provincial Government is better equipped than municipal governments and quasi-governmental special-purpose bodies to cope with the problem of urban sprawl.

It is precisely because the problem of urban sprawl has not yet been subjected to the amount and quality of

research, which its significance and magnitude would suggest it should have, that this thesis was conceived. It is recognized that the problem of urban sprawl is beyond comprehension, let alone solution, by any one person. If indeed there is a solution, it must include a consideration of the technical, economic, social and psychological factors, in addition to the physical and administrative factors, all of which tend to promote a general urban dispersal in what may be called a sprawling type of residential development.

In this thesis an attempt is made to develop an overall view of the problem of urban sprawl by examining as rationally as possible its major aspects, recognizing that the limitations of time and resources preclude a detailed study of many of its important aspects. The main objective of this thesis is to examine the major aspects of the urban sprawl problem; the objective can be considered as consisting of three component parts:

a. to determine the causes of urban sprawl and to identify potential relationships between these causes and land use controls;

b. to establish a procedure for investigating the value of land use controls in curbing urban sprawl; and

c. to test this procedure by means of a case study of a selected municipality having a positive policy aimed at curbing urban sprawl.

The hypothesis is therefore advanced "THAT THE RESPONSIBILITY FOR CURBING URBAN SPRAWL LIES WITH THE PROVINCIAL GOVERNMENT, WHICH SHOULD ENSURE THAT ITS MUNICIPALITIES IMPLEMENT A COMPREHENSIVE LAND DEVELOPMENT POLICY".

CHAPTER I

LAND USE CONTROLS IN NORTH AMERICA

A. DIRECT LAND USE CONTROLS

1. HISTORICAL AND LEGISLATIVE BACKGROUND

The history of land use controls in North America is a matter of record.[1] A most valuable realization for the planner is that "American land-use controls cannot be traced to an ideological preference for the planned community. There is nothing utopian about those controls, and their origin is to be found not in a theory of town planning but in the common law of nuisance and in the public statutes relating noxious industries".[2] There prevails still "a real antagonism towards anyone who presumes to limit a man's right to do as he pleases with his own property".[3] By and large in North America today, however, rights inherent in the ownership of real property

> the right to use or not to use, to sell, to lease, to enter, to give away, and finally the right to refuse to exercise any of these rights[4]

have been modified in the public interest. These rights of real property ownership are modified today primarily by the five powers of government: "police power"; power of expropriation ("eminent domain"); taxation power; spending power; and proprietary power. These powers are exercised, in the first instance, by the senior governments (Federal; Provincial and State), which are deemed to be sovereign within their sphere of jurisdiction as set out in the B.N.A. Act[5] or the

American Constitution, as the case may be. Provincial and State governments may then delegate any or all of these powers, to their own appointees, commissions, and local elected bodies. Any delegation of powers must be manifest; "enabling legislation" is therefore fairly specific, in a well drafted statute, to avoid misinterpretation and litigation over interpretation. The general power to carry out community planning proceeds from such enabling legislation, which may also state the aims of planning, the limitations of local government power, the nature and scope of land-use controls, and the nature and scope of judicial review.

Rights of property are still modified by common law concepts, as they have been from the beginnings of common law, although few occasions are likely to arise today requiring common law judgements in connection with the use of land. The intent of statutory controls on the rights and use of real property is largely <u>to prevent</u> undesirable conditions of land use, <u>not to punish</u> for what could and should have been prevented by public action. To the degree that public controls may work hardships on individuals, they also prevent the individual from acting against his own interest and protect the public at large from the effect of his use of the land. The important issue in the use of statutory land use controls is not whether or not they should be used, but how the public interest and individuals' rights are weighted.

2. ZONING

The most common land-use control device is "ZONING", which initially was but the assigning of "places in each town, where least offensive, for slaughterhouses, stillhouses, and houses for trying tallow and currying leather".[6] "Comprehensive zoning" meant the division of the whole area of a town into zones permitting uses and restricting the height, bulk and layout of buildings. Zoning is still based on the original philosophy of the New York ordinances:

> The basic principles of comprehensive zoning were developed before the automobile era, the great expansion of metropolitan cities, and the technological revolution, still going on, in ways of housing people, business and industry. A first tenet of comprehensive zoning was and still is that it is possible to map an urban land area into districts in which a class or classes of compatible uses are permitted and uses compatible with them are prohibited. The first zoners, however, liked their districts 'straight' with few or no accessory or mixed uses or building types.[7]

Another tenet of zoning was and largely still is that the land being regulated is cut into small lots, to be built on by diverse owners, one at a time. It was negative rather than positive in application. Perhaps the greatest flaw of this brilliantly conceived legal device was that, more often than not, it was used as an end in itself; whereas any device, in fact, can be used properly only when there is an understanding of the end to be achieved.

> Zoning is, after all, a tool which a municipality or other governing agency uses to effectuate a plan. Much of the difficulty in meeting present zoning requirements stems from the basic fact that most communities have no plan advanced to such a point that it clearly guides growth or rebuilding, and have no clear concept of all the basic reasons for zoning. Moreover, there is lack of coordination between a Master Plan (where it does exist) and the Zoning Resolutions...[8]

A summary review of zoning, indeed any other type of land-use control, can only be superficial, for zoning resolutions have become rather elaborate; a discussion of zoning beyond the introduction above must necessarily be specific and will therefore be restricted to eight aspects of zoning: use, density, performance standards, planned developments, other methods of zoning control; and zoning administration.

a.) Use Regulations

The traditional four categories of "single-family residential", "multiple-family", "commercial" and "industrial" zones are being supplemented by a host of new zones with a view to defining use-districts more precisely, "to take account of the relationships between uses, and to assess the location requirements of particular uses as well as the conflicts between uses".[9] Refinements are, on the one hand, very important because the zoning system allows very little, if any, latitude in any use-district; on the other hand, they are cumbersome for all uses must be stated precisely and the ratification of refinements is also a weary political and legislative undertaking and complicates administration. The length of zoning by-laws is explained by the listing of permitted uses, which still leaves the problem of novel uses or combination of uses not listed specifically.[10] A persistent flaw in the drafting of these regulations is that the purpose of the use-districts is left implicit.

Attempts to relate controls more directly to planning objectives can be seen in the increase in number and types

of zones, also making for greater flexibility and choice; the welcome change in the legal and legislative interpretation of the public interest; and yet another, the introduction of flexibility into two traditional zones, the residential and industrial. Formerly 'pure' residential zones now generally admit parks, schools, shopping facilities and offices of professional practitidners, such as doctors, lawyers, architects, accountants, and engineers. Duplexes and apartment buildings may be permitted on corner lots or in restricted parts of single-family areas. Zoning paradoxically never did concern itself with residential land use (old or new) in industrial zones; in the curious hierarchy of zones, the industrial zone was the lowest of them all, the catch-basin of urban development. Not only was zoning partial in application, but it positively did not protect uses other than the residential, and not even that if it existed in other zones. Industrial, and to a lesser extent commercial, uses were thus constantly encroached upon by random non-industrial development capitalizing on the proximity and traffic generated by the industrial facilities. It can reasonably be assumed that some of the present residential and industrial slums developed as a result of the single-minded purpose and misdirected application of zoning.

Just as motels were once relegated to industrial zones, so trailers are either forbidden or restricted to the less desirable areas of a community. There is also a tendency on the part of central and suburban communities to "zone out"

certain land uses, which are vital yet considered 'undesirable', and "prey" upon neighbouring communities which have not yet got around to forbidding these uses. Some of these uses are: wholesale oil storage, slaughter houses, noxious industries, recreation (e.g., campsites), radio towers, sewage disposal plants, airports, cemeteries, dumps, junk yards, auto wrecking, track car racing, exploitation of earth products, and outdoor movies. Use regulations in the more central municipalities of a metropolitan region thus bear directly on land uses in the urban fringe.[11]

b.) Density Regulations

The intensity of land use is measured in various ways. It may be in terms of "density", or population per unit of land area; in terms of "coverage" of the land; or in terms of "bulk". Land use planning is concerned with all three facets as a measure of density generally. Density regulations traditionally have been associated with residential areas, aiming to control contagion; insure access to daylight, sunshine, and ventilation; protect against excessive noise; protect against physical fatigue from congestion and provide for adequate privacy; and provide opportunities for normal family and community life. Density regulations are seen here not so much as the "protection against" type, but as positive planning regulations proposing an optimal residential environment. Single-family residential zoning generally does not prescribe outright a numerical population density; rather it prescribes a minimum lot size, the percent coverage of the

lot by the house, and the bulk of building permissible. Such regulations have generally led to an accepted low population density, given the habits of North American suburban dwellers. Density regulations must be supplemented with occupancy regulations if they are to limit the population density directly and effectively.

Bulk regulations in low-density residential areas require a) minimum side yards, for fire safety, light, air and privacy; b) minimum front and rear yards; and c) height limitations. Perhaps the utility of bulk regulations can be gauged best by referring to what the traditional low-density zoning should provide:[12]

(1) Assurance of light and air. Requirements for front and rear yards are, if anything, excessive; there is waste land, especially in the side yards, so that often there is little difference visually between row houses and a row of houses.

(2) Privacy. There are no specific requirements for the arrangement of windows facing the side yard; however, the separation of houses generally has secured some degree of privacy.[13]

(3) Full use of land. The owner of a lot definitely does not have the full use of his land. He is required to site his house in accordance with front, rear and side yard regulations which, valid as their purpose may be, are unnecessarily inflexible. The clearances required fracture a lot into sub-areas, which are of greatly reduced value to the owner. If setbacks of buildings were staggered, the open areas of a

lot could be used as one unit and the privacy of neighbouring housing would be vastly enhanced.

(4) Freedom of design. This freedom, already circumscribed by economic and technical forces tending to favour the repetition of certain types of dwellings, is further restricted by the yard clearance requirements.[14]

(5) Protection of neighbourhood character. The very uniformity imposed by the siting, height and use regulations and the nature of the building type on the market has tended to promote artificial decorations and superficial ornamental treatment to satisfy people's desire for variety. Although the regulations may promote a distinguishing neighbourhood character, there is no guarantee as to its quality.[14]

Bulk regulations in higher-density residential, commercial and office districts have been more flexible, since the concept of floor-area ratio (FAR) was introduced.[16] The FAR may be a convenient guide, but it

> ... does not assure the generous open space that it theoretically permits. Detailed controls appropriate to the development of a one-house plot can hopelessly impede a more subtle relationship between buildings in a large scale development.[17]

New York's revised ordinance evidently has supplemented its other density controls of maximum rooms per acre and minimum lot area per room by specific height and setback requirements, a "sky exposure plane" for the setback at the upper storeys, floor area ratios, an "open space-area ratio" based on the floor area of a proposed building, and an alternative formula for regulating the space between buildings in a large-scale

development. The "bonus" system for extra open space is also widely used elsewhere.

> The details of these controls, however, are less significant than the planning authority's claim that residential density standards have been related not to vague generalizations about types of residential neighbourhood but to the 'capacity' of a district in terms of public transport, roads, schools, open spaces and other community facilities. Whether or not these criteria have actually been followed..., the principle is clearly valid and must eventually replace the old subjective values on which so-called density regulations have been based.[18]

While there is some sincere concern over density as a determinant of desirable land use in urbanizing areas, much of the concern is induced by economic and political pressures on suburban municipalities. A lower allowable population density appeals to the suburban resident, who typically wants to stem the tide of urban residential dispersal, of which he possibly was part at one time; and a lower density reduces the need for immediate ascertainable communal expenditures and investments.

c.) Performance Standards

Noise, vibration, smoke, dust, odour, fire and explosive hazards, humidity, heat and glare, and radiation are now capable of measurement, but the standards for their regulation are technical and difficult to administer. As long as safe levels of these nuisances can be assured, there is no logical technical reason why industry should be segregated categorically from other land uses. Eventually performance standards may render traditional use districts unnecessary; at present performance standards are used cautiously on a project-by-project

basis in evaluating the feasibility of allowing traditionally 'incompatible' land uses in proximity of uses higher up in the hierarchy of uses.

d.) Planned Developments

The actual building "block" of our residential pattern today is an entire subdivision, not the individual lot in terms of which traditional regulations have been drafted. To promote and accommodate desirable large-scale subdivision layouts with associated shopping and service facilities, some municipalities designate "comprehensive development zones". The regulations in such cases remain flexible, and relaxations on standard requirements are commonly granted if compensating features warrant a deviation.

e.) Other Methods of Zoning Control

(1) Special-Use Zone. This separate zone provides for a particular use or a group of related uses, such as trailer parks, parking lots and multiple-storey garages. One altered form used is that of a "combination-zone", in which certain kinds of use are allowed in some but not all areas of one particular use zone. The "combination-zone" can be applied more selectively in that it allows many kinds of use, under appropriate conditions, where a special-use zone would have to either exclude or include it.

(2) Special-Use Permit. This device allows planning authorities to permit stated conditional uses (generally of a public nature) in use zones for private development.

(3) Floating Zone. A "floating zone" combines the advantages of both devices above: a special-use zone is defined but not applied to any particular area; rather it floats over a general area till rezoning for that particular use is sought by a developer. The device is of particular value to developing areas where the location requirements are difficult to determine in advance and where avoidance of inequities in land values created by 'spot zoning' are a benefit. The farther actual community development has progressed, however, the more difficult it becomes to apply this device.

(4) Miscellaneous Controls. Such controls may state, for example, the requirements for off-street parking and loading facilities.

(5) Special-Purpose Zone. Such zones have been created to prevent building in flood areas, to protect watersheds, and to limit building heights around airports.

(6) Agricultural and Forestry Zone. Agricultural zoning, pioneered in California to save farm land from being used for residential settlement, constitutes an important weapon against urban sprawl. Its use will be discussed in succeeding chapters.

(7) Aesthetic and Historic Zones. Germany has had legislation for aesthetic control since 1869; in recent years "restrictions against disfigurement" have been enacted, "disfigurement" being "the creation of any positively ugly condition which would offend the sensibilities of an esthetically intelligent observer".[19] In Canada, direct proposals for architectural

controls have been unpopular with laymen and professionals alike, although "zoning by-laws disclose a wide range of controls commonly imposed that have far greater effect on the 'design, character and appearance' of our cities and towns than any control over even individual buildings would likely have".[20] The greatest clamour has usually arisen against the control of outdoor advertising. The general planning powers apparently suffice in most Canadian provinces to control at least the most unsightly advertisements. "The most successful and least meretricious aesthetic controls are those designed to protect a specific area of historic, architectural, scenic or civic importance".[21]

f.) Zoning Administration

(1) Enforcement of Zoning Regulations. Since commencement of construction usually is dependent on the issuance of a building permit, this affords the best opportunity for enforcing a zoning by-law. The building inspector must interpret the by-law strictly and is not allowed to exercise discretion. This mechanical type of approval is undesirable from a planning point of view, but it is entirely inadequate if applied to more complex and sophisticated zoning by-laws or complex situations.

The approval procedure ought to be controlled by qualified personnel and should require the participation of the planning department. It is strikingly obvious that the community with a zoning by-law (usually drawn up by consultants) but no continuous planning advice lacks one important cog in

the administrative process.

(2) Zoning Appeals. Appeals against zoning decisions and interpretations can be made to a quasi-judicial, quasi-independent body deriving its power directly from a Provincial or State government. Although in theory zoning appeal boards have strictly limited powers, they have in many communities subverted the zoning codes. Relaxation may be made not in the permitted use of land, but in detailed, technical provisions of the regulation - and then only for "undue hardship".

(3) Zoning By-Law Amendments. The power to enact zoning regulations includes the power to amend or withdraw these regulations. Prior to both the original enactment and the amendment or withdrawal, a public hearing must be held by Council. The amending power has been misused on occasion in creating small "spot zones"; these are zones allowing a particular use not allowed under the existing zoning. There may be valid planning reasons for "spot zoning"; frequently it is done for political or other, less honourable, reasons.

(4) Judicial Review. "Judicial review", referring to the review of public administrative acts by the judiciary, differs between the United States and Canada.

The British system of law practiced in Canada holds that parliament (i.e., any duly constituted legislative body) is supreme. "Judicial review" thus has a limited, though vital role to play; it may be thought of as referring to four distinct functions made necessary by the "encroachment of the administrative on the preserves of the judiciary...":[22]

(a) to limit transgression of powers of decision; (b) to examine the fairness of procedure of administrative agencies; this procedure rests on common law and can be modified by act of legislature; (c) not to try the merits of the case, but merely specified defects in administrative decisions; (d) it is a remedial procedure limited to a fraction of all possible causes.

> Broadly speaking, the American citizen may appeal to the courts against any administrative or legislative action on a point of law (constitutional or otherwise), or on grounds that the action was arbitrary, capricious, oppressive or unreasonable, or represented an abuse of authority. This allows almost any administrative decision or legislative act to be brought before the courts, but the scope for judicial reversal of those actions is more limited.
>
> In zoning matters litigation may take the form either of challenging the constitutionality or legality of the whole ordinance or part of it, or if disputing the reasonableness of the authority's exercise of that power in a particular case.[23]

In the United States, zoning was the work of the legal profession and any controversy over the use of land is still considered a matter of judicial rather than administrative review. Zoning in Canada was adopted in a different context; here it is held that "...planning is essentially a governmental not a judicial responsibility, or should be if planning is seen as a means of promoting the public interest rather than resolving conflicts of private interest".[24] In both countries, however, there is a similar tendency for the judiciary to show reluctance in substituting their judgement for that of the duly appointed body; in other words, they are showing an increasing favour to the public interest.[25]

3. SUBDIVISION REGULATIONS

Subdivision regulations govern not the use of the land or the type of buildings on it (i.e., zoning), but the preparatory stages of development - the layout of streets, blocks, lots, and the quality of services and the responsibility for their installation. It is obvious, of course, that subdivision and zoning regulations are inter-dependent because the layout of an area is a function of the character of the use to be made of the land. One definition of "subdivision" states that it is "the division of a parcel of land into two (2) or more lots or parcels for the purpose of transfer of ownership or building development, or, if a new street is involved, any division of a parcel of land; provided that a division of land for agricultural purposes into lots or parcels of five (5) acres or more and not involving a new street shall not be deemed a subdivision".[26] The term "subdivision" is also used to denote a group of homes on improved lots, having the character of a more or less distinct development unit.

Subdivision regulations originated with the statutory requirements for registering land ownership, transfer, and road access, but they were really only "paper" requirements. Road access to property had to be recorded, but it did not have to be actually built and provided, nor did the roads have to bear a proper, functional relationship to each other.

a.) Development Standards

Whatever the merits of legal "paper" requirements regarding the subdivision of land, the community has a fundamental interest in the layout of streets, lots and utilities. Therefore, in the Province of British Columbia, the subdivision of land must be approved by an "approving Officer".[27] His terms of reference are not clearly spelled out; in unorganized territory he may follow a few guiding principles stated in the Land Registry Act, whereas in municipalities he must follow the local subdivision bylaw (Appendix I, page 191).

(1) General Powers. The Approving Officer is not required to, but may choose to request a subdivision sketch if he anticipates resubdivision of the land; in this way he can presumably ensure that the new lots can be further subdivided conveniently. In actual fact he does not have the power of ultimate refusal under this clause, but in the meantime he can influence the applicant considerably by advising him and continuing to request new subdivision plans.

(2) In Unorganized Territory. The Approving Officer may refuse a plan for a number of technical reasons and if "the deposit of the plan is against the public interest".[28] Determining and substantiating the "public interest" is a difficult thing at best; unless the Approving Officer is a qualified planner, positive action for better land use and against urban sprawl is indeed a matter of chance.

One of the technical requirements is that of road access to subdivided land. Therefore, in unorganized territories in the Province of British Columbia, District Engineers of the Department of Highways have been made approving officers in their districts. Subdivision approval is very much a mechanical office procedure judged on the criterion of road access. The Community Planning Division of the Provincial Municipal Affairs Department appears neither to have nor to seek a say in the procedure. There is in such areas an utter lack of community planning, which aggravates the difficulties of unqualified officials burdened with the task of approving a community's pattern of development. The provincial government is clearly neglecting its duties in delegating the power to approve the subdivision of land to unqualified personnel.

(3) In Municipalities. The Approving Officer may refuse to approve a subdivision if it does not conform to the by-laws of the municipality. Subdivision regulations today encompass not only the layout and type of road or street, but the area and dimensions of lots, the relationships of lots to streets, the quality of services and the responsibility for their installation. The trend in improvement requirements has been to require developers to provide most or all improvements; consequently, fly-by-night operators and irresponsible layout and construction have been discouraged.

Subdivision by-laws may require the provision of a sewage-collection system and connection to the municipal

sewage-disposal system, if one exists. The approving officer may also refuse to approve a subdivision plan if, in his opinion, "the cost to the municipality of providing public utilities or other municipal works or services would be excessive".[29] Theoretically at least, this clause in the Municipal Act enables urban sprawl to be prevented, especially since one of its marked features is the excessive cost of providing public services.

> In considering an application before him for subdivision approval, the approving officer may hear objections from any interested persons, and may refuse to approve the subdivision if in his opinion the anticipated development of the subdivision would injuriously affect the established amenities of adjoining or adjacent properties or would be against the public interest.[30]

This discussion shows that the legislation is equivocal and offers little practical help to unincorporated, rural areas in controlling and preventing urban sprawl. Secondly, the approving officer operates in a twilight zone: acting as a direct delegate of the provincial government, he is nevertheless paid by and responsible to his municipal government. No matter how promising the provincial delegation of power, the approving officer is under pressure to carry out only those directives which are sufficiently practicable in terms of local politics. Thirdly, the approving officer's calculations on "excessive" costs can be challenged quite easily unless there exists, in fact, a community development plan with a development priority and some form of capital budgeting.

b.) Planned Unit Development

Physical standards for planned unit development are designed to encourage developers to use a more creative approach than hitherto in the development of residential, commercial and industrial land; to achieve flexibility in land development; to encourage a more efficient and more desirable use of open land; to achieve a more desirable living environment than through strict application of zoning and subdivision regulations; and to encourage variety in the physical development pattern of the city. Therefore the subdivision bylaw may stipulate only a few essential requirements, one of which would be the presentation of competently designed plans for landscaping, siting and subdivision. Such regulations allow the developer to take advantages of new land-use concepts, such as the "cluster layout". This simply means that houses are grouped around courts, leaving the rest of the land as common open space in its natural state.

Planned unit development is an important step away from single-lot development, but it is very much dependent on the availability of suitable and reasonably priced tracts of land, which is the primary factor influencing the locational decision of the builder. "Tract builders ... are the most sensitive to ... land costs and seek the least expensive land".[31] A very promising method of "salvaging" subdivided land is by erasing the existing subdivision plan and replotting the land. Land assembly schemes frequently involve

replotting, as do the relocation of roads and large-tract development on modern subdivision design principles. However, subdivision problems encountered in replotting and land assembly schemes are generally unique and ought to be resolved only with competent planning advice.

c.) Other Functions

The success of subdivision regulations depends very much on the enforcement of their provisions and the review by professional municipal staff of most, if not all, cases of subdivision. Increasingly so, subdivision applications are circulated among several municipal departments so that the Approving Officer has the benefit of their comments and they are kept abreast of new land development. In Richmond, British Columbia, to name one example, a "staff coordinating committee" meets once a week formally; the whole subdivision approval hinges on the procedure of circulating to all municipal departments, the school board, and the utility companies the subdivision application for comment or refusal. Vancouver, British Columbia, has its "Technical Planning Committee"; the applicant is relieved of the negotiation with separate departments while still getting the benefit of their review.

There are also the subdivision regulations which are applied to the developer not by a municipality, but by mortgage institutions. They are discussed under "Mortgage Lending" on page 29.

B. INDIRECT LAND USE CONTROLS

1. DEVELOPMENT GUIDANCE

> One of the characteristic features of suburban development in America is its lack of contiguity. Individual developers use whatever land they can acquire quickly and cheaply; universal car ownership overcomes the deterrent of isolation; vacant sites left behind by the outward spread of suburbia seldom get filled in later; the result is a patchwork of development, unsightly, wasteful, inconvenient, and expensive to service.[32]

Delafons considers the worst deficiency of American land-use controls to be their failure to prevent this kind of development referred to as "urban sprawl". Zoning deals only with the "what" and not the "when" of development. Subdivision regulations contain no direct control element either; they may even be considered handicapped by the zoning tradition which assigns all land to some type of use. In actual fact, the assigned use was rarely the "best use" for that land nor was it based on a planning analysis of land use needs or probable development. One prominent lay misconception held thatzoning was tantamount to actual physical development. Urban sprawl was made possible as much by "overzoning" as by the lack of municipal land-use controls.

One of the valid reasons for land-use controls is that they can improve the functioning of a community. One aspect of function is efficiency; in terms of efficiency, urban sprawl development fails abominably. If land-use controls

are to effect a better city under the limited terms above, they must attempt to effect efficiency. The controlling factor ought to be the economical and adequate provision of public services. This can be achieved only by a positive policy and program, of course.

Zoning alone has not played a great role in controlling the location and sequence of development, but subdivision regulations have been used on the strength of the "efficiency" argument and, often, the authority of the public health statutes. The procedure thus is to require new houses to be linked to the public water and sewer system, which makes their construction dependent on the programmed extension of these municipal services. An additional implementation force is the mortgagee's financing policy which may require their installation.

a.) Municipal Expenditures

The use of land is very much dependent on the availability of a number of municipal services. A municipality's policy to provide or not to provide these services can therefore constitute a powerful device controlling land use. There are eight municipal services which are basic to the use of land: streets, water supply, sewage disposal, garbage collection, fire and police protection, schools, welfare and recreational facilities. The huge sums involved in providing these services and maintaining them should ensure, one would have imagined, considerable attention to the relation between settlement pattern, density of settlement, and the provision

of these services. Instead, municipal services are provided on an ad hoc basis; services are seldom planned on a long-range sound economic basis nor can they be, in the absence of an overall development program.

Municipalities have been consistently short of funds, especially since 1945. They relieved themselves of the pressure for public improvements by (1) requiring developers to provide many of the services hitherto provided municipally, and (2) themselves skimping on expenditures. Many of the standards required of developers were and are not matched in quality and scale by over-all municipal utility and community planning; excellent facilities scattered throughout a community, but unrelated to each other, may be a gross waste of money in the larger view. Municipalities apparently have forgotten that

> ...decades after the buildings are finished, and the names of their builders and first occupants are forgotten, the municipality will still be cleaning the roads, ploughing the snow, removing the garbage, collecting taxes - and perhaps underwriting demolition and redevelopment. The local government should be intent on having the new piece of urban fabric put in shape, for the city will have to pay to keep it in shape. Inefficient layout, facilities disproportionate to the people to be served, repellent appearance will add to social frictions and public costs.[33]

The principle relating municipal costs to land-use and settlement pattern is "that residential development should always be contingent on the provision of services to standards required by health and safety".[34]

b.) Public Roads

It is obvious that the more efficient the transportation service connecting different land-uses, the better these land-uses may function. Transportation routes and facilities are becoming significant land users: when land becomes urbanized, at least one-third of it is transferred from private to public accounts. Very expensive public works are installed, involving the use of public taxing and borrowing powers. Visually, the transportation routes are becoming outstanding elements in the urban scene. Most important, there is a powerful causal link between transportation and land use.[35]

c.) Real Property Taxation

Real property taxation can be used to direct land use in the following ways: (1) to foster the more intensive or higher and better use of land resources; (2) to promote conservational goals; (3) to attain particular tenure goals; and (4) to discourage or prohibit certain types of land use. The relationship between taxation and land use is complex and embraces many diverse facets; suffice it here to point out the notable revival of interest in property taxation.[36] One prominent point of interest is the basis of property taxation: should taxation be levied on land alone or on land and improvements?

The greatest controversy within the existing taxation framework has been the assessment of agricultural land

threatened by urbanization.[37] The steady tax increases, in the absence of legislative action to control rural land assessing, have forced farmers to sell their land; there are at least two facets to this question in any locality; one is whether any land, and then which land, must be kept in agricultural production;[38] the other, when is the 'dispensable' land best turned over to other than agricultural uses? In other words, the optimum use of land must be optimum with respect to the soil capability, location, quantity, and time. The optimum use of land can be decided only in a planning context because the competitive market has proved it cannot optimize society's land resources.

d.) Mortgage Lending

The most important single factor determining residential land-use after 1945 has been the availability of Federal mortgage money for new single-family housing in the suburbs. The concentration on single-family housing and a lack of appreciation of the crucial role of proper community planning and neighbourhood standards are still shaping suburban residential areas. Despite some progress in promoting variety in housing as well as large-scale development, the appraisal of applications for loans on new houses still seems "...too closely linked to measurable and mechanical elements of the individual property in today's market; present appraisal methods are too indifferent to those aspects of housing en masse which only architectural and planning judgment can distinguish".[39]

The uncertainty of mortgage funds over the years, short rations in other words, have encouraged short views, and short views are ultimately expensive. Municipalities, builders and prospective home owners have been forced to accommodate themselves as best as they can to the spurts of building activity triggered by the sporadic release of Federal mortgage funds.

Federal mortgage lending is a coin with two sides: 'easy' mortgage money was made available with few strings attached concerning land use, municipal services, and community planning; and the modern suburb was made possible, with its monotony, lack of housing variety, economic class segregation, and waste of site and street space. At the same time, income restrictions were so high and development standards so rigid in Canada, that a sizeable percentage of the nation's income earners were ineligible for National Housing Act mortgages. Many families were thus forced to continue renting their accommodation, which was and is both expensive and unsatisfactory; others chose to build according to the standards and the mortgaging they could afford, where they could afford it. Frequently this meant substandard housing in the urban fringe and in urban sprawl areas; it goes without saying that communal services were also substandard or even lacking.

This cursory investigation into the role of indiscriminate and yet restricted Federal mortgage spending in helping to create the land-use pattern of suburbs and sprawling fringe areas has ignored other contributing factors and the nature of Federal-Provincial relationships. The Federal

Government, as the mortgagee, dispensing Federal money, has the responsibility - from a business point of view, to say the least - of ensuring that the housing built does create satisfactory communities of a lasting nature; or else it should not lend. It is the responsibility of the Provincial Government, however, to ensure proper community and land use planning.

e.) Housing, Building and Safety Codes

Housing codes have had a direct bearing on land use through their sanitary and fire regulations. The former prescribed minimum room sizes, floor areas and window sizes, water supply and sewage disposal standards. The latter prescribe, among other things, the space separation between adjacent buildings. If these regulations are combined with the structural provisions in building codes, it is fairly easy to trace both the development of lot sizes, side yard clearance requirement and a fairly uniform street-scape as well as the planning effort to design more compact settlement to reduce public utility costs. With the inclusion of occupancy and density regulations, housing codes exert much stricter land use control inasmuch as the population density as well as the qualitative aspect of occupancy can be controlled. Building codes have occasionally played a role in promoting higher-cost residential development by requiring more expensive construction than the reasonable use of modern building materials necessitates; by being obsolete; or by being deliberately misused to allow only high-cost houses.

2. PUBLIC LAND POLICY

a.) Public Land Acquisition

Complete control over the use of land naturally means ownership of the land. Ownership of course does not guarantee good land-use allocation, but it does assure efficient implementation of planning measures where planning is a function of government.[40] Opposition to governments' real estate operations has been so strong in North America that even land legitimately needed in the future for public purposes has not been acquired in advance; exclaimed Williams Whyte, Jr.: "Long-range planning is necessary, but what we need most is some retroactive planning: get the good land first and then, at leisure, rationalize with studies how right we were to have done it".[41]

Land acquisition by municipalities in British Columbia is limited only by their financial resources; "land assembly" schemes between the Federal and Provincial governments have not borne fruit and are not designed, in any case, for planned long-range land acquisition. Short of an all-out effort, the acquisition of strategically located land can still help a local government to direct the future land-use pattern. Key determinants of land use are the traffic routes, shopping districts and centres, town centres with commercial, administrative, entertainment and cultural facilities, and parks.

b.) Expropriation

One of the governmental powers is that of "expropriation", which is the forceful acquisition of private property for public purposes. Expropriation may be the outright acquisition of all property rights (such as taking land for open spaces or for public use present or future) or the taking of all development rights (as of productive agricultural, forest and grazing land, or even land only suited for building purposes). Expropriation is particularly prominent in land acquisition for urban renewal, highways and hydro-electric developments. The question arises whether expropriation can be considered legitimate if the property expropriated is not needed in the near future for public use.

c.) Open Space

The generic term "open space" can be made more specific by distinguishing between two types: "open country", which would include agricultural land, and conservation and flood control areas; and "open space in the urban area proper", which would include land for parks, recreation and miscellaneous public use.

(1) Open country. Preserving open country for its recreational and scenic value has traditionally been achieved by outright acquisition; but the whole pace and pattern of settlement have made it difficult for public authorities to find the financial resources for this purpose. A number of devices have been tried, especially in the United States, with varying

success. Agricultural Zoning (i.e., zoning areas exclusively for farm land) was pioneered in Santa Clara County; Alameda County has been considering "planned agricultural parks". Agricultural Zoning appears to be a weak device unless taxation is based on agricultural land values and the land is actually being worked. Where agricultural land has a low capacity, its value may lie in remaining as a protected natural landscape or recreational zone. The California State legislature adopted a bill for "exclusive recreational zones", with the immediate but not exclusive purpose of protecting golf courses in metropolitan areas; the measure proved entirely ineffective because the assessment did not follow present use, but potential use. The assessor in this particular instance said he took his orders from the state constitution and it told him to tax the land at fair market value. Although the legislative process in Canada is not restricted in the American sense, the example illustrates the interdependence of land-use controlling factors.

> Outright purchase is certainly the most satisfactory technique where the land is to be developed primarily for recreational use, or as a reservation, but there remains the problem of agriculture and other open land that should remain in private ownership but needs to be protected from incongruous development. It is here that the hiatus in the American system between uncompensated control and public acquisition is most apparent. In an effort to overcome this, the idea of 'conservation easements' has recently been introduced. The suggestion is that the public should acquire not the freehold but only the conservation or development 'easement' of land that it wants to see kept permanently as open space.[42]

The easement is in fact only a right in property; the property still belongs to the owner. Easements have been

successfully used to conserve future rights-of-way and scenic areas for highway purposes; to prevent the erection of buildings or billboards in the vicinity of parks; for highway 'sight corners', paths and trails to scenic places; for ensuring planting and maintaining shrubs and trees along rivers and ponds; for assuring an unobstructed path for the entry and exit of air traffic; and for pipelines. The state of Wisconsin is pursuing an active conservation program with the aid of easements; prohibitions against the burning and filling of wetlands are enforced, and public hunting, fishing, trapping, weed control, etc., are assured.[43] Conservation and scenic easements have been used to maintain a specific local or regional landscape character, such as along the Mississippi Parkway. It is intended to preserve the landscape in its normal condition; the difference is that it is not a 'museum piece' under public ownership, but part of a functioning, productive region.

It remains to be seen whether easements afford permanency of security against development pressures; they may or may not be the "more or less tenuous legal safeguards of undeveloped land",[44] Delafons envisaged. One principal drawback is that they do not allow access to much of the land.

(2) Open Space in the urban area proper. Where public open space must be created in a built-up area, it is usually possible only with outright purchase by the public; demolition of buildings and other physical changes may or may not be involved. The provision of public open space in urbanizing

areas is not restricted to outright purchase or any public expenditure, but it is generally required.

> It is simple enough to require that every lot be served by a paved street and utilities in an ordinance that treats the individual lot as the thing being regulated. Small parks, conceptually are a necessary service to an entire subdivision rather than a single lot, hence it is incongruous to require them in an ordinance regulating the individual lot. It is even difficult in such an ordinance to permit minimum lot sizes to be reduced to make way for common open space. But an ordinance or section applying to entire subdivisions can handle the matter of permissive or obligatory inclusion of open space with simplicity and directness.[45]

Subdivision regulations have come a long way in divorcing themselves from the single-lot concepts. In regulating the location and amount of public open space, however, they ought to be based on a general development plan which establishes the need for and location of these open spaces. Subdivision regulations can then be used to reserve the land at the time of subdivision. Once it is known whether the open space has a neighbourhood, local, metropolitan or regional use, equitable financial settlements can be arranged with the land developer. Developers presumably will be much more cooperative if they do not have to carry an unjust burden in providing public open space.

3. GOVERNMENT COORDINATION

Provincial and federal authorities have been accused of not cooperating with municipalities and occasionally callously disregarding legitimate local interests when programming and executing their own departmental work. Whereas

no municipal government has recourse against the actions of senior governments, small communities in particular are ill-equipped to make their needs known and to direct and convert into benefits the impact of major public works projects - without the help of special staff, consultants or advance warning. There comes to mind the case of Revelstoke, British Columbia; the opening of the Trans-Canada Highway was "like pulling the plug out of the bathtub", a resident lamented. If the town was unprepared for this long foreseen onslaught of travellers, what effect will the spending of $400 million on three water storage dams in the area have on the town?

Another operating tier of government has arisen over the years to fill a governmental vacuum, created by the lack of cooperation and understanding and sympathy between governments at all levels. This tier of government is a labyrinth of special-purpose bodies, ad hoc agencies, and special districts.

> Special districts are frequently used in the development, protection, and administration of land resources. These districts range from the irrigation, drainage, levee, weed control, grazing, and soil conservation districts used in rural areas to the water, sanitation, park development, and metropolitan districts used in and around our cities. Each of these types of districts calls for state enabling legislation; and each involves ad hoc units of government vested with specific administrative, taxation, and other powers.[46]

Local governments are thus in a weak position with regard to the two senior governments and, often enough, the special-purpose 'governments'. The latter hold particularly strong positions if they perform such essential services as water distribution and sewage disposal.

The discussion has shown that the effectiveness of land use controls is determined by not only their technical adequacy, but also the purposefulness of their application and their political intent. Land use controls are techniques and will remain mere techniques until they are made to implement a land development policy. This would suggest that urban sprawl poses not only the fairly specific problem of how to curb it, but also the more general one of how, at the same time, to guide community development. The investigation into causes and characteristics of urban sprawl in the following chapter will therefore include a consideration of the physical, economic and social implications of urban sprawl, but the emphasis will be on the land use aspects of urban sprawl.

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[10]Trailers, as residences, were allowed initially only in industrial zones, the "lowest" quality of zone; trailers had not been anticipated and were thus not listed as a land use under any zone.

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[15]Many subdivisions of the late 1950's can serve as example, "Westlynn Terrace", in the District of North Vancouver, B. C., exemplifies how a developer capitalized on the buyer's craving for "character" and quaintness of his neighbourhood.

[16]Floor Area Ratio (FAR): the ratio between the total floor area of the building and the ground area of the site. Noteworthy is the effect of the method of calculating the total floor area on the livability and 'phychological density' of a group of high-rise buildings (e.g., the inclusion of balcony and hallway space).

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CHAPTER II

URBAN SPRAWL IN NORTH AMERICA

> "For sprawl is the municipal locust, the great devourer of both money and land, and producer only of grief - even more for the future than for the present".[1]

A. GENERAL CHARACTERISTICS

"Urban sprawl" is the infringement of urban uses on rural land in the form of discontinuous, uncoordinated and uneconomical low-density residential development. It may mean scattered building development. "It may consist of 'ribbon' development along roads; or subdivisions which do not sell; or an indiscriminate mixture of dwellings on small lots in rural areas".[2] In the short-term view it means waste of land, money, time, and livability; in the long-term view it constitutes waste of resources and the development of undesirable community growth patterns.

> Sprawl takes many forms, but all forms have one common characteristic - low population density. This characteristic is the basis for the definition of sprawl...: Sprawl is a stage of transition between true agricultural development, which has a density less than 0.3 people per acre, and suburban residential development, with a density greater than 3.5 people per acre. That is, sprawl areas have a density between 0.3 and 3.5 people per acre.[3]

Fundamentally, favourable conditions for urban sprawl do exist, for "... the present widespread use of the automobile, the availability of modern conveniences like

television, septic tanks, power driven pumps, telephone, refrigerator, freezer and the high standard of living indeed make it technically and financially possible for many to live in a rather spread-out manner, while yet the city-as-a-whole can remain interrelated and integrated with reference to its daily requirements".[4] What makes urban sprawl possible is the lack of governmental policy on and control over urban development. Specific aspects of urban sprawl will be discussed separately in the following sections.

1. LAND DEVELOPMENT PATTERN

Sprawl areas are characterized by the fragmentation of land into ever smaller rural plots with an encroachment of urban size lots, many of them prematurely subdivided and therefore left vacant for long periods. Increased taxation loads, generally resulting from the increased service needs and increased assessments of urban houses, have forced farmers in such areas from agricultural production.

> The rural municipality must provide more and more services for the urban fringe. Many fringe homes have too low a valuation to carry the costs of schools, roads, police, welfare, and other needed services. The tax load is extended to the farmers and since property taxes represent a large part of a farmer's fixed costs, taxes may rise to the point where the farmer feels he no longer can remain in farming. At this point he is tempted by any reasonable offer for his land, now based on non-agricultural values, or he may actually promote the sale of his land for non-agricultural purposes himself.[5]

The by-products of such casual, individualistic and generally amateurish approach to land subdivision are several:

a) the subdivision pattern is not functional;

b) much of the land remains vacant or is locked in by perimeter subdivision, causing a form of mixed urban and rural slum;

c) much of the urban growth has to skip over subdivided land because the owners, whose land is nearest to existing growth and services, hold out for tomorrow's price today;

d) land ownership becomes fragmented; and

e) large-scale land developers, unable to find suitably priced large tracts, have to "leap frog" to find such land.

Sprawl areas are further characterized by a disorganized land use pattern and contrasts in land use. Rural and urban, agricultural, commercial and residential land uses are intermixed; incompatible or undesirable land uses exist side by side. Furthermore, the density of residential settlement is so low as to preclude the provision of the basic municipal services.

2. MUNICIPAL SERVICE DEFICIENCIES

Municipal services are grouped under "basic household services", "street services", and "neighbourhood and district services".[6]

a.) Basic Household Services

The low density and haphazard development in sprawl areas have the effect of making it uneconomical to provide water supply and sewage disposal facilities on a communal

basis; reliance is based on individual wells and septic tanks. Utility services (electricity, gas, telephone), being less expensive to distribute and also under government control, are generally supplied where needed, even where uneconomical. Sprawl areas are low-cost and low-tax areas, at least superficially and only in the early stages of urban sprawl. The health hazards posed by faulty septic tank operation are a major source of residents' complaints.

b.) Street Services

These services are the paving itself and the services alongside or under it. Commonly a street in a sprawl area is not paved; no sidewalks are provided and drainage ditches are open and unkempt. These three conditions, symbolizing danger and inconvenience to children and adults, pedestrians and motorists alike, arouse by far the greater number of complaints. Other services generally not provided are street lights (even at intersections), street signs, and a functional street system.

c.) Neighbourhood and District Services

These services affect the residents of an area as a whole. Since they are oriented toward a larger area and the whole population, and since this population arrives over a period of years, the need for these services is frequently ignored during the initial urban development. The provision of school facilities may be a major cause of dissatisfaction of residents; schools may be too far away from homes, too

small, or inefficient. Such facilities cannot be provided, of course, on the spur of the moment. The reservation of school sites in proper locations, the budgeting for and construction of the buildings, and the attraction of teachers, all depend on a long-range approach, implying some knowledge of and control over the residential growth of an area. The absence of playgrounds and recreation facilities is another characteristic of sprawl development. The provision of various types of facilities is dependent on a community plan, regulations requiring the necessary space to be set aside by developers, and the proper functioning of a local government to enforce the requirements and itself undertake the provision of such facilities.

Standards established by the Canadian Underwriters Association and the National Fire Protection Association, of distance from the fire hall to the farthest house to be protected, are seldom met.

There are other public and private services which affect an area greater than one neighbourhood, and many of which need not be provided in each neighbourhood. Since they are essential to each, however, they ought to be envisaged and located for optimum utility to all. There are the services which are normally a public responsibility, but not necessarily in public ownership or operation: police protection, health clinics, libraries, community centres, and public halls, special recreational facilities such as zoos and botanical gardens, public transportation. And there are the

privately or commercially operated services: shops, entertainment and indoor recreation, churches, private schools, medical and other professional services. In sprawl areas, typically, many of these public or private services are not available at all; those which are available have been located to the best knowledge and ability of individual owners and operators. Their decisions, almost by definition, cannot but be based on a short-term, individualistic amateur interpretation of urban development.

The excessive distance to and the insufficiency of playgrounds and recreation, school and shopping facilities are, along with inadequate streets, sidewalks, public transportation and septic tanks, the major sources of dissatisfaction of sprawl area residents.

3. GOVERNMENTAL FAILURES

Urban sprawl characteristically spreads most wantonly in unincorporated territory or where the quality of local government is poor. Typically, no policy regarding land development has been formulated nor have regulations been enacted; enforcement of whatever regulations there exist is frustrated by lack of personnel or by political maneuvering. Furthermore, there is little consistency of purpose over a period of years; there is little realization of the possible or desirable effects of a policy if one were to be adopted.

The Provincial Government has neglected its duties with regard to community development control; the government's

neglect weighs particularly heavy in unorganized territory for which it is directly and immediately responsible. There may exist special-purpose bodies, supplying one or more services, among them community improvement, hospitals, irrigation, drainage, dyking, water, sewerage, fire protection, street lighting, ambulance service, parks and electric power. The "districts" are the principal governing entity below the municipal level, hopefully only stop-gap arrangements prior to full municipal government. Generally their work is uncoordinated, overlapping and single-purpose; it is difficult to expect urban sprawl to be controlled by them if even municipalities have been unable to do so.

4. ENCROACHMENT ON AGRICULTURE

It was suggested earlier how farmland tends to be taken out of production by subdivision of farmland for urban purposes. The relative ease with which this form of subdivision can proceed has encouraged sprawl greatly; there remains the question as to which agricultural areas are so valuable to society that they should remain in agricultural production indefinitely, as opposed to those rural areas which could be taken over ultimately for urban purposes.

> The prevailing attitude towards land has come sharply to the fore in recent discussions of the evaluation of agricultural versus urban land use. A fairly general attitude is that whether land should be farmed or rather used for some other purpose (or perhaps for no purpose whatsoever) should be decided in a free market. If agriculture cannot compete in the land market with urban development, then there is no sense in trying to keep land in agricultural use. If developers can outbid agriculture, even if urban development is at very low densities, there should be no interference for whatever purpose, be it conservation of a food resource base, comparative advantage, conservation of agricultural processing industries, avoidance of diseconomies of "scattered" land use patterns or the achievement of certain local urban benefits. The market will-if necessary-regulate at least several of these things. If, for instance, food gets scarce, agricultural values of land will rise to an even or perhaps higher level than urban values.[7]

One of the lessons of the last century is, however, that the "competitive market" is unable to optimize long-range social and economic goals; the encroachment of urban uses on productive agricultural land by urban sprawl is another incident in competitive market history. Even the short-range view, that as little land as possible should be so obviously nonproductive as much of the land in sprawl areas is, carries no weight in the competitive market.

Farmland which should be conserved for agricultural production cannot be utilized efficiently if fragmented or if the absolute amount of product declines so that packing, transportation and distribution become uneconomical.

> It is simple to cut up farmland but difficult to reassemble it, and the smaller the unit the fewer the alternatives open to the farmer. Yet successful and resilient agriculture may require freedom to manoeuvre from time to time. Thus the breaking up of farm lands is not only a one-way street but a steadily narrowing one from which there may be no return.[8]

Farmland may be protected by public action not only for its agricultural value, but also its scenic, educational, and recreational value. Of all good farmland threatened by urban sprawl, two kinds are singled out for conservation: unique, irreplaceable fruit-growing areas (Niagara peninsula, Florida, California); and farmland supplying large, local urban markets with milk and market-garden produce. No satisfactory way has been found yet of either timing the transfer of use of farmland or assuring its continued agricultural use, unmenaced by vacillating policies, high taxation or other harassment.

5. DISREGARD FOR INDUSTRIAL LAND NEEDS

The expensive servicing of urban sprawl areas and the low real property tax revenue (low assessments on land, improvements, farms, and vacant land) have led to competition for industry, which generally is taxed disproportionately for the services it receives. This has led to an erratic industrial location pattern. Conversely, industries have located in sprawl areas because of low raw land costs and relatively low taxes. Problems arise particularly from the scattered nature of industrial location; the preemption of choice industrial land by other than industrial uses or industrial uses which could be located equally well or even better elsewhere; the lack of protection from intruding uses; uncertainty of adequate future water supply and public services; and the strong possibility of sharply increased and

occasionally discriminating taxation, when residential service demands entail major unexpected expenditures.

6. SOCIAL INCONVENIENCES

Living in urban sprawl areas means adjusting to the lack of physical facilities and services and to new social circumstances. The opportunity for and inducement to participating in social, cultural, recreational, and educational life are greatly reduced, compared with suburban and urban areas. Many houses are unfinished, some occupied, some unoccupied; other structures serve purely as temporary living quarters. This points out that sprawl areas attract many who cannot afford to either rent in the central city or own a home closer to the urban core. One investigation into living in the urban fringe and sprawl areas states:

> ...there remains the intractable fact that the fringe areas-especially the outer fringes - provide a haven for some who cannot find acceptable housing within their means in the city.
>
> Clearly, in looking after its own interests - which are the interests of every taxpayer and resident in the region - the community should bear in mind the needs of this minority and try to make sure that improved development of the region is not achieved indiscriminately at their expense.[9]

Another study in the same series found that about one-third of the income earners in Metropolitan Vancouver (1959) were ineligible for a National Housing Act mortgage on a very moderately priced (9600) home.[10]

Possibly the most striking thing about the fringes is the extent to which they are built on illusions. Most of their residents expected open space, peace and quiet, but all of these vanish as the area develops. They appear to have thought they could do without urban utilities; but the need for these has crept upon them unawares. They thought they could do without city facilities and conveniences, but found that both they and their children need them. They presumably expected low taxes, only to find that the taxes of rapidly developing suburban areas inevitably rise, and that what they don't pay in direct taxes they may have to pay in special charges.

Behind these minor illusions lies a great illusion - that a large number of people umbilically attached to a great metropolis can escape urban costs and conditions merely by moving one step away from it. For a small community this may be feasible, but where scores of thousands of people are involved it is self-defeating.

The advantages and opportunities of metropolitan life cannot be enjoyed free. They can be embraced by living in the urban area and paying the penalty of city costs and restrictions; or they can be enjoyed more selectively - at least for some time - by living far out of town and spending both time and money in commuting. But to settle hopeful and unprepared in the path of the metropolitan tide is not a solution, but a sugar-coated expedient, costly and disillusioning for all concerned.[11]

B. LAND

This section deals with those aspects of land which are crucial to the prevention of urban sprawl. The breakdown of this section into components is a matter of convenience only; it is not implied that they exist separately.

1. LAND FRAGMENTATION

Typical evidence of sprawl is the large increase of urban-size lots, or larger lots in the one to five acre range, too small for farming, at the fringe of urban areas. This large increase is due not so much to a substantial immediate demand, but rather to an anticipated future demand. There are of course many examples where speculators anticipated an immediate demand and found none. This is not surprising for the economics of urban and especially fringe development are far from perfectly understood. The operation of the housing market, moreover, is far from perfect, especially in sprawl areas where builder, buyer, and landowner are in fact amateurs involved in what amounts to urban development. Urban sprawl can indeed be ascribed, in a sense, to the "collusion" between a large number of customers, inexperienced, undiscriminating, in a rush to build, with just sufficient money to be able to venture into a transaction of their own.

Generally speaking, the larger the tract of land remaining under one ownership, the better the chances for curbing sprawl development. For instance, efficient farming requires large, compact and continuous plots of land; the more land that is retained in such parcels, either vacant or under cultivation, the easier it will be to maintain economical units of farm production or to adjust and shift urban and rural uses. Residential and urban development likewise benefits from large-scale development. It is true that the scale of development does not assure quality, nor any improvement over piecemeal development; there are examples to prove that. However, the technology of land development, utility installation and house building is such to-day that piecemeal development is both expensive and undesirable from the point of view of quality and functional acceptance of a growing body of planning knowledge has led to development requirements (such as a functional circulation system, walkways, neighbourhood parks and local shopping facilities) which are extremely difficult to satisfy in piecemeal development.

2. TIMING AND LOCATION OF SUBDIVISION

Significant evidence of urban sprawl is the premature subdivision of land. The pace of subdivision activity generally reflects neither a shortage nor a demand for subdivided residential land; to the contrary, there is already

plenty of land available elsewhere and there is little demand locally. Much of the residential land on the market in fact remains idle, the assessment system providing little incentive to keep or make land productive of produce, income or taxes. The threat of further subdivision and increased, frequently unfair, tax assessments discourage long-term capital investment in agriculture, compounding the adverse effects of premature subdivision. Development proceeds irrationally, which in financial terms means that the benefits and costs of this development have no demonstrable relationship.

One municipality in the Lower Mainland of British Columbia had, in 1954, "8548 unoccupied lots less than one acre in size, enough by themselves to accommodate the whole of the municipality's growth for more than 8 years".[12] The Metropolitan Area of Vancouver, B. C., presently has more than 30 years' supply of zoned but vacant residential land.[13]

"Easy credit" makes it possible for even the inexperienced to start developing larger tracts of land. There are instances in the Lower Mainland where not only most of the subdivided land is vacant, but also most of the houses, which were speculatively built.[14]

The location of subdivision in urban sprawl areas is largely unrelated to existing land uses and facilities in both the urbanized and the sprawl areas. It generally represents an infringement on the existing uses. The subdivision of land throws an "urban shadow" over wide areas, disproportionate to the urban development that has actually occurred;

and forces the provision of services which cannot be economically provided to unplanned, haphazard, low-density settlement at such low population densities. "Location" of Subdivision includes two aspects: location in geographic terms, that is, community design; and in terms of staging and sequence.

3. LOCATION AND STAGING OF DEVELOPMENT

Urban sprawl implies not only the premature and irrational subdivision of land, but also the inefficient use and development of that land, all being closely related. Development is possible, of course, wherever subdivision is permitted or has taken place. The Lower Mainland Regional Planning Board of British Columbia has pointed out a most significant trend within sprawl areas:

> ...in spite of the complete lack of encouraging factors, a considerable amount of concentration of development seems to take place naturally. Of the lots less than 1 acre occupied in North Surrey between 1949 and 1954, 44 percent were located on only 1.75 sections out of a total available of over 50 sections, that is, on 3.5 percent of the land available.
>
> Another indication of the apparent desirability of lots in denser areas is shown by lot occupancy rates. In a sample area, those sub-areas with a density of more than 3.5 people per acre had 65 percent of lots less than 1 acre occupied; those between 1.2 and 3.5 people per acre had 53 percent occupied; and those between 0.3 and 1.2 people per acre had only 32 percent occupied.[16]

This should not suggest, the Board continues, that sprawl is self-correcting, that development will fill in the sprawl areas to urban densities and that "today's sprawl will merely be tomorrow's urban area".[17] To bring 33,150 acres at sprawl densities in 1955 to a low suburban density of

5 people per acre would require a population increase of 145,000 over Surrey's 1955 population of 45,000. By the time this density could be expected, about 40 years, "new sprawl areas would have sprung up farther out and the problem would be repeated on a larger scale in a new area".[18]

4. COMMUNITY DESIGN

It has been intimated that the eventual infilling of sprawl areas may never be fully realized; whether this will be borne out in practice remains to be seen. Meanwhile, the operation of the free or competitive land market is such that only about 50% of the total building land supply appears to be utilized; once this "magic" percentage has been reached in an area, the development of land there tapers off very quickly and becomes asymptotic.[19] A considerable amount of land thus appears to be destined to lie idle and vacant for a long period. Several reasons can be suggested: the price may be too high, indicating inflated expected returns of the landowner; the establishment of a "character" for the area limits the market; there may be weary legal procedures in obtaining title to land subdivided many years ago, if the owner is not a local resident; and there could be many other reasons. The point of interest here is that sprawl development (unless it occurs on an approved development layout, which is rare) precludes a reasonably complete or efficient future use of land. It has been shown that land in our land market system, if not "forced" by design to be utilized, may

indeed not be utilized. There can be no questioning the fact that the future physical layout of a community in a sprawl area is seriously compromised by the existing development. As was indicated previously, the acquisition of land for public purposes becomes costlier and costlier as urban development forces land prices up. It has also happened, however, that local governments have been able to acquire easily some of the land locked in by perimeter development, for school and park sites.

The desirable tendency to large-scale subdivision and development as one unit has itself not been a remedy for sprawl.

> This development of large-scale units has led to greater efficiency in withdrawal or withholding of land for urban purposes insofar as vacant lots are concerned. The large-scale development unit, however, has introduced a new pattern of vacant areas. Opportunities or limitations in the process of acquiring tracts of land leave large blocks of vacant land around and between these large-scale units of development. The tendency is for the pattern of development to assume a pattern of large developed units interspersed with areas of vacant land of varying sizes but of substantial scale. These large vacant land units may provide opportunities or possibilities for reservation of park areas or for maintenance of other nonurban land uses. But it is doubtful that a significant efficiency is being achieved.[20]

5. STREET SYSTEM

One of the most permanent features of urban development is its network of streets; cities big and small have been destroyed and burned, but nearly always the old street plan has dictated the pattern of reconstruction. So it can be proved to-day that streets, designated as such or actually

built, will be perpetuated, whatever their cost or location. In the long run, with the addition of a sufficient number of complementary roads, circulation in sprawl areas may indeed function reasonably. Patchwork is of course never cheap, nor can it substitute for good original workmanship; some things cannot be patched at all.

The circulation system has a formative control over land use. Roads gain and lose functions, reflecting their usefulness as parts of a greater circulation system; as new links are introduced, the existing network adjusts itself. So it can happen that land uses depending for support and access on a street can see their fortunes turn, or that existing land uses suddenly become incompatible with the new traffic conditions. In either case, a blighted area may well result. Where the improvement and the use of land are not in a functional relationship, temporary or permanent friction will result. A haphazard road system evolving in sprawl areas can thus be expected to cause friction and frustration at later stages of urban development.

C. SERVICES

The sine qua non of modern residential settlement are the services which are either necessary or desirable. To a degree not recognized by most urban residents, their homes are tied to an "umbilical chord" of sewage and water, power and telephone lines. They are also very much dependent on roads and streets for access. Recognizing that the population in sprawl areas displays a wide range of attitudes toward the kind of environment they wish, and also recognizing that sprawl development as a transient stage of urban development will be followed by a much denser stage of development, one would do well to explore how the presence or absence, and the quality or lack of quality, of certain types of services affect sprawl development and prejudice the urban stage of development. Lest the order of financial commitment to services not be appreciated: a study conducted in 1958 by the Southern California Research Council on the costs of metropolitan growth in the Los Angeles area found that for every new family that moved into the area, $13,290 would be needed for just publicly provided physical facilities. Operation costs would be additional.[21] In the Lower Mainland of British Columbia, in 1962, the average householder in the region had an average investment of $12,000 in his own home

and owned, as his share of his community's assets, 36 feet of sewer, 61 feet of water main and 64 feet of paved road, to say nothing of public buildings.[22]

1. ACCESS

The most basic need of any real property is the provision of access to it; for this reason, new subdivided lots must have access before they can be registered in the Province of British Columbia. Providing access means providing land for the "highway" which will presumably be constructed when the land goes into use. In unorganized territory, this highway is generally a gravel road; in organized territory it may be a gravel or a paved road, depending on the standards adopted in the subdivision regulations. In either case, the usefulness of the access depends on its utility with regard to other highways and focal points in the area, as well as on its adequacy and function.

The relation of a road to neighbourhood, collector and regional roads needs consideration. The function of a road may be local or area-wide in nature; usually it has an overall function, carrying a certain type of traffic. Highways in urban sprawl areas are typically not planned on any basis, let alone a functional basis; therefore it might be asked, what traffic should use it, considering the land use in its vicinity. Conversely, one must consider whether the land use is suited to the function of the road. The utility of a road in a community context determines whether shops,

schools and other facilities can be reached fairly directly, and whether so by private car, public transportation, or foot. The linkages ought to be envisaged and not left to chance, and the distances must be reasonable. The adequacy of a road depends on the reliability and directness of service, and the safety of using it. The adequacy depends greatly on the design purpose of the highway, if there was a rational purpose, and changes in the external influences.

2. WATER SUPPLY AND SEWAGE DISPOSAL

The residential use of land in particular necessitates a water supply and a method of sewage disposal. This subject must be considered under the aspects of quality, quantity, cost and external effects, since sprawl areas are generally not blessed with a communal system of such services.

The quality of water from an individual well stems from its "natural" qualities and those imparted by external influences, such as oil seeping into the ground, industrial wastes, and septic tank effluent nearby. The quantity may be limited by either the natural limitations of the individual supply or the exploitation by too many users. The cost of water, as well as the quantity and quality, is likewise subject to much uncertainty and wide fluctuations. Due to insufficient geological exploration and, generally, a non-engineering approach to well-drilling, the initial outlay for attempts to reach water are unpredictable, if water is reached at all. If water is drawn, there may still be extra

costs involved if the quantity is insufficient at any time. A general reduction of groundwater resources, coupled with such water-devouring practices as intensive lawn sprinkling and automatic washing of clothes and dishes, can be expected to increase the problems of the individual well-owner sharply. In brief one could say that the unreliability of obtaining and maintaining an adequate supply of clean water is inevitably accounted for by unforeseen costs.

In some areas, liberal public water supply policies have enabled urban sprawl to occur. "Generally, residential building, aided and abetted by wide-open zoning and liberal water supply policies, has followed its own profligate path, leaving sewerage problems to develop piecemeal behind it".[23] Public health authorities and town planners generally hold that the provision of public water supply and waste disposal facilities is a basic prerequisite for urban development along with such things as streets and schools. Yet, the bulk of residential development since World War II has occurred without the provision of central water and sewage systems. It is by no means clear whether the provision of these services on individual sites is cheaper this way than on a communal basis, on a per capita basis.

The central facts of sprawl development promoting and inducing on-site water and sewage systems are the lack of planning, low residential density, the lack of controls and standards regarding services, the lack of sufficient capital to install services on an area-wide basis prior to

development, and the nature of the North American housing "market". In spite of the generally acknowledged desirability of public service systems, the absence of these systems has not deterred developers from locating in unserved areas.[24]

The Metropolitan Area of Vancouver, British Columbia, has a supply of vacant, but residentially zoned land for thirty years or more; included are an eight and five year supply, respectively, of vacant land now sewered, and vacant land not yet sewered but with access to existing trunks.[25] Yet, even within the metropolitan area and certainly beyond it, new residential development is proceeding without public sewerage connections. While a huge public investment is lying idle, new investment is made on private on-site facilities in new residential areas. When densities increase later and well pollution or soil difficulties call for public sewage disposal, expenditures are made again on inefficiently utilized facilities. This vicious circle is gaining ground in the United States at least, where in fact the use of septic tanks for single-family houses is again increasing.[26]

3. NEIGHBOURHOOD AND DISTRICT SERVICES

The group known as "Neighbourhood and District Services" are illustrative, primarily, of the social aspect of urban sprawl. The absence or relatively inconvenient location of these services is an identifying characteristic of sprawl. In the exploration of the relationship between these services

and sprawl more actors come into play than just the new resident, land owner and, perhaps, the local government.

a.) Schools

Transporting children to school where it is too far for walking is an emergency measure to offset the lack of facilities in adequate numbers and locations. Until the density of development increases, the local tax base may be too small to support a local school, that is obvious. The question is: should it be possible for people to establish residence in an area which is known to be unable to provide adequate schooling in proper locations to their children?

One of the important reasons why people are moving into sprawl areas is to provide a better environment and life for their children, the very thing they are, most likely, not able to do - if the longer view is taken and schooling included. The relatively low assessment in sprawl areas yields such low school tax income that the cost of schooling cannot be covered.[27] Yet it is the low assessment and the low tax rate which have attracted many of the residents in the first instance. They are correct in assuming that the taxpayer at large will assure schooling to his children, at practically any cost to the public.

b.) Playgrounds and Recreational Facilities

Like schools, these facilities must be both planned and paid for by the community; they are infinitely more

difficult to establish than schools. Facilities such as parks are most difficult to establish because they require large amounts of land as well as money; urban sprawl so fragments land that there may be no suitable land left for parks; the assembly of land is always more costly than the purchase of large plots. The apparent need to account to the public in dollars and cents for the utility of parks further hinders real planning for such facilities. In urban sprawl areas there is obviously so much open land at the outset that it seems a waste of money, to an "ordinary citizen", to buy park land at that time. Indeed there exists a notion that open land is "park" land and any spot of grass is park. Obviously, if park land is not reserved or acquired when this is cheapest, then waiting for additional settlement to "justify" it (and today we know there will be ample "justification") can but increase the costs steeply. When people in urbanizing areas do get around to making improvements in their larger environment, they find themselves with few real alternatives. Not only is it commonly found to be expensive to acquire land for public purposes, but the available sites are often poorly located and compromises have to be made.

In urban sprawl areas, neighbourhood, community and metropolitan parks are few and far between. In the Vancouver Metropolitan Area of British Columbia, Burnaby has a 89% deficiency in metropolitan parks, two other municipalities have a 100% deficiency, and another 45%. Burnaby is a good

example of a former sprawl area, now having a gross population density of over 5 persons per acre and completely surrounded by urban and suburban development; the general observation, that the basic character of a new urbanizing area is established during the early stage of development, applies to Burnaby. By the time the population had risen to 115,000, only 0.7 acre (as against a desirable standard of 7) of metropolitan park per 1000 local residents had been acquired.[28]

Neighbourhood parks and playgrounds may be more frequently found than larger parks, but typically they are far from adequate in size, number and location. Recreational facilities, typically, are lacking too in urban sprawl areas.

c.) Commercial Facilities

Commercial facilities are notoriously scattered, inconvenient to reach, and generally inadequate in urban sprawl areas. Commercial concentration is rare, as are the differentiation and choice of goods and services. Yet where a nodal point occurs, there is a clutter or string of commercial enterprises; generally the layout is uncoordinated and there is little convenience offered to the customer. The promotion of commercial centers as nodes of settlement is held to be a sensible and necessary antidote in sprawl areas; a variety of other functions and services could be attracted as well.

D. LOCAL GOVERNMENT

Urban sprawl has many causes, but in terms of the actual physical development on the ground, there is but one thing which makes it possible: the approval by government, as the collective will of the people. The level of government most vitally affected by urban sprawl is of course local government, which is generally also the least prepared to deal with urban sprawl. Local governments are limited by human and physical resources, not to mention lack of leadership from senior governments and the lack of regional cooperation and planning. In North America, however, urban sprawl is particularly distinguished by a density which is low by any standards; urban sprawl in the United Kingdom is also "bits of cities in the wrong place",[29] but at a much higher density and much smaller in scale than in North America. It is the responsibility of local governments to anticipate and recognize the implications and the impact of urban sprawl, and to formulate policies and apply measures to curb it. A policy of neglecting it amounts to an endorsement of the pattern of development recognized as urban sprawl.

How can local government action as it relates to curbing urban sprawl be analyzed? A look at any effective

municipal program reveals a sequence of action which proceeds in circular rather than straight-line fashion: recognizing the problem, analyzing the problem, forming objectives regarding the problem, devising policies to achieve the objectives, implementing the policies, and evaluating the results of the policies. Before action is taken with regard to urban sprawl, a problem connected with it must be recognized. At this point, an incapable government will launch into action, hoping to remedy the problem; a good government will analyze the problem at hand, enquiring about the causes and analyzing these to come to grips with the underlying problem. To illustrate with actual events:[30] Parents in the suburban municipality of Richmond, B. C., demand of the School Board the purchase of extra school buses to take their children to school. The demand is rejected, but remedial action is promised. It is obvious that the problem is not the inadequate number of buses, but the excessive distance between home and school. Is the location of schools at fault, or the number of schools? Or is it the location and number of houses? A number of alternatives are recognized at this stage: sprawl development yields insufficient taxes to provide an adequate number of schools; even an adequate number would be inconvenient to reach because settlement is so scattered; in any case, urban sprawl makes it impossible to anticipate the volume and location of schooling demand; the population influx may be excessive; and there are other unknowns. The problem

underlying all the above problems is that there is no policy guiding the urban development of the municipality; this lack of policy, in turn, results from the lack of a systematic consideration of ideas and concepts regarding urban development in general, and the development of this municipality in particular. Alas, this is the problem.

One important symptom of the quality of action thus is whether the real problem and its principal components are defined. The likelihood of this happening is enhanced if competent advice is sought. Success from then on depends on the coordination of competent professional planning advice, political action, and administrative implementation. An indicator of success may be the consistency of a municipality's objectives and the effort expended on evaluating what has been learned from past decisions and incorporating this knowledge into the decision-making process. Urban sprawl is so multi-faceted and has so many implications for the future that the growth and distribution of population and activities it represents can be controlled and advantageously guided only if the whole range of governmental powers is employed to achieve this end.

Reference Footnotes

[1]Lower Mainland Regional Planning Board of British Columbia, Land for Farming (New Westminster, British Columbia: L.M.R.P.B., 1962), p.21.

[2]Community Planning Association of Canada, Sprawl (Ottawa: CPAC, 1957), note, p.2.

[3]L.M.R.P.B., Economic Aspects of Urban Sprawl (New Westminster, B. C.: L.M.R.P.B., 1956), p.8.

[4]G. A. Wissink, American Cities in Perspective (Assen, Netherlands: Royal Van Gorcum Ltd., 1962), p.155.

[5]E. G. Pleva, "Industry Crops Canadian Fruitlands", Business Quarterly, (Winter 1956/57), p.320-321.

[6]L.M.R.P.B., Countryside to Suburb, Supplementary Study 3 to Land for Living (New Westminster, B. C.: L.M.R.P.B., 1963), p.13 ff.

[7]Wissink, 244.

[8]L.M.R.P.B., Land for Farming, 15.

[9]L.M.R.P.B., The Urban Frontier, Supplementary Study 1 to Land for Living (New Westminster, B. C.: L.M.R.P.B., 1963), p.20.

[10]L.M.R.P.B., Countryside to Suburb, 36.

[11]L.M.R.P.B., The Urban Frontier, 20.

[12]L.M.R.P.B., Economic Aspects..., 10.

[13]Lower Mainland Regional Planning Board of British Columbia, Land for Living (New Westminster, B. C.: L.M.R.P.B., 1963), p.20.

[14]In a residential subdivision boom in 1958, following construction of the Delta Thruway, 360 lots were created on farmland of the Municipality of Delta, about 30 miles south of Vancouver, B. C. By August, 1962, only fifteen houses had been built in "Hawthorne Estates"; 345 lots remained vacant.

[15]Joan Hind-Smith, and L. O. Gertler, "The Impact of Urban Growth on Agricultural Land: A Pilot Study", Resources for Tomorrow, Supplementary Volume (Ottawa: Queen's Printer, 1962), p. 155-180.

[16]L.M.R.P.B., Economic Aspects..., 12.

[17]ibid.

[18]ibid., 13.

[19]Lower Mainland Regional Planning Board of British Columbia Dynamics of Residential Land Settlement, Supplementary Study 2 to Land for Living (New Westminster, B. C.: L.M.R.P.B., 1963), p.15.

[20]Land Economics Institute, Modern Land Policy, Harold G. Halcrow (ed.), (Urbana: University of Illinois, 1960), p.146-147.

[21]Southern California Research Council, The Cost of Metropolitan Growth (Pamona College, 1958), quoted in Richard W. Cutter, "Legal and Illegal Methods for Controlling Community Growth on the Urban Fringe", Wisconsin Law Review, 1961 (May, 1961), 371-372, footnote.

[22]Lower Mainland Regional Planning Board of British Columbia, Chance and Challenge (New Westminster, B. C.: L.M.R.P.B. 1964), p.15.

[23]L.M.R.P.B., Land for Living, 20.

[24]Twin Cities Metropolitan Planning Commission, Selected Determinants of Residential Development (St. Paul, Minn.: Twin Cities Met. Pl. Comm., 1962), p.36-38.

[25]L.M.R.P.B., Land for Living, 20.

[26]News item in Civil Engineering, Journal of the American Society of Civil Engineers, (March, 1963), p.29. Over half the new residents in metropolitan areas in the U.S.A. depend on septic tanks.

[27]In Richmond, B. C., the 1959 imbalance between the actual revenue per dwelling and the total servicing cost was $210 minus $337 = $127, which equalled the cost of education per dwelling ($130).

[28]Lower Mainland Regional Planning Board of British Columbia, Land for Leisure, (New Westminster, B. C.: L.M.R.P.B., 1961), Table 3, p.10.

[29]L.M.R.P.B., The Urban Frontier, p.4.

[30]As told by Counsellor Robert A. McMath, January 14, 1964, in the course "Problems of Municipal Government", The Department of University Extension, The University of British Columbia, Vancouver, British Columbia.

CHAPTER III

LAND USE CONTROLS AS TECHNIQUES FOR CURBING URBAN SPRAWL

A number of land-use controls may be used to counteract the characteristic tendencies of urban sprawl singled out previously, and these are reviewed below. The investigation is 'theoretical' inasmuch as no reference is made to actual places and situations. The value of the suggestions presented in this chapter will emerge as a result of their application in the case study in Chapter V, where the political element in practical day-to-day decision-making will temper the theoretical or 'pure' planning and legislative considerations.

A. CONTROLS RELATED TO LAND

1. ZONING CONTROLS

a.) Large-Acreage Zoning

Large-acreage zoning requires parcels of land to have a certain minimum acreage, commonly five or ten acres. It may be applied selectively to certain areas of a community or to a community as a whole. There are two fundamental purposes for such zoning: to prevent small-lot subdivision generally, and to ensure minimum lot areas for specific purposes requiring larger areas.

(1) The Prevention of Small-lot Subdivision. A primary reason for the attempt to prevent the creation of urban-sized residential lots appears to be the avoidance of problems associated with urban population densities; this would include the political problem created by the possible displacement of

an established political elite or doctrine, the problem of providing the new population with public services, and the problem of administrative reorganization. Considered in this light, the device is a negative measure perpetuating the social status quo and deriving its reasoning from existing, "technical" inadequacies. Commonly a five to ten-acre standard is specified for select areas in a community. While zoning cannot be relied on to guarantee the exclusion of small, urban-size lots in perpetuity, at least during the initial years the desired result will be achieved. Any such control reflects a community's wishes at any one time; it may therefore be expected that changing social, political and economic circumstances will effect new resolutions affecting the use of land.

One conceivable practical and reasonable purpose is the prevention of urban sprawl by preventing the premature subdivision of land. It has been suggested already in this paper that restricting development opportunities in urbanizing areas near the center of population actually accentuates urban sprawl tendencies elsewhere, unless all outlying communities in a region are protected by land use controls against urban sprawl. Therefore, large-acreage zoning can be used to prevent the premature subdivision of local land; if applied throughout an urbanizing region, it can be used successfully to prevent urban sprawl.

By creating a large-acreage zone and thereby permitting controlled residential development, a municipality may be

able to have hitherto vacant land returned to use. Residents could use the land profitably for gardening, grazing or small-scale agriculture, or by providing sports and recreation facilities. The urgency for large-acreage zoning, the price of the land, the expected demand for large-acreage lots, the adequacy of municipal services, and the community design envisaged will bear on the decision what area standard to select. There is persistent danger that development may, in spite of careful consideration, compromise future development.

A related purpose may be to increase the population in selected areas of a community so as to utilize more fully the existing, uneconomical services, such as roads, sanitary services, power and telephone installations, schools and community centers. One other purpose may be to permit just sufficient subdivision to forestall strong anticipated pressures for large-scale subdivision. This is a conceivable remedy where farms are threatened by undue assessments. Similarly, agricultural land can be phased out of agricultural use and into urban use gradually, with the least inconvenience and financial difficulty for the farmer.

There may also be a desire to preserve some of the open countryside in and near urbanizing areas. The ever increasing significance of land generally in urban areas and the increasing competition for and conflict between different land use interests make it more and more difficult and correspondingly important to preserve open space. The interest in land use in this case goes beyond immediate concerns into the realm of

social thinking and basic public policy. The measures proposed to preserve such areas in their present state must therefore have a greater inherent permanence and effectiveness than measures implementing short-range goals or applying to changing situations. The most effective guarantee for the protection of such areas would be an official community plan, which would protect them not so much by the force of law, for a plan can be amended, but by its inner logic. In other words, unless such areas can be shown to have a role to play in the community, by being planned into and as part of it, an official community plan offers no more protection than the inertia and mild legal restrictions required to change it.

(2) Ensuring Minimum Lot Areas for Specific Uses. Under certain circumstances any fragmentation of land or land holdings is deplored; certain types of economic activity and residential development require special sites and, above all, minimum site areas. Having determined the suitability of its land for various classes of land uses and having allocated land to them, a community can deduce by study the land needs of potential economic activities and establish its policy accordingly.

Frequently urban sprawl is infringing upon existing farm land. Where farms are not contiguous, where farming is marginal, or where farming is a part-time occupation of varying importance, zoning the area for agricultural use is an unrealistic control because farming is obviously not

sufficiently viable to warrant such exclusive control. Instead, a minimum lot area standard is determined, sufficiently large for a range of full and part-time farming to be carried on, and yet not so small as to make possible urban sprawl or prevent the assembly of land for farming or other purposes in the future. The selection of an area standard should be influenced by not only functional considerations, but also the price of and demand for land, for these will help determine the location and amount of land which will be subdivided.

Urban sprawl in general is also infringing upon land which is required for future industry. It is known, for example, that most modern industries require sites of at least 10 acres. Since industry does require special sites and in most cases depends for its labour, capital and market on areas outside a municipality, it is both necessary and reasonable to divorce the control of land for industrial use from purely local considerations. In actual fact, communities compete vigorously for industries because local industrial taxation generally compensates for deficits produced by single-family housing. If it is assumed that industrial development areas have been determined by a regional planning body, that municipalities in the region have a common industrial land use policy and have agreed to follow the industrial development area proposals, then the best way to protect essential sites is exclusive industrial zoning with a minimum acreage clause.

Farming, industry, commercial and public establishments, and large scale residential subdivisions cannot be established, or maintained, unless suitably large land parcels are available or can be assembled reasonably economically. The smaller the parcels, the greater the number of parcels needed to make up a certain area, the greater the price per square foot, the greater the cost of land assembly, and therefore the smaller the chances of attracting these land uses to a particular area. The aim of land use control in this case must also be the maintenance of as much of the municipality's land in as few and as large parcels of land as is possible. Not only will suitable land be available for major developments, but the existence, in large parcels, of a land area in excess of that needed for these major developments allows flexibility and adjustments in the arrangements of land uses in the future. The real strength of a control attempting to maintain large land parcels lies in keeping this land in productive use until development takes place.

(3) Protection of Country-Estates. Large-acreage zoning may also be applied to big areas, perhaps even a whole municipality. Here one comes to the moot point of distinguishing between urban sprawl and country-estate development. The latter can be described as urban settlement on large acreages of rural land; "gentleman farming" may be carried on and cattle or a stable of horses kept. A public road past the property may be the only direct municipal service provided. Typically, country-estate properties are well-maintained.

In urban sprawl areas, on the other hand, much land is vacant and the upkeep of both land and improvements frequently has been neglected. To protect the character of country-estate areas, some such settlements incorporate and impose large-acreage zoning on the whole community, rather than depend on zoning protection in a larger governmental unit.

A good case can be made for preserving some countryside close to the city in as natural a condition as possible, for private and public use, and for its psychological value. A public policy to this effect would have to be established and then the amounts of public and private land, in either a whole greenbelt or separate country estate zones, around urban areas could be determined.

If country estates are to be a permanent feature for a number of years to come, then the leapfrogging of residential development beyond this protected zone must be accepted and this arrangement incorporated into the community planning process. For example, municipal services would have to be rearranged and the fact utilized that the estate areas would require bare minimum of services. If there is reason to doubt the permanence and continued success of a country-estate area, the municipality must ensure that large-acreage zoning is not misused. As soon as development farther out sufficiently increases the price of land closer in, owners of land in large-acreage zones could then apply for rezoning and sell their land at a good profit. Landowners would actually find it in their interest to zone initially as much land as

possible for large acreages to force as much residential development as possible beyond its zone, for their land prices would rise faster. Even presuming that residential development beyond this zone, and the later residential development of the zone itself, is not urban sprawl, municipal services would have to be provided uneconomically to the more distant development in the meantime. The municipality should enter into contractual relationships with landowners so protected, to share the private capital gains from the sale of land and thus recover the accumulated additional servicing costs. Permanent protection of any kind cannot be expected from zoning, since it is a rather mundane, day-to-day working tool subject to continuous political pressures.

b.) Agricultural Zoning

The obvious purpose of zoning exclusively for agricultural and associated uses is to prevent the infringement of unrelated uses on this land. This control can substantially reduce sprawl, because it is the availability of agricultural lands for urban purposes that enables sprawl to proceed. It may not be reasonable, however, to zone an area for agricultural use when in fact the land is not suited for it, the product grown is not economically marketable, or other reasons prevent the efficient use of the land for agriculture. Agricultural zoning ought to be used only where the land so zoned can be used for economical agricultural production.

Agricultural zoning, to be effective, must be accompanied by measures protecting the farm operator, to a much greater extent than is now the case, from taxation based on surrounding urban and suburban land values and services. Farmland taxation should be based on the actual use and not the potential use of the land. Since the community would forego a certain amount of tax income, it should be sure that agricultural zoning is actually desirable. Furthermore, if the zoning were ever changed, the community should receive a share of the capital gains from the sale of land at that time. In the absence of public land use controls it has been relatively easy for farmers to sell or subdivide their land at high profits; the alleged taxation squeeze may well be a convenient device for rationalizing the sale of land. Therefore there must be a real justification for special taxation arrangements.

Because farm investment is such long-term investment, agricultural zoning must be substantially permanent and consistent. If urban development occurs in a controlled, concentrated manner, the rate of residential development and the prospects for land becoming needed for residential development can be demonstrated to the public much easier and more convincingly. It should be much easier, under these circumstances, to maintain the agricultural use of land at a high level.

2. SUBDIVISION CONTROLS

a.) Timing of Subdivision

Traditionally the subdivision of land has been more a legal act than a positive step toward physical development on and use of that land. Occasionally the timing and arrangement of land subdivision have been stipulated in land sale agreements, as for larger residential developments. The speculative real estate market is very fond of "raw" land, that is, land not subdivided and with no improvements on it. Such land can be obtained in large quantities; it can be divided into that number of parcels yielding the highest profits; and it can be traded quicker and easier than developed land. Urban sprawl is closely identified with an uncontrolled speculative land market.

The premature subdividing of land and the accumulation of vacant lots commonly associated with urban sprawl could be prevented by making the approval of land subdivision conditional upon development and use of that land within a very limited period. Studies have shown that "for industrial land the market seems to require as much suitable and available, but vacant, land within the active development area as is actually occupied to function properly, and provide a site for every industry at a price it is willing to pay".[1] Another study showed similarly for residential land that "development, (i.e. occupancy) peters out when the total areas of occupied and vacant residential land within the whole settlement zone are roughly equal".[2] Whether this

finding should become a standard for guiding policies is arguable, of course; there is a case to be made, however, for not holding the supply of developable land down too closely to the level of demand. Whatever the "allowance" decided upon, the total amount of land approved for subdivision would be geared much more closely than it is now to the present and the anticipated demand for residential building. By concentrating its attention on the community and planning aspects of premature subdivision, the community would decide upon the sequence and location of development; the demand for development would determine the pace of development. The most frequently proposed criterion for the sequence of development is the economical extension of the public water supply and sewage disposal facilities. School and transport facilities could aid in determining the sequence.

Three major points emerge from this discussion: (a) A subdivided vacant lot has little value to the community because it is unproductive and yields a low tax income. Municipal real property taxation on both land and improvements effectively "penalizes" the owner for improving his land; since he does enjoy the use of land, however, there can be no serious objection to such a tax. This system of taxation does enable landowners to hold on to vacant land, however, since in the absence of improvements only the land is taxed.

That contiguity and continuity of land development is desirable and economical has been shown earlier in this study. Taxation can be used to bring about this pattern of development by taxing vacant lots waiting for urban use as if certain improvements had been made on them. Control over the pattern of land development could also be attained if the actual development on the land were made a condition of approval for subdividing it. Actual demand would thus justify the taking of land for residential purposes. There may be a question of the practicability of this requirement. In many, if not most, cases the subdivider is not the developer but only sells individual or groups of lots to individual builders according to market demand. The answer is that this subdivider - developer relationship has really no special claim to being essential in urban development. If there is reason to believe that subdivision and development are interdependent and should therefore be done well, knowledgeably and on an integrated basis, private entrepreneurs must arrange their affairs to suit the requirements reasonably imposed by a community.

(b) There is no reason to suppose that long-time landowners such as farmers would "suffer" financially from such regulations, not that the possible speculative gains from the sale of their land ever should be a norm guiding public policies. One could expect that orderly development would actually increase the value of the land, and that the landowner would occupy in fact a monopoly position if development

were to take place in a predetermined sequence. "Holding out" for higher land prices could still lead to leap-frog development and urban sprawl as it now does. This leads the discussion to the extent of land use control jurisdiction (see next paragraph) and to the remedy to "extortion" in land dealings. There is no simple remedy, for the problem is that of reconciling the private rights to land explained in Chapter I with the development and use of land in the interest of the community as well as the landowner. Two courses of action suggest themselves: one is for the public to acquire the land now and itself reap the benefits of public improvements; and the other is to recognize the conflict of interest and make private landowners forego all but the most reasonable capital gains from land sales. The former course has been discussed and found to lack the support of governments and the public; the latter has been attempted elsewhere, but found difficult to administer and enforce from a political point of view.[3]

(c) The third point to arise is that control over the timing of subdivision must be area-wide, for urban sprawl is by nature a metropolitan, if not regional phenomenon. The over-all success of curbing it depends, to be sure, on the results in each sub-area of a region; success in a few sub-areas alone could, on the contrary, seriously increase the hazard of urban sprawl elsewhere in the region. No definite stand need be taken in this study on whether subdivision approval should be made by municipal bodies or by one regional

body. The important thing is to have land regulations correlated, at least, by a regional planning board and reviewed periodically.

b.) Location of Subdivision

(1) Determining the Location of Subdivision. The location of development can be considered from the point of view of sequence, which was discussed earlier, and that of space allocation. The attempt to control urban sprawl is bound up with an attempt to formulate a policy regarding the areal relationship of the various land uses in a community. A sensible way of going about this would be to study the situation thoroughly and produce a plan which could guide decisions regarding development, assuming that urban sprawl could in practice be prevented henceforth. Urban sprawl proceeds too rapidly to allow one to wait for formal long-range plans to be made, however. To make matters worse, remedial action is sought by municipalities at a fairly late stage of development. The word "late" has special significance here, for "the basic character of a new urbanizing area is established during the early stage of development".[4] Under pressure of time it may well be necessary to develop in a short time a preliminary development program which may or may not be put down on paper or adopted by legislation.

A convenient guiding principle with an added political appeal is that of economy: to prevent the diseconomies of

urban sprawl, all subdivision and development is made contingent upon the municipality's willingness to provide the basic municipal services discussed in Chapter II, section A.2. The location of new development should occur as an extension of existing development; the direction of extension may be determined by both economic-engineering and planning considerations.

An essential part of the administration of controls is that the objectives be reviewed periodically and the controls adjusted to changed conditions. Review and adjustment are particularly necessary during the formative stages of urban development. Nowhere is this more important than in urban sprawl areas. Since development prior to the enactment of suitable controls may occur anywhere, there is no obvious or valid precedent to guide the new controlled development. Although some "natural concentration" is discernible in some sprawl areas, the planner will have to select one or several points for concentrated development and remain flexible, allowing for shifts in emphasis, if not radical changes.

The designation of land for public use is more difficult to carry out properly than for residential use, the reason being that centers of public activity attract development and have a definite formative influence on a community. An important consideration in urban sprawl areas is thus to locate key public functions so as to induce a natural gravitation of residential development toward them and

reinforce land use controls directly aimed at preventing urban sprawl.

(2) Controlling the Timing of Subdivision.

(a) Residential Subdivision. The first steps to controlling subdivision should be directed toward that land which is the most threatened by urban sprawl, has the highest locational and quantitative priority in terms of community development, and is likely to benefit most from and react quickest to protective measures. The priority of land for community development is governed, of course, by the development plans of a community. Controlling the timing of subdivision is a meaningless exercise unless there is some consensus on the future development of the community; only in this way can the priority of subdivision be established. If it had been decided, for example, to concentrate future settlement at a definite location, then the prevention of subdivision of outlying areas can be justified.

Some urban sprawl areas may well be so subdivided and developed that short of major redevelopment very little can be done to ameliorate the situation; controls applied in this particular case could well effect no real change and need therefore not be applied. Rather, all effort should be directed toward those areas not affected to such a degree by urban sprawl; further subdivision would affect such areas adversely and the prevention of subdivision benefit them immensely. The application of land use controls involves the balancing of costs and benefits of such actions; account

should be taken of the probable physical results, the "resources" of political backing and goodwill, the urgency of the situation, and the personal resources of knowledge, time and staff.

On the assumption that little subdivision would go on if residential development were prevented, a municipality lacking, or thinking it lacks, the power to control outright the rate or location of land subdivision can attempt to control development by using powers generally contained in provincial health regulations.[5] A by-law can be adopted, requiring a new house to be connected to a public sewer or public water supply. Since the municipality cannot be coerced, except by local political pressure, to provide such services, the municipality can control the location of development. Land speculation and subdivision of land can be expected to drop sharply.

Although the more or less strict control of subdivision is an important means to curbing urban sprawl, complementary means of achieving this end should be kept in mind at all times. While the supply of subdivided land is held steady in one place, for example, infilling is promoted where it is desired. The decision where to promote infilling and where to "freeze" development is not entirely unrelated to the costs and benefits of new public works in the light of the capacity and location of existing facilities, the present population density, and changes in density and land-use patterns.

(b) Preserving Land for Public Purposes. The obvious way of securing land for public purposes, such as schools, parks and recreational facilities, is outright purchase. At present it appears impossible for municipalities to raise the moneys required, not that there is evidence of an overwhelming sympathy on the part of voters and governments for a public land acquisition program. Municipalities acquired title of hundreds of thousands of lots during the 1930's through tax seizures; today, tax seizures are rare occurrences. Surprisingly enough, municipalities absolved themselves of this "windfall" as soon as they could, usually at bargain rates for the buyers. Amazing situations have arisen where municipalities have had to acquire, at prices many times their own bargain prices, land sold by them only a few years previously; although some of the increase is due to speculation, much of it is due, ironically enough, to the values created as a result of municipal improvements and public works.

School sites have had the best chance, in the past, of being purchased before the need for the site became acute; generally speaking, however, there has not been a policy of acquiring school sites prior to substantial urban development. Only a community development plan provides the framework within which the location and quantity of school sites can be predetermined rationally. A site can then be zoned for school purposes, but must eventually be bought by the public.

Urban sprawl is most effective in carving up land so that it is difficult, if not impossible, to assemble later the large parcels of land needed for parks and recreational facilities. One task is the preservation and conservation of natural features generally; the other is the reservation of specific sites and features for public use. The former is achieved increasingly by the public's buying the development rights of land or else acquiring conservation easements (Chapter I, page 34); the public generally does not have the use of the land under this system. If the public wants to use land, it must be prepared to pay for the use; outright purchase is the cheapest, most convenient and effective way of ensuring continuous accessibility to land. The real question is when to buy or, if that is not feasible financially, when and how to reserve the land till it can be bought. The most convenient but also the least reliable way to reserve the land is through zoning; it can be zoned "agricultural" or "recreational", both offering essentially the same "protection". Since zoning can work great injustice on individual landowners, the success of such zoning for public use depends to a large degree on its political acceptability. The best climate for political cooperation of landowners can be created, it seems, if Council can propose and adhere to a definite, continuous land development policy. For example, by taking a stand on its land acquisition policy, Council may succeed in allaying landowners' unfounded fears of its use of the power of expropriation.

The reservation or purchase of land for a definite public purpose removes land from the market and thereby removes the possibility of infringement on this area. Much more important, the designated land can serve as a focal point for future development plans or for immediate development. The longer the interval between designation and actual use or acquisition by the municipality, the more attention must be paid to the use of that land during that period. Ideally, all land should be used to capacity in its best use at any time. An unresolved question is what to do about land which cannot be used productively in this period by the landowner, yet will not be acquired for the designated public use until some future date.

3. LOCATION AND STAGING OF DEVELOPMENT

The future use of land should reflect the location and pattern of subdivision and the development on that land. The availability of subdivided land for development is the key to urban sprawl; controlling the sequence and location of subdivision almost automatically implies control over development. Frequently, however, large numbers of subdivided lots are in existence in a municipality. There appears to be no direct authority (other than through a servicing policy possibly) for a municipality to prevent building on such lots, representing as it does undesirable urban sprawl. The following section shows how public health regulations can be used to control residential development.

B. SERVICES

The provision of such municipal services as water supply and sewage disposal facilities seems to emerge as the most promising device capable of being used to prevent the premature subdivision of land, to minimize or prevent development in subdivided potential urban sprawl areas, and to guide new subdivision and residential development in a positive manner. The provision of municipal services is a useful device for two reasons: public utilities and public works improvements are essential for the physical use of the land and for the maintenance of sanitary conditions; and they are physical entities whose installation can be justified or refused on objective grounds, and whose substantial cost stands to remind and warn a community of its permanent, irretrievable commitment to development.

If municipal servicing is to guide a community's development, then

> a detailed plan for the extension of public services (water, sewerage, schools, and parks) that has been related to the anticipated demand from new development provides the surest basis for the effective control of suburban growth. The relationship should be that private development determines the <u>pace</u> (tempo) of public development, but that public development determines the <u>place</u> (sequence) of private development. Once this relationship has been established by factual analysis of projected growth and planned extension of services, the location of new development can be controlled on a reasonable basis.[6]

For this system to be truly effective, areas of high and low priority would have to be determined by a competent planning process, supported by a consistent public works program. Particularly if the activities of all agencies of public development can be coordinated, this system seems very promising.

C. LOCAL GOVERNMENT

Controlling if not preventing urban sprawl has a corollary: the channeling of residential development into desirable patterns, fitting a general municipal development pattern. Planning decisions can be made properly only with reference to a concept of the design and growth of the community; the more definite the concept the better. Paradoxically, the greater the detail with which a design concept has been adopted in a legal community plan, the less flexibility there is in adapting the concept to changing circumstances. The problem thus is to strive for an optimum balance of definiteness, detail and flexibility in this concept.

It would be folly to expect the design of a future community to be so complete as not to need changing, or to make it so immutable as to make changes difficult to accomplish from the legal and planning point of view. Even if this were possible, it is not desirable.

The most logical procedure, and yet the most difficult, would be to assemble a "catechism" of goals, objectives and principles with a view to "translating" these into a broad but firm development plan. A broad development plan would include, among others, an outline of essential land uses, the circulation system, and parks, recreation areas and other

public land; a capital budget; and a physical implementation program. Adjustments, changes and detailed decisions would then be evaluated strictly against the "catechism". This train of action is so difficult to set in motion because it involves agreement and decisions on fundamental aims of urban development and all this implies. The more basic a decision, the more difficult it is to arouse interest in it and to reach a decision; the greater is the commitment by, and the more courage is required from, each individual in contributing to reaching a collective decision.

It has been demonstrated that urban sprawl cannot be controlled effectively unless land use controls can be designed to achieve objectives of the over-all community concept. It is inconceivable that the over-all concept and specific objectives can be developed except through the leadership and facilities of the municipal government. It is also difficult to see how policy decisions at the local level can be valid unless made with a view to regional, provincial and even national concerns. The Provincial Government, supreme in its power to control provincial affairs, has the duty and responsibility of establishing the general policy that urban sprawl as an undesirable form of urban development must be prevented.

Reference Footnotes

[1]A. D. Crerar, in "Urban Growth and Resources Workshop A", Resources for Tomorrow, Volume 3 (Ottawa: Queen's Printer, 1962), p. 193.

[2]Lower Mainland Regional Planning Board of British Columbia, Dynamics of Residential Land Settlement (New Westminster: L.M.R.P.B., 1963), p. 2.

[3]"Compensation and Betterment" was introduced in the United Kingdom with the Town and Country Planning Act of 1947, but practical administrative problems led to the abandonment of this policy in 1951.

[4]Twin Cities Metropolitan Planning Commission, Selected Determinants of Residential Development (St. Paul, Minn.: Twin Cities Metropolitan Planning Commission, 1962), p. 4.

[5]British Columbia, Municipal Act, R.S.B.C. 1960, c. 255, sec. 634 (1). (See Appendix II, page 196).

[6]John Delafons, Land Use Controls in the United States (Cambridge, Mass.: Joint Center for Urban Studies of the Massachusetts Institute of Technology, and Harvard University, 1962), p. 66.

CHAPTER IV

THE EVALUATION OF LAND USE CONTROLS AIMED AT CURBING URBAN SPRAWL

It is intended to establish in this chapter the approach to be taken in the case study in evaluating the effectiveness of land use controls aimed at curbing urban sprawl. It was hoped that a methodology for evaluating these controls could be developed. This would involve the grouping of all effects and causes of urban sprawl with a view to analyzing them to determine significant relationships between them. The aim then would be to select a few indicators which reflect the incidence and character of urban sprawl; the emphasis in selecting these indicators would be on physical measurements since they are the most convenient way of evaluating physical changes and of comparing different situations in various geographical settings. Limited knowledge, resources and time available and the detail of procedure necessary for a "methodology" prevent the author from pursuing this course of investigation.

Instead, a general survey of all potentially useful measurements and ratios is made, without proposing any definite criteria to be adopted. Finally, in the next chapter, the approach to the case study is presented; the theoretical plan of approach to the case study is expected to be of limited value because the author is at this stage neither experienced in investigating in detail the effects of land use controls nor sufficiently familiar with the case study itself.

A. POTENTIAL EVALUATION PROCEDURES RELATED TO LAND

1. LAND AS A MARKET COMMODITY

a.) Land Prices

The spiralling price of both raw (i.e., unsubdivided) and subdivided land forces builders and developers to skip beyond this land and subdivide and build on cheaper land, thus causing urban sprawl. It is essential, therefore, to identify the pattern of land prices in relation to location, type and degree of development; since the price changes may be quite subtle, prices may have to be checked frequently.

Speculation in land is characteristic of urban sprawl areas. A superficial indication of the extent and profitability of this enterprise would be the number of real estate agents and salesmen engaged in land transactions; this information may be significant, for the introduction of strict zoning and subdivision regulations has been known to reduce noticeably the number of real estate agencies in a municipality.

b.) Land Transactions

It seems reasonable to suppose that the number, type and distribution of land transactions may indicate expectations of the market, trends of development, or private preparations for the development of land. Such information may be helpful in pointing out frictions between land uses and difficulties for certain land uses, such as agriculture. The

"selling out" of farms may result from farmers' being over-taxed, for example, or from farmers' unwillingness to re-invest in their property and continue farming in the face of urban sprawl infringement in their areas and a lack of governmental policy and protection.

Data could be obtained on the total number of transactions and the number of transactions related to lots subdivided in different years.

2. LAND USE

a.) Over-all Pattern

The present pattern of land use, and changes in the concentration, density, location and type of land use need to be recorded, studied and understood for they are important indicators of trends dictated by, among others, market forces, development trends, and general economic conditions. These other forces must be understood so that both the effects and causes of urban sprawl may be attacked simultaneously. For example, much of the residential development in urban sprawl areas is of a marginal character, reflecting a need for housing which the competitive market evidently cannot satisfy with regard to quantity, quality, location and price.

b.) Zoning

Since zoning is the most widely used of any direct land use controls, it is extremely important to establish the influence it has had on land uses and development. Thus, zoning regulations and their changes can be traced over the

years and then used to relate to each other a variety of land use, development and subdivision phenomena. The development of a community is influenced most significantly by the zoning which regulates the high-priced land; there may well be a reciprocal relationship here in that communities, in turn, will exercise greater care in zoning high-priced land.

Ratios can be worked out on the land zoned for various uses per population, changes in the amount of land zoned for these uses, the relocation of use-zones, and the permanency of use-zone boundaries.

3. SUBDIVISION

a.) Rate and Location of Subdivision

Important facets of urban sprawl in urbanizing areas are the irregular pace of subdivision activity and the exaggerated anticipated demand for residential lots. From the number of ways in which the rate of subdivision can be expressed, several have been selected as being potentially significant as well as relatively easy to determine:

number of lots subdivided per year;

number of subdivided lots per total number of families in the municipality per year;

number of subdivided lots per new houses built in the municipality per year; and the number of subdivided lots related to the total municipal population.

It is fairly difficult to predict which of these ratios may correspond closest to the incidence of urban sprawl and the effectiveness of land use controls. The significance of the

individual ratios probably won't emerge until several of these have been determined and compared with those of other municipalities within a metropolitan region. They are thought of here as indicators complementary to others proposed in this chapter.

A way must be found to describe the location of subdivision numerically and to indicate the type of land utilization effected by a subdivision process. This would require a consideration of the type of lot grouping, the number of lots per group, and the amount and configuration of land locked in or otherwise affected. New subdivided lots can be related, probably by a distance, time or convenience factor, to existing or proposed schools, business, recreation and entertainment areas. Furthermore, the geographical scatter or concentration of subdivision can be determined, either fairly precisely with geographic techniques, or approximately and subjectively by plotting a map.

b.) Timing and Location of Development

Before a judgment can be made on the subdivision of land, something must be learned about the timing of development of that land. In urban sprawl areas, for instance, much of the subdivided land lies idle for many years; the timing of development therefore has special significance.

The location and quantity of house construction for certain significant time periods (e.g., a year, or the period a zoning bylaw was in effect) can be related to the

location, quantity and timing of subdivision. If some indicator of the use of land between the time of subdivision and building development could be obtained, a better idea might be obtained whether the land was subdivided prematurely or not. Changes in the pattern of distribution of population density are an important indicator of the pace of infilling in urban sprawl areas in a municipality.

To ensure a desirable land use pattern, the location of residential, commercial, and industrial development must be steered in the direction appropriate to implementing a community development plan. Only a flexible planning approach can achieve this goal in urban sprawl areas where mixtures of types and intensities of land use, as well as of raw, subdivided and haphazardly developed land, are encountered.

Areal population density changes can be mapped and attempts made to relate these to changes in land-use regulations, new commercial and service developments, the provision of new schools and parks, and transportation changes.

B. POTENTIAL EVALUATION PROCEDURES RELATED TO SERVICES

One of the major problems of sprawl development is the inefficiency of all types of residential services. Such basic services as roads, water and power at times have been provided to stimulate development; in some areas this policy has been successful, in others the anticipated rate and quantity development was insufficient to ensure the efficient operation of services installed. It is therefore necessary to examine for what purpose and at which stage of residential development these services were provided in particular areas. It should be possible then to judge whether the objective was reached or whether, in actual fact, the untimely provision of the basic services initially promoted urban sprawl.

1. ACCESS

a.) Roads

The circulation system in urban sprawl areas generally is qualitatively and quantitatively deficient. For this reason, the lengths of roads, by type and surface, ought to be related to the rate and location of subdivision and development, the pattern of land uses, and the size and growth of population. Although it is difficult and probably futile to generalize, certain standards can probably be adopted as indicators of the sufficiency or deficiency of the system. Once the deficiencies of the circulation system have been

described, an idea of its inefficiency can be obtained by the linear measurements of various road types serving vacant lots.

It would be interesting also to establish whether certain municipal public works, and industrial or commercial developments, helped to bring vacant land nearby into use and thus incidentally improve the utilization of the circulation system.

b.) Public Transportation

Public transportation is a subsidized, controversial service in North America. There are arguments for better public transportation at low fares on the one hand, and arguments on the other hand for only that public transportation which can operate with a profit and without subsidies. No matter what its financial and political basis, public transportation is nevertheless related in some rational way to the density of population and the pattern of community development. These factors can be related and desirable relationships worked out in a separate study; here the concern is with a general description and some measurement of the public transportation provided, especially changes and improvements.

A map showing the public transportation system and the frequency of service, as well as land uses and population densities, should be sufficient for a general study of the effects of land use controls on urban sprawl. Changes in

school bus routes and the number of school buses should be recorded.

2. SANITARY SERVICES

a.) Water Supply

The linear measurements of water mains can be related to population, subdivision, and residential development data. Ratios relating to municipal water servicing can be expected to be significant because this service is recognized as essential to urban living and a lack of it as characteristic of low population densities, uneconomic settlement pattern, insufficient public works and land use planning, and inadequate municipal development control and financing. The time of installation may reveal what type of and to what extent land subdivision and development were promoted as a consequence.

b.) Sewage Disposal

Data on sewage mains and disposal may be less significant than those for water mains, because sewage disposal often is not a serious problem during the initial stages of urban development and there may be no absolute necessity to install proper municipal sewage disposal facilities prior to or concurrent with residential development. There is no questioning the fact, of course, that they are desirable and an essential feature of urban development.

The basic information required is the location and number of lots sewered and on septic tanks, and the length of

sewage mains. Such data can then be related to those on land subdivision, development, and population densities. Some relationship between the installation of such facilities and urban sprawl may be discerned. Where a definite servicing policy is employed to influence subdivision and development, or perhaps curb urban sprawl, the failure or sucess should emerge from the analysis and comparison of the data.

3. NEIGHBOURHOOD AND DISTRICT SERVICES

Such services and facilities as schools, parks and recreational areas, and commerce are oriented toward a larger group of people, are few in number and selective in location. Their usefulness and importance on a local or regional scale cannot be determined unequivocally; a general judgment on the local scale can be attempted, however, on the basis of certain desirable, if not accepted, criteria.

Elementary and high-schools are considered essential elements in a community, their convenient location and access to them determining to a large extent their usefulness to a community. A maximum distance of one-quarter mile from home to elementary school is a common locational standard; for higher institutions of learning there are only the vaguest of locational standards, because the larger "catchment" area allows more freedom in location and the number and types of institutions are determined by the demand for them and the population density. Since elementary schools, of all schools, are the largest in number and their location most critical, they are most important to consider in land use planning.

Parks and recreational areas must be judged from the point of view of number, location, type and differentiation. Again, the main concern should be to obtain the most pertinent indicator of the adequacy of these facilities as they relate to land use. Thus the areas, locations and types of park and recreational facility such as golf courses, beaches and athletic grounds, can be related to population density, land subdivision and development, and access. As more leisure time is available, travel made easier, and more differentiation and choice sought between types of recreation and locale of recreational area, the recreational function tends to become a regional function. Tenuous arguments regarding regional recreational demands on local land can be avoided by using local neighbourhood parks to evaluate the adequacy of park and recreational areas as local land uses.

Similarly, the adequacy of commercial and personal services, by type, number, and location, are difficult to evaluate because they can be supplied from and obtained at locations outside municipal boundaries; they are very much a regional function. Nevertheless, because of their significance to the development of a community, they may serve as an indicator of the effectiveness of land use controls in promoting a better land use pattern. A knowledge of the number and location of public libraries, churches, community centres, and indoor recreational facilities can complement findings directly related to land use controls.

C. POTENTIAL EVALUATION PROCEDURES RELATED TO MUNICIPAL GOVERNMENT

1. ZONING AND SUBDIVISION

A thorough review and understanding of local land use controls, from their inception to the present, is necessary for a meaningful analysis and correlation of these controls with land use and municipal servicing data.

Since the effectiveness of land use controls is so dependent on the quality of their administration, the administrative process should be reviewed with respect to personnel, scope of involvement of the municipal departments, efficiency of process, and the reciprocity of land use policy-making and administration.

2. PLANNING

Before the status of planning in a community can be appreciated, the circumstances under which it evolved must be reviewed. It is the community's temperament and general attitude toward betterment which, in the last analysis, makes the difference in the value and effectiveness of planning. In communities which intend to and actually do pursue, intelligently and dynamically, their plans of community development, land use controls play a purely technical role; land use controls then have no inherent value and can be changed to yield the desired results. As a corollary, land use controls have a significance all their own in communities

which do not pursue definite development policies. Because they then lack direction and public support, land use controls are, at best, pliable and weak and at worst, ineffective and potentially detrimental.

The significance of planning can be evaluated from the role it has been playing in municipal policy-making and from its failures and successes. The significance of planning, and much of its success, will depend on whether and how it is applied to everyday private and public problems concerning urban development and the use of land. One question is whether land use controls are or are not drafted and administered by the Planning Department. An equally important question concerns the effectiveness of the control, if any, exercised and the quality of planning generally. The quality of the planning done should emerge from an over-all analysis of the municipality's development, as will be attempted in the next chapter.

3. GENERAL ADMINISTRATION

To complement the evaluation of land use controls, some indication should be obtained of the effectiveness and continuity of local government and administration. It would be useful, for example, to establish successive governments' attitudes toward the use of "expert" advice in carrying out their duties. There is probably no better case material in a municipal hall than that provided by the activities of a Planning Department, for the latter is continuously involved in proposing important policies and projects.

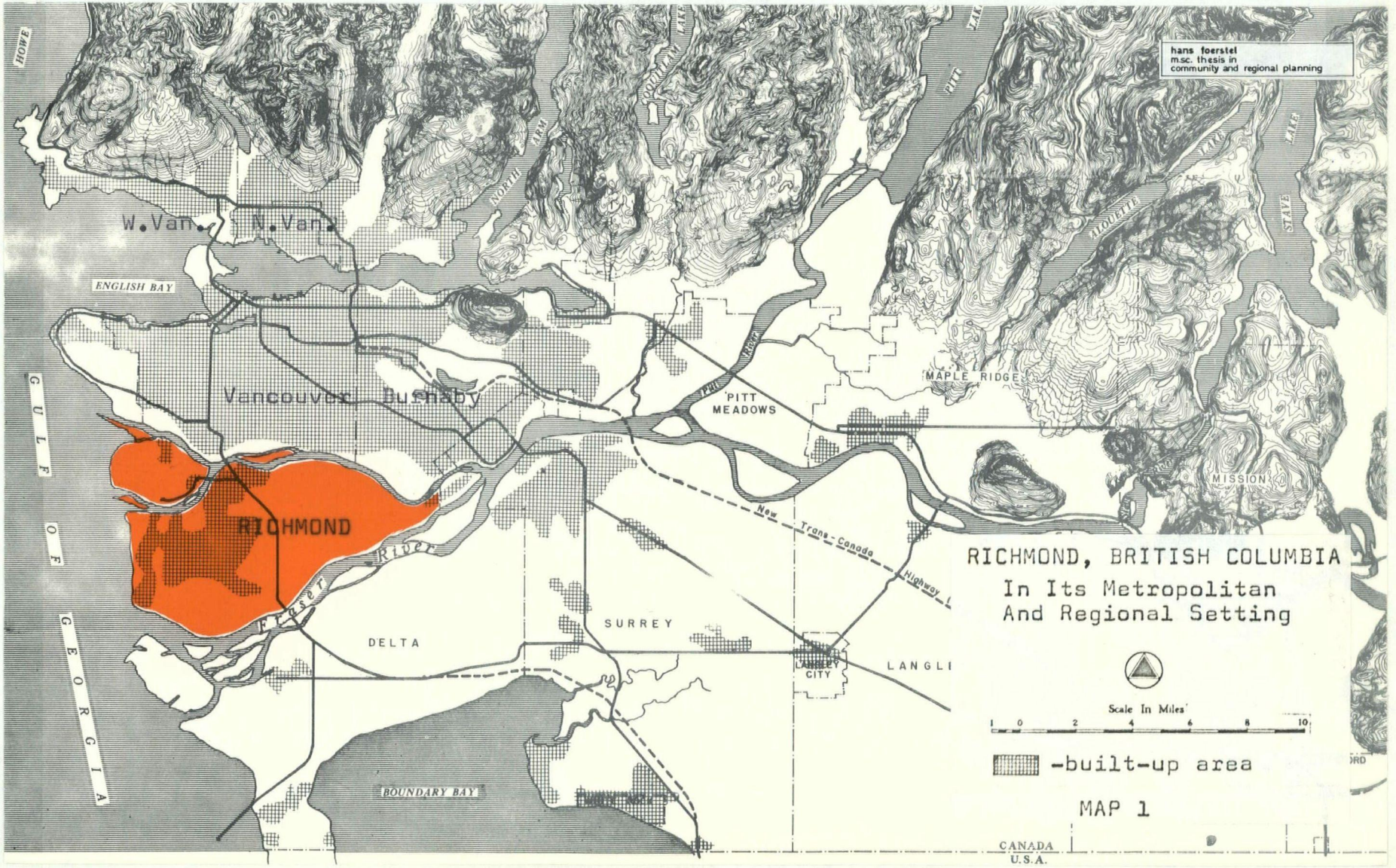
CHAPTER V

RICHMOND, BRITISH COLUMBIA

A CASE STUDY

An attempt will be made in this case study to propose an evaluation procedure for land use controls aimed at curbing urban sprawl, and to test the validity of both the policy proposals and general criteria of the previous two chapters, and of the evaluation procedure itself.

The Corporation of the Township of Richmond, in British Columbia, was chosen for the case study for the following reasons: first, until relatively recently, Richmond was primarily a rural community, Vancouver's personal market garden; secondly, in its situation directly adjacent to Vancouver, Richmond experienced a sudden wave of suburban residential development which created urban sprawl problems with attendant infringement on good agricultural land; thirdly, Richmond enacted land use control legislation to curb urban sprawl; fourthly, the controls have been applied for a sufficient number of years by professional planning staff, so that some conclusions may be drawn at this time; fifthly, Richmond to date is the only municipality in the Lower Mainland of British Columbia which has applied these controls continuously in a planning context, by professional planners, so that especially valuable observations can be made here regarding the utility of land use controls to curb urban sprawl; and lastly, essential statistics regarding land development and use are available from the Planning Department.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Fraser River
GULF OF GEORGIA
DELTA
SURREY
BOUNDARY BAY
PITT MEADOWS
MAPLE RIDGE
MISSION
New Trans-Canada Highway
LANGLEY CITY
LANGLI
RICHMOND, BRITISH COLUMBIA
In Its Metropolitan
And Regional Setting
Scale In Miles
1 0 2 4 6 8 10
-built-up area
MAP 1
CANADA
U.S.A.

A. DESCRIPTION OF RICHMOND, B. C.

1. GEOGRAPHY AND COMMUNITY GROWTH

The Corporation of the Township of Richmond, located in the delta lowlands and at the mouth of the Fraser River is comprised of Lulu Island (25,082 acres), Sea Island (3,821 acres), Mitchell Island (262 acres), and numerous smaller islands. Richmond lies at the extreme western end of the Lower Mainland of British Columbia, south of the City of Vancouver and separated from it by the North Arm of the Fraser River (Map 1, page 119).

The wave of suburban residential development in the 1950's together with improved access to Richmond from Vancouver by the new Oak Street toll bridge (opened in June, 1957) are responsible for the rapid population increase in Richmond, illustrated in Figure 1 , page 121. The enforcement of fairly high planning and engineering standards regarding residential development, accompanied by a high general standard of planning and administration have borne fruit in preventing urban sprawl on a large scale; furthermore, the groundwork has been laid for a long-range community development program, with technical studies, plans and actual work in progress attesting to the fertility of the community's planning process.

RICHMOND, B.C.

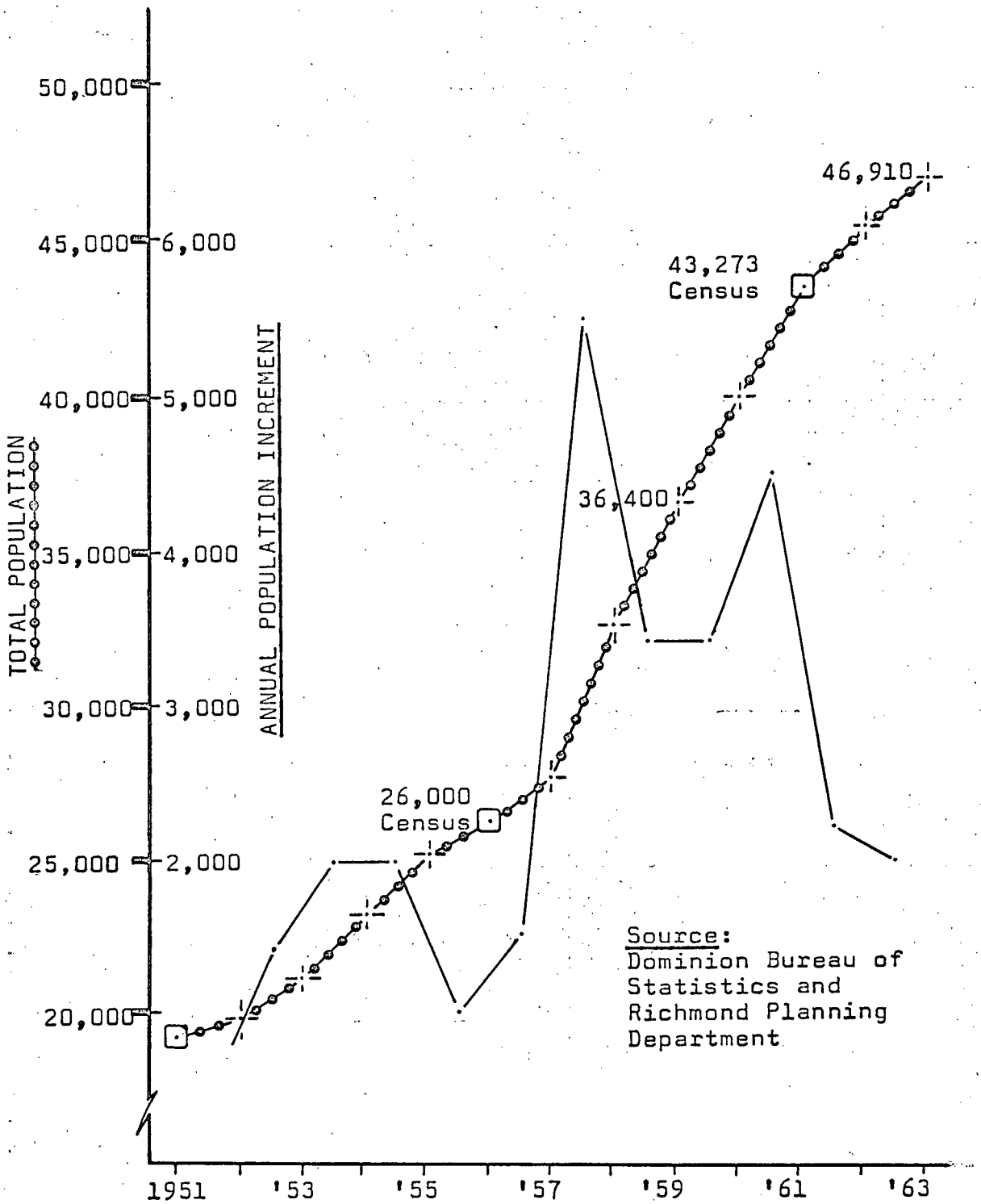


Fig. 1 POPULATION GROWTH
AND ANNUAL POPULATION INCREMENTS
1951-1963

2. LAND CHARACTERISTICS

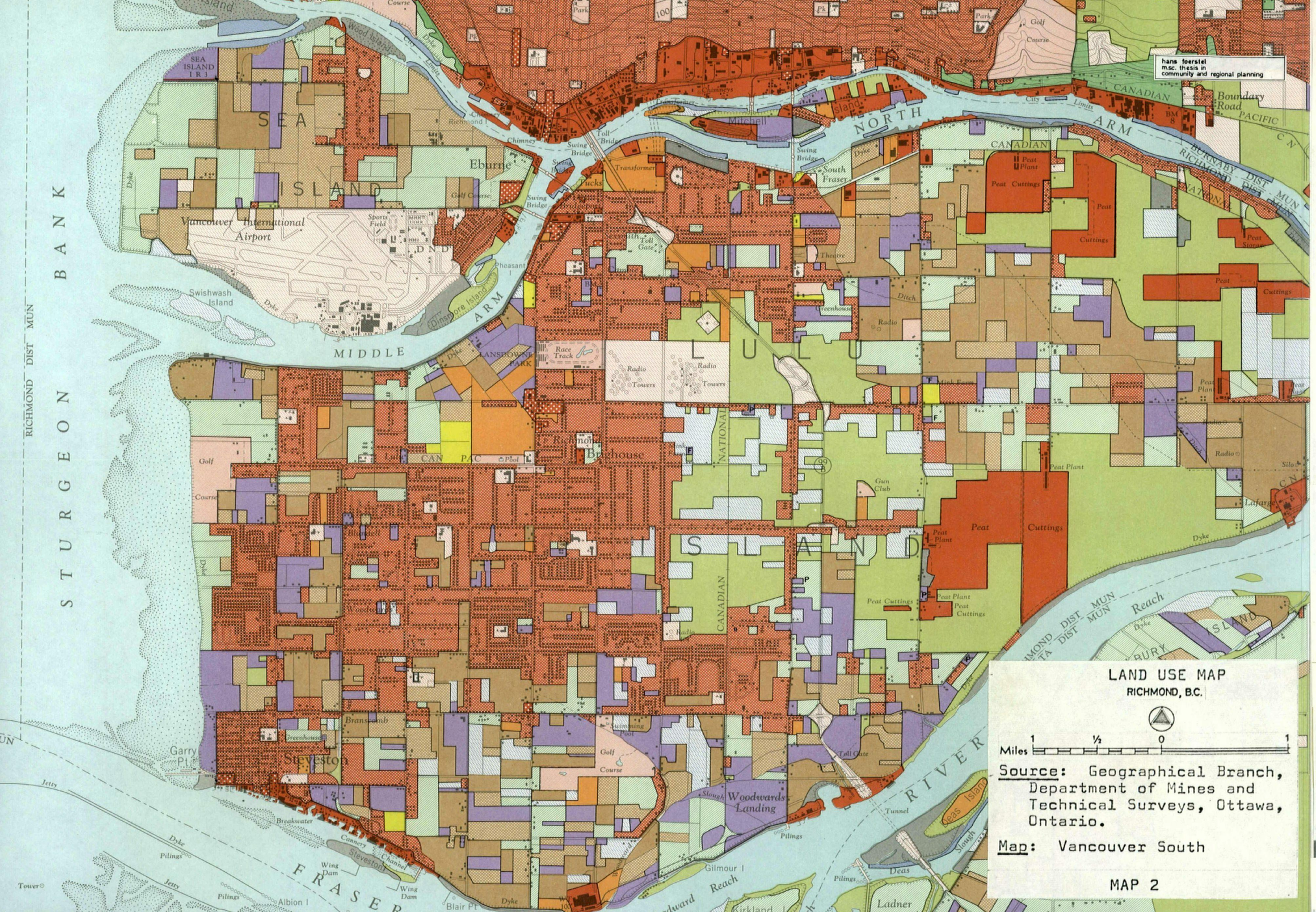
a.) Geology

Richmond is comprised of three major islands located in the Fraser River delta, which is still in the process of formation. The delta land, mostly below the level of extreme high tide, is dyked to prevent flooding. Top layers of sand of fifty feet thickness and more are underlain by thick clay and silty clay sections, to make a total delta deposit depth of up to 700 feet on Lulu Island.[1]

The substantial costs of dyking and pumping water to maintain a desirable water level are further increased by the clearance of land and the development of building upland, which increase run-off and therefore aggravate the flood problem in the bottom of the drainage basin. There is at present no basin-wide sharing of the extra costs among local governments.

Foundation problems are incurred in the peat bogs of Richmond. Problems are encountered with the operation of septic tank sewage disposal systems when the ground water level is up to or nearly up to the absorption tile.

The land capability of Richmond soils as determined by the Lower Mainland Regional Planning Board of British Columbia (Appendix IV, page 202) is shown in Map 3 , page 124.[2] The land capability for agricultural production significantly affects the likelihood with which urban sprawl may occur.



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LEGEND

- Industrial Areas
  Zones industrielles
- Commercial Areas
  Zones commerciales
- Residential Areas
  Zones d'habitations
- Recreational Areas
  Parcs et terrains de jeux
- Associated Urban (non-agricultural) Areas
  Zones urbaines associées (non agricoles)
- Hay
  Foin
- Grain
  Céréales
- Horticulture
  Exploitations horticoles
- Fur Farms
  Fermes d'animaux à fourrure
- Poultry Farms
  Fermes avicoles
- Improved Pasture
  Pâturage amélioré
- Open Grassland
  Prairie découverte
- Scrub Grassland
  Prairie à brousse
- Dense Woodland
  Terrains boisés, serrés
- Scrub Woodland
  Terrains broussailleux
- Unproductive Land
  Terrains improductifs
- Swamps and Marshes
  Marécages et tourbières
- Log Storage Areas
  Réserves de billes flottantes

LAND USE MAP

RICHMOND, B.C.

Miles 1 ½ 0 1

Source: Geographical Branch, Department of Mines and Technical Surveys, Ottawa, Ontario.

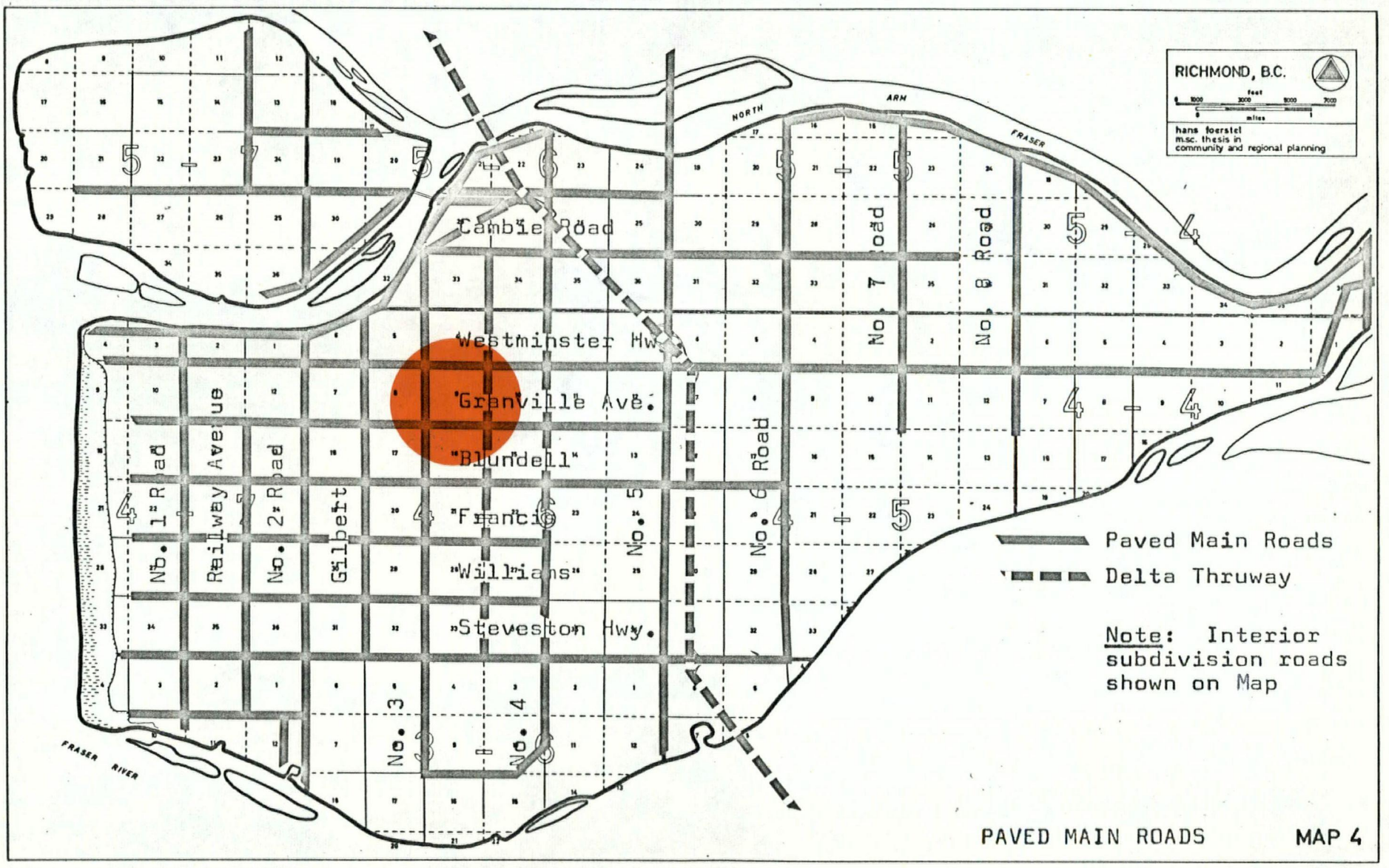
Map: Vancouver South

MAP 2

Base compiled by the Army Survey Establishment, R.C.E., 1961. Land use information obtained from field observation in 1958 by the Geographical Branch in co-operation with the Lower Mainland Regional Planning Board of B.C.

Source: Lower Mainland Regional Planning Board of British Columbia, Land for Farming (New Westminster, B. C.: L.M.R.P.B., 1962), p.7.

FARMING SOIL MAP MAP 3



PAVED MAIN ROADS MAP 4

b.) Land Use

The case study is concerned mainly with the largest island in Richmond, Lulu Island, which does in fact represent the major land area and population of the whole municipality. Slight statistical inconsistencies in this study may result where data are given for the whole Municipality. Sea Island is not in the study because the major part of the island has been zoned as an Airport District to enable Vancouver International Airport to expand; in any case, residential building has come to a standstill (1960-1963: 5 new dwelling units, 11 demolitions). Mitchell Island is an industrial area with insignificant residential settlement.

Early farm settlement occurred on the fertile clay soil areas west of the large peat bog bisecting the island; about the turn of the century a large number of one-acre holdings were created in this same area possibly as a speculative venture. Most important, Steveston, the original urban "center" of Richmond, attracted settlement to the westerly part of Richmond. With the advent of the suburban expansion after 1945 and the availability of easily subdivided land with good soil bearing values, the area west of No. 5 Road attracted 92% of the increase in dwelling units between 1946 and 1960.[3] This can be called a "natural residential area". A "natural non-residential area" lies east of No. 5 Road; two large peat bogs (9500 acres), separated by a strip of good farm soil, make residential settlement unattractive from the point of view of foundation costs and general environment.

The Delta Thruway is an added deterrent to an eastward residential expansion. A variety of agricultural activities are carried on successfully in this area, among them market gardening, dairy farming, small fruit growing, and commercial horticulture. Peat is mined on a large scale.

Commercial establishments in Richmond are concentrated near residential areas, or at key corners of main roads; there is practically no "ribbon" commercial development as can be found along Vancouver's Kingsway or Seattle's Aurora Avenue. Industrial areas have been reserved at the perimeter of Richmond to enable them to have water access (see Map 2, page 123), and Map 14, page 153).

B. CASE STUDY PROCEDURE FOR THE EVALUATION OF LAND USE CONTROLS

1. ZONING ADMINISTRATION PRIOR TO ESTABLISHMENT OF RICHMOND'S PLANNING DEPARTMENT

First the land use controls used during this period will be identified. Only the most important land use control, zoning, will be examined here and related to the land use and density pattern existing at the time zoning was introduced, and as they change over the period of the bylaw. Zoning is then related to the subdivision activity and pattern, the growth in population and the estimated residential building activity. These relationships are then examined for the role they play in promoting or curbing urban sprawl.

A similar train of thought will be followed in investigating similar effects and relationships of the new zoning bylaw introduced in 1956. A more lengthy discussion will result from the introduction of a Small Holdings District and the changed conditions provided by the shift toward large-scale, designed subdivision development. The role of the 1956 zoning bylaw in promoting urban sprawl, or making it feasible, will be studied by means of data on the subdivision of land, building activity, and population density changes.

2. LAND USE CONTROLS DEVELOPED AFTER THE ESTABLISHMENT OF RICHMOND'S PLANNING DEPARTMENT

An attempt will be made to establish the policy toward development which was developed, formally adopted, or used without formal sanction after the Planning Department was established. It was decided to restrict the study of the effectiveness of land use controls to Zoning and Subdivision regulations which apply to the two major land uses in Richmond: the residential land use and agriculture.

a.) Zoning

Non-farm residential settlement occurs primarily in residentially-zoned areas and small holdings areas. The 1958 amendment to the 1956 zoning bylaw will be examined with respect to the effect it had on the subdivision of land and building activity, in both the sections directly affected and other residentially-zoned sections. The effect on the agricultural use of land within the residential areas will be traced. The general aim is to establish whether or not the effect of the amendment was to curb urban sprawl, and if so, in which areas.

The effects of the 1963 zoning bylaw, too, will be traced. Particular emphasis will be given to the evolution of the three residential districts, as devices to curb urban sprawl. The 1961 policy change of the Central Mortgage and Housing Corporation in requiring National Housing Act insured houses to be connected to a public sewer will be considered to find out to what degree it has influenced Richmond's

attempts to discourage residential development at the perimeter of the urban area and encourage it in the central area.

Then the Small Holdings District will be studied: the location, pattern of subdivision, building development, population density changes, actual land use, and its urban sprawl aspects.

The effect of Agricultural Zoning on the creation of urban-size lots, on residential development and agricultural activities will be investigated. If it can be established that Agricultural Zoning has, in fact, prevented non-farm settlement in agricultural areas, then urban sprawl can be said to have been curbed by this zoning device.

b.) Subdivision Regulations

The incidence of urban sprawl is very much dependent on the requirements calling for certain improvements to the land prior to residential development. The standards adopted and the allocation of costs will determine the attractiveness of the development to potential developers. The policy of Richmond requiring the developer to carry substantially the whole cost of servicing of a "major subdivision" may be found to have a considerable effect in discouraging large numbers of small developers from attempting to develop land in Richmond. The quality of standard required also may be shown to have been effective in curbing urban sprawl.

The role of the "pre-planning" service by the Richmond Town Planning Department in minimizing future difficulties with the development of land on which low-density residential settlement is now permitted, will be studied.

c.) Effects of Senior Government Policies

Residential development has been influenced significantly by the policies of two federal agencies, the Veterans' Land Act Administration and the Central Mortgage and Housing Corporation. The role of their policies as regards urban sprawl will be investigated.

d.) Observations on the Case Study Approach

Considerable difficulty has been encountered in relating, theoretically, even the limited number of factors chosen for consideration in the case study. The following factors, among others, contribute to the difficulties encountered:

(1) There is no one definition of sprawl, nor can it be measured conveniently and objectively.

(2) The influence of land use controls on an existing land use pattern is modified in various ways by the existing pattern and may therefore not be determined conclusively.

(3) The very fact that zoning, for example, prohibits means that one cannot determine its influence on that development which might have occurred in a particular municipality; expressed differently, the urban sprawl curbed in Richmond may have been deflected to other municipalities in the region.

(4) The simultaneous action of a number of factors having the effect of indirectly influencing the use of land complicates the investigation of the effectiveness of land use controls in curbing urban sprawl. For example, the rapid development of Richmond Gardens in 1963 (and continuing in 1964) naturally led to a decrease of building development elsewhere in Richmond; however, of the large number of visitors attracted to Richmond by the Richmond Gardens advertising campaign, some found other areas in the municipality to their liking and started a compensating trend of development in these areas.

(5) The location of a number of higher-density subdivisions at the perimeter of Richmond's urban area introduces yet another concept of urban sprawl, that of fully-developed and serviced subdivisions scattered in the countryside and not functionally related with each other.

The foregoing comments serve to indicate that the author, during the course of this study, has come to doubt that a well-defined methodology for evaluating the effectiveness of land use controls in curbing urban sprawl can be devised.

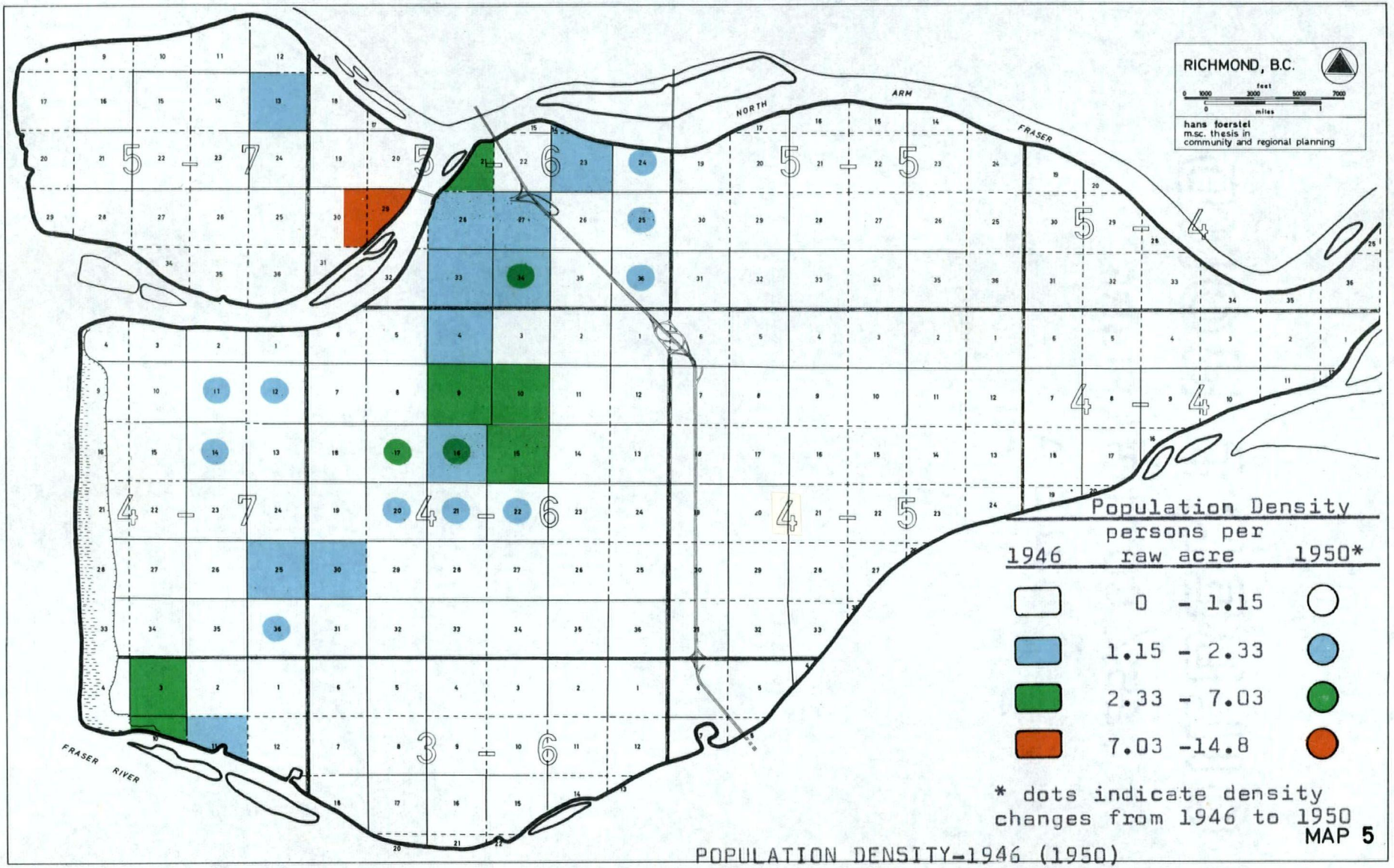
C. AN EVALUATION OF LAND USE CONTROLS IN RICHMOND

1. ZONING ADMINISTRATION PRIOR TO ESTABLISHMENT OF RICHMOND'S PLANNING DEPARTMENT

Richmond began exercising control over the use and development of land in the municipality by enacting a zoning bylaw, Bylaw No. 1134, on December 28, 1949. Richmond's population of approximately 18,000 was distributed, in 1946 and 1950, as shown on Map 5, page 134. A comparison of the zoning map accompanying Bylaw No. 1134 (Map 7, page 136), with the population density map shows that the residential zoning followed the existing use fairly well; about 25 "sections" were zoned residential, compared with 26 sections with a population density, in 1950, greater than 1.15 persons per gross acre.[4] Twenty-five sections developed at a suburban density of 12 persons per gross acre would have accommodated a population of 48,000, the predicted 1964 Richmond population figure.

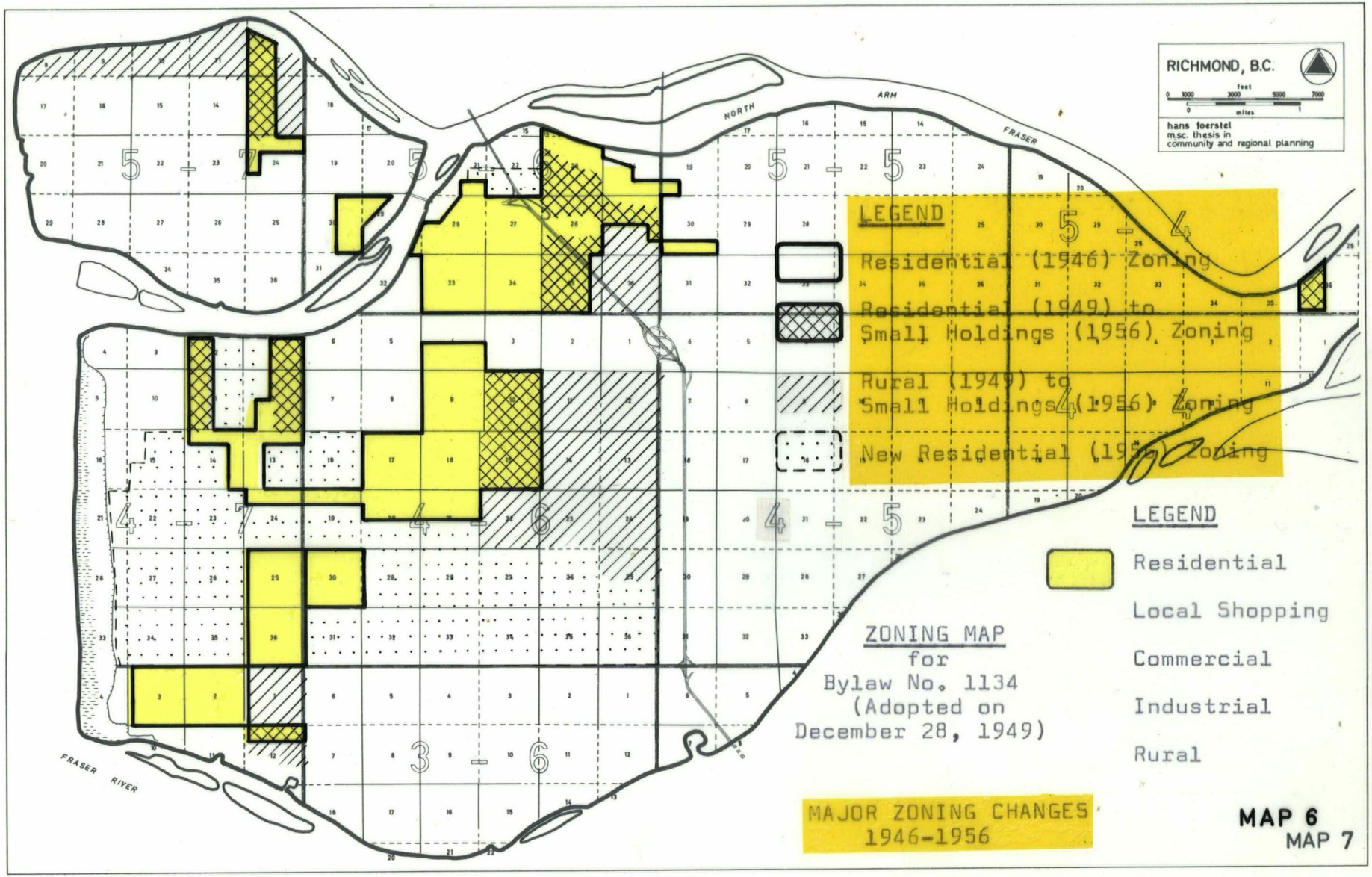
Beginning in 1952, Richmond's population increased rapidly (Figure 1, page 121). In 1954 and 1955 the number of building permits of all types issued was 420 and 723, respectively, whereas the previous high figure had been 302 permits in 1949; 1951 was the low year with 185 permits (Table 2, page 137). The quickened pace of residential development generally and the bright prospects for its

Source: Richmond Planning Department



MAP 5

POPULATION DENSITY-1946 (1950)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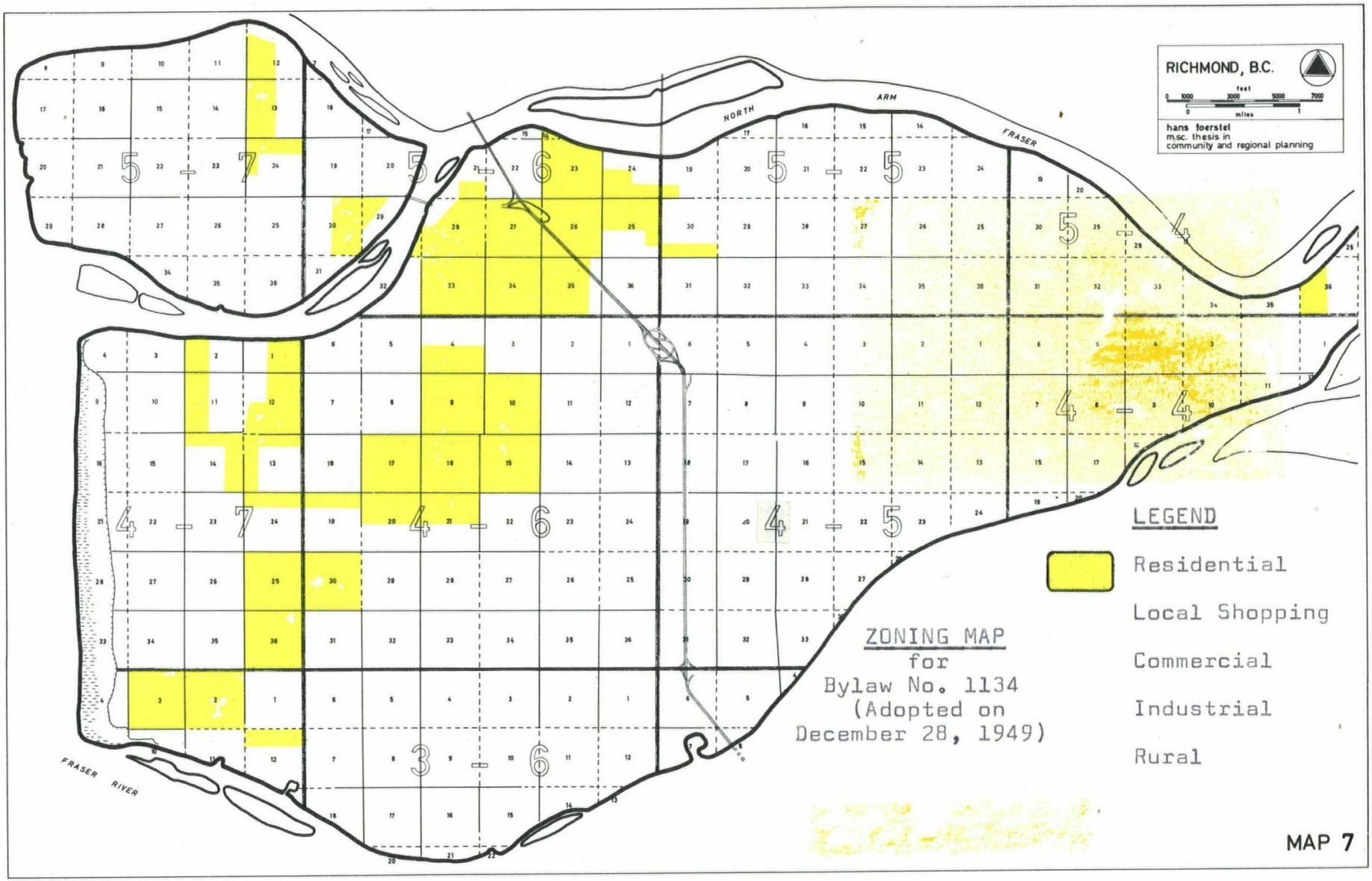
NORTH ARM FRASER
FRASER RIVER
LEGEND
Residential (1946) Zoning
Residential (1949) to
Small Holdings (1956) Zoning
Rural (1949) to
Small Holdings (1956) Zoning
New Residential (1956) Zoning
LEGEND
Residential
Local Shopping
Commercial
Industrial
Rural
ZONING MAP
for
Bylaw No. 1134
(Adopted on
December 28, 1949)
MAJOR ZONING CHANGES
1946-1956
MAP 6
MAP 7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LEGEND
Residential
Local Shopping
Commercial
Industrial
Rural
ZONING MAP
for
Bylaw No. 1134
(Adopted on
December 28, 1949)
MAP 7

TABLE 1. RICHMOND'S DEPENDENCE ON NHA-INSURED MORTGAGES

	N.H.A. Starts (Single-family homes as % of Total Starts)			Total Starts as % of Vancouver Area Starts		
	1959	1960	1961 (Jan-Aug.)	1959	1960	1961 (Jan-Aug.)
Richmond	83	73	75	13.2	9.7	5.4
Vancouver Area	38	24	26			

Source: Richmond Planning Department

TABLE 2. RICHMOND BUILDING PERMIT STATISTICS

Year	No. of Permits	Year	No. of Permits
1943	143	1955	723
1944	195	1956	649
1945	208	1957	633*
1946	246	1958	1,442
1947	268	1960	298
1948	299	1961	219 to Aug.31
1949	302	1962	
1950	246	1963	
1951	185		
1952	197		
1953	259		
1954	420		

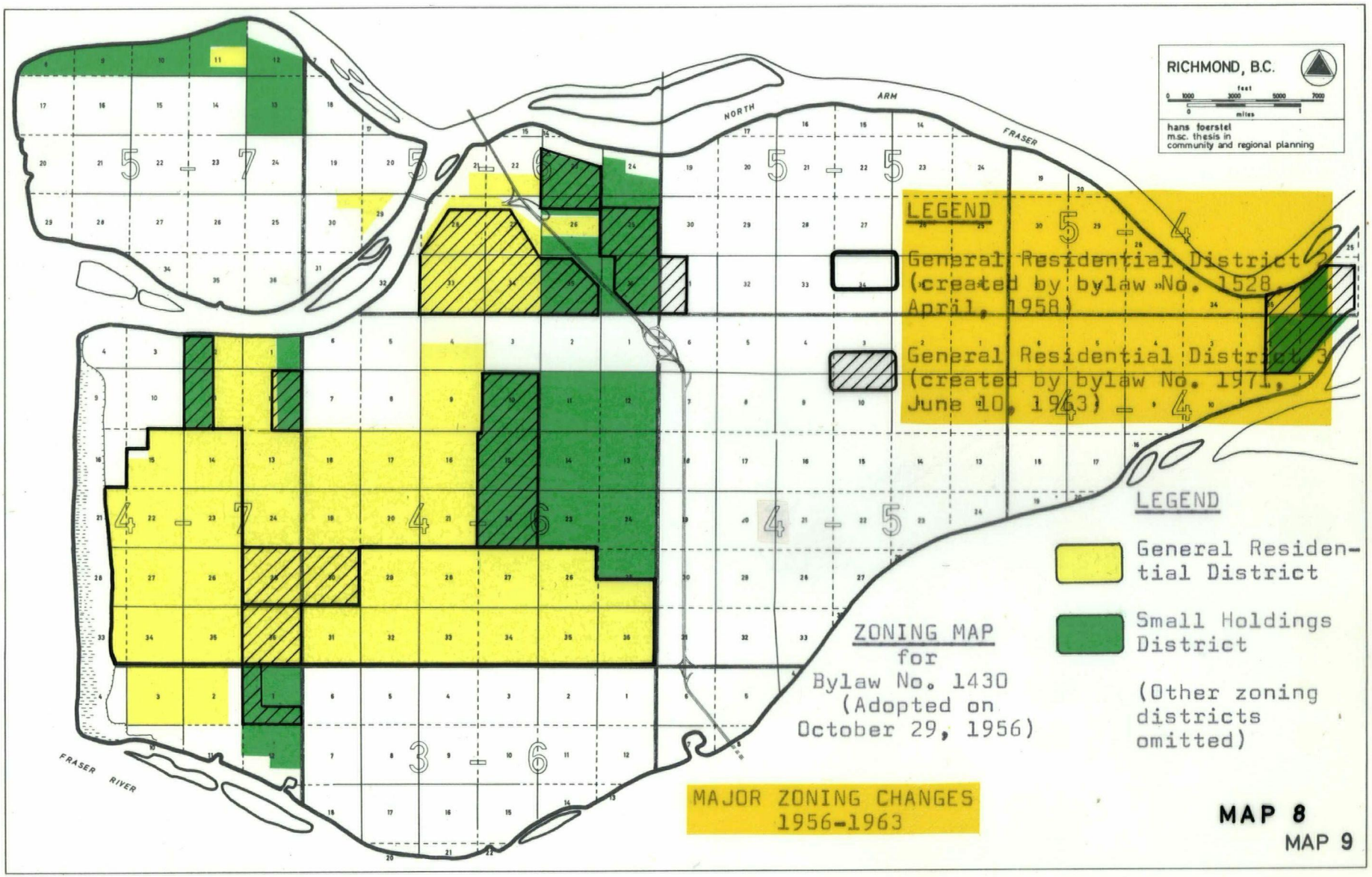
Source: Richmond Planning Department

Note: * includes all buildings prior to 1957

continuation resulted in great pressure, as has happened so frequently in the history of zoning, to zone large tracts of land for residential use. Although the services of planning consultants had been retained, the new zoning Bylaw No. 1430, adopted on October 29, 1956 (hereafter referred to as the "1956 zoning bylaw"), showed a lack of understanding of the rudimentary factors involved in urban, particularly residential, development (Map 9, page 140). Obviously the pattern and magnitude of population growth was not very well understood; or if it was, then at least no attempt was made to relate it in any way to physical development and the amount of land used. The equivalent of 39 sections zoned residential was far in excess of what was needed (the area zoned residential in 1949 would have accommodated the 1964 population); furthermore, the equivalent of 23 sections was opened to residential settlement as "Small Holdings Districts". Thus, 62 sections became potential residential areas. The General Residential District alone could have accommodated three times the Richmond population at the time the 1956 bylaw was passed.

A number of factors contributed to urban sprawl under this new zoning:

(1) Overzoning. The availability of a large area of unserviced, potential residential land encouraged a scattering of development. Since the resident population was small and the increase of population very small in relation to the size of the new areas opened up for development, a low population density persisted in the settled sections, and the new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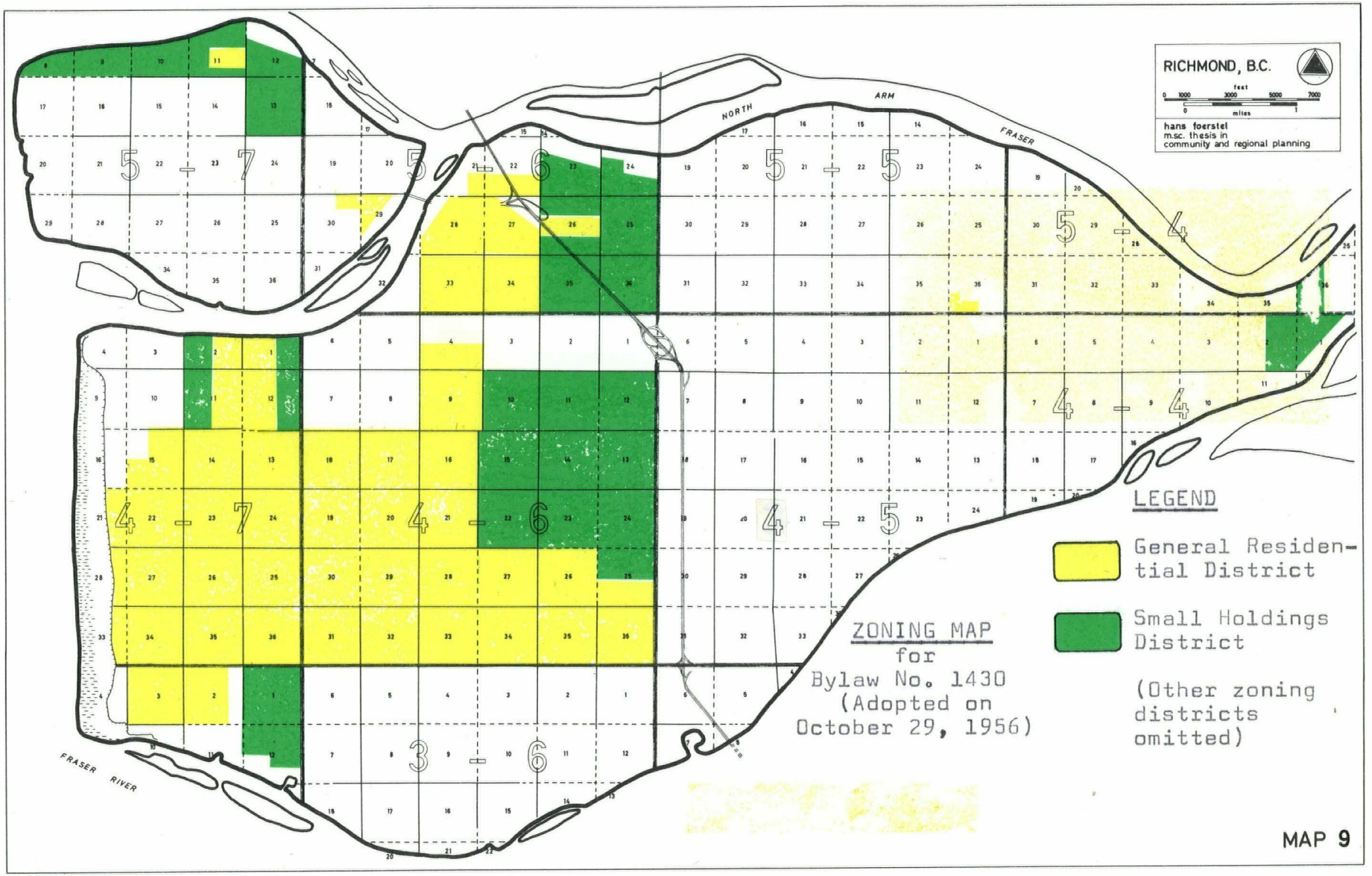
hans foerstel
m.sc. thesis in
community and regional planning
NORTH ARM FRASER
FRASER RIVER
LEGEND
General Residential District 2
(created by bylaw No. 1528, April, 1958)
General Residential District 3
(created by bylaw No. 1971, June 10, 1963)
LEGEND
General Residential District
Small Holdings District
(Other zoning districts omitted)
ZONING MAP
for
Bylaw No. 1430
(Adopted on
October 29, 1956)
MAJOR ZONING CHANGES
1956-1963
MAP 8
MAP 9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FRASER RIVER
LEGEND
General Residential District
Small Holdings District
(Other zoning districts omitted)
ZONING MAP
for
Bylaw No. 1430
(Adopted on
October 29, 1956)
MAP 9

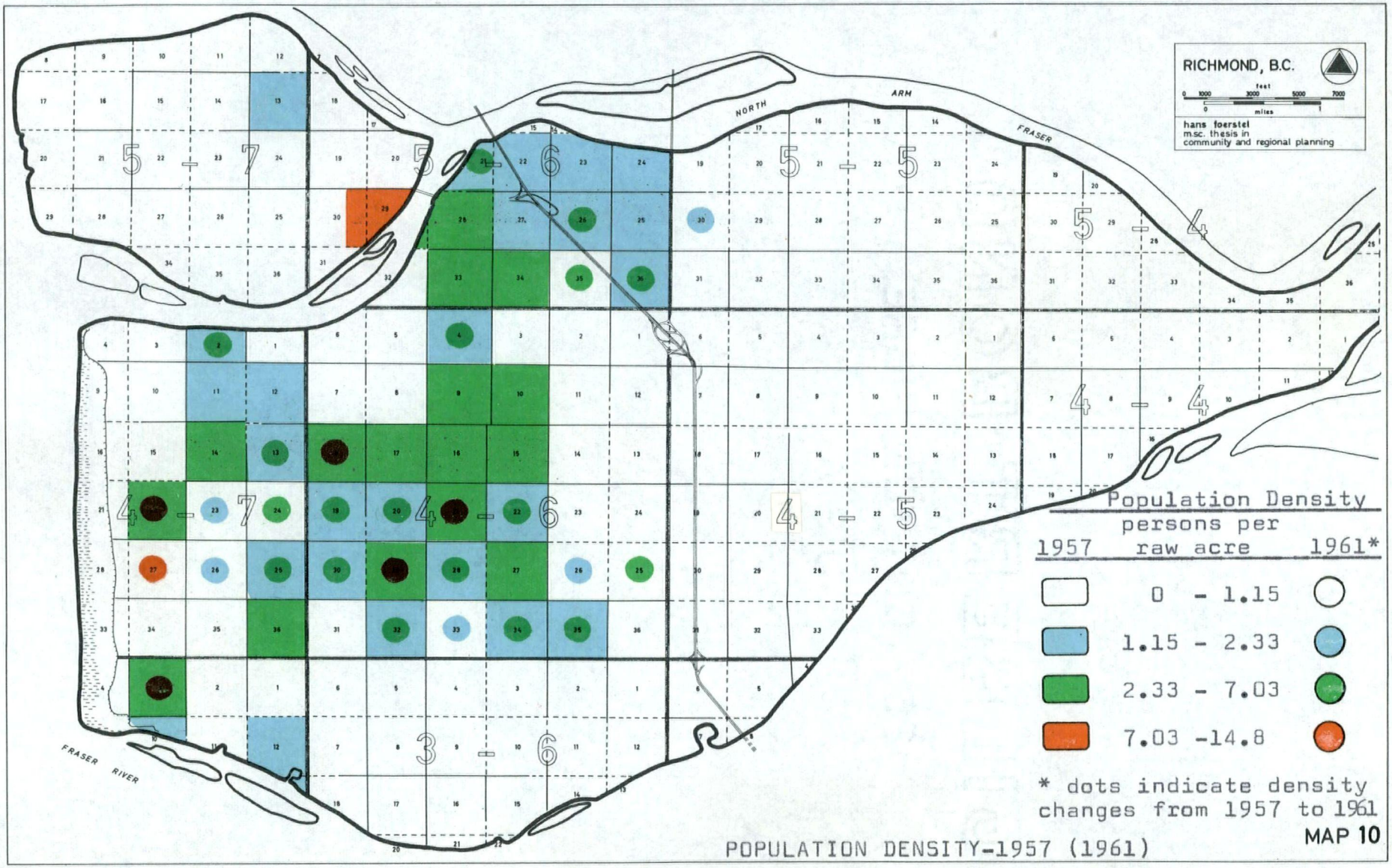
sections experienced scattered, extremely low density "urban" settlement. The population density in 1957 is shown on Map10, page 142.

(2) Perimeter Development. In a competitive land market, the cheapest land will be developed before the more expensive land; since this cheaper land lies at the perimeter of the existing settlement, and beyond, all that was needed to bring this land into the market was permissive zoning. Thus there is a tendency for development to occur at the perimeter; urban sprawl may then take the form of individual buildings, isolated groups of houses, or whole subdivisions, scattered throughout the landscape.

(3) Large-Tract Development. A shift has been taking place in the single-family house construction business from single-house building to large-scale building and land development; consequently, the availability of large tracts of undivided land determined the location of whole subdivisions within the residential zone. The availability of these tracts is a matter of location (i.e., perimeter) and the historical development of a municipality (refer to sections 22 and 27 of block 4-7; 29 and 35 of block 4-6; on Maps 11 and 12, pages 143 and 144).

(4) Land Costs. As the size and price of houses and lots increase, and higher servicing standards are applied, much greater attention has to be paid to the relationships between the cost of land, house, and services. Since the latter two are generally less variable than the first, the

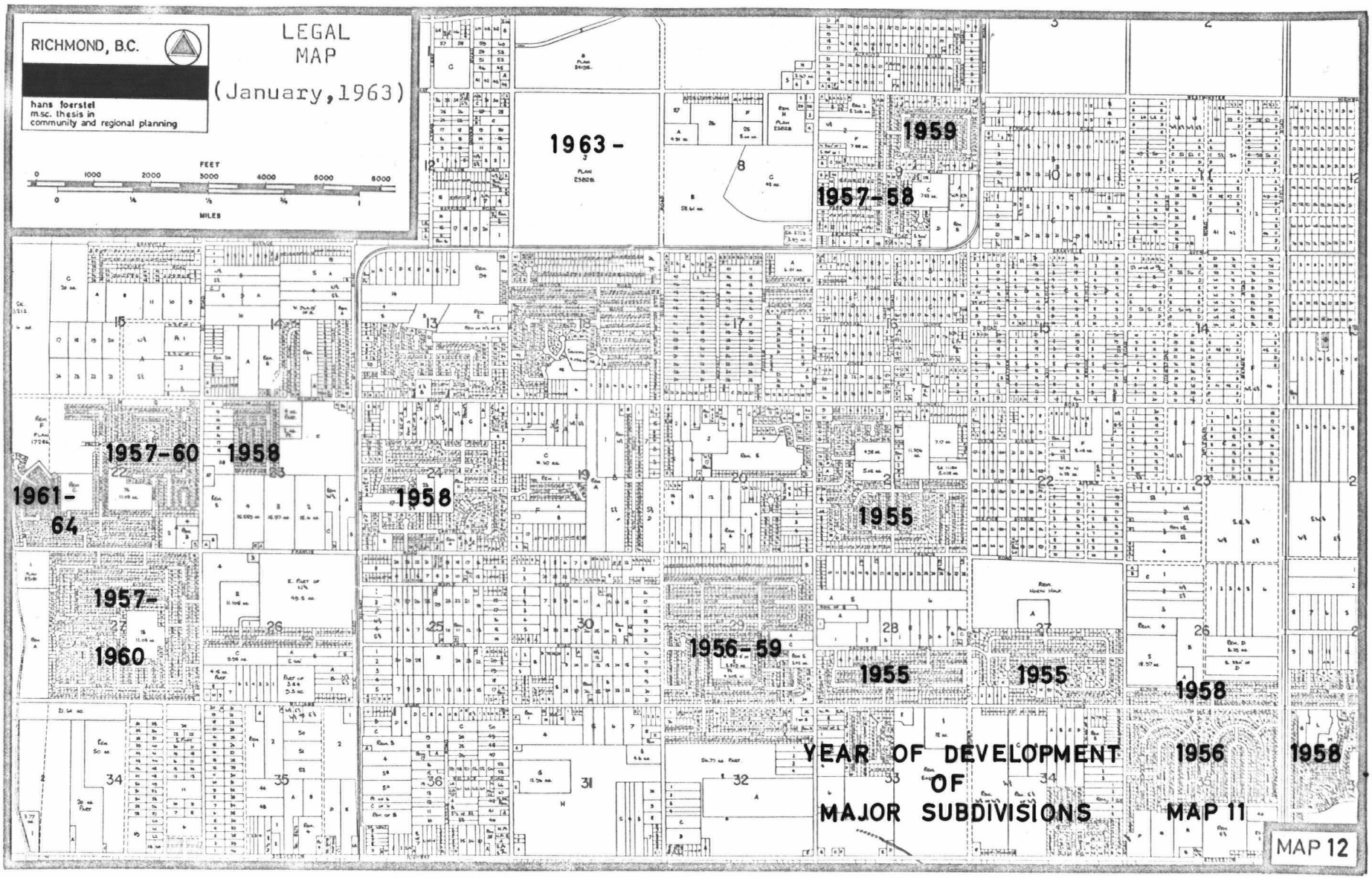
Source: Richmond Planning Department



POPULATION DENSITY-1957 (1961)

MAP 10

Source: Richmond Planning Department



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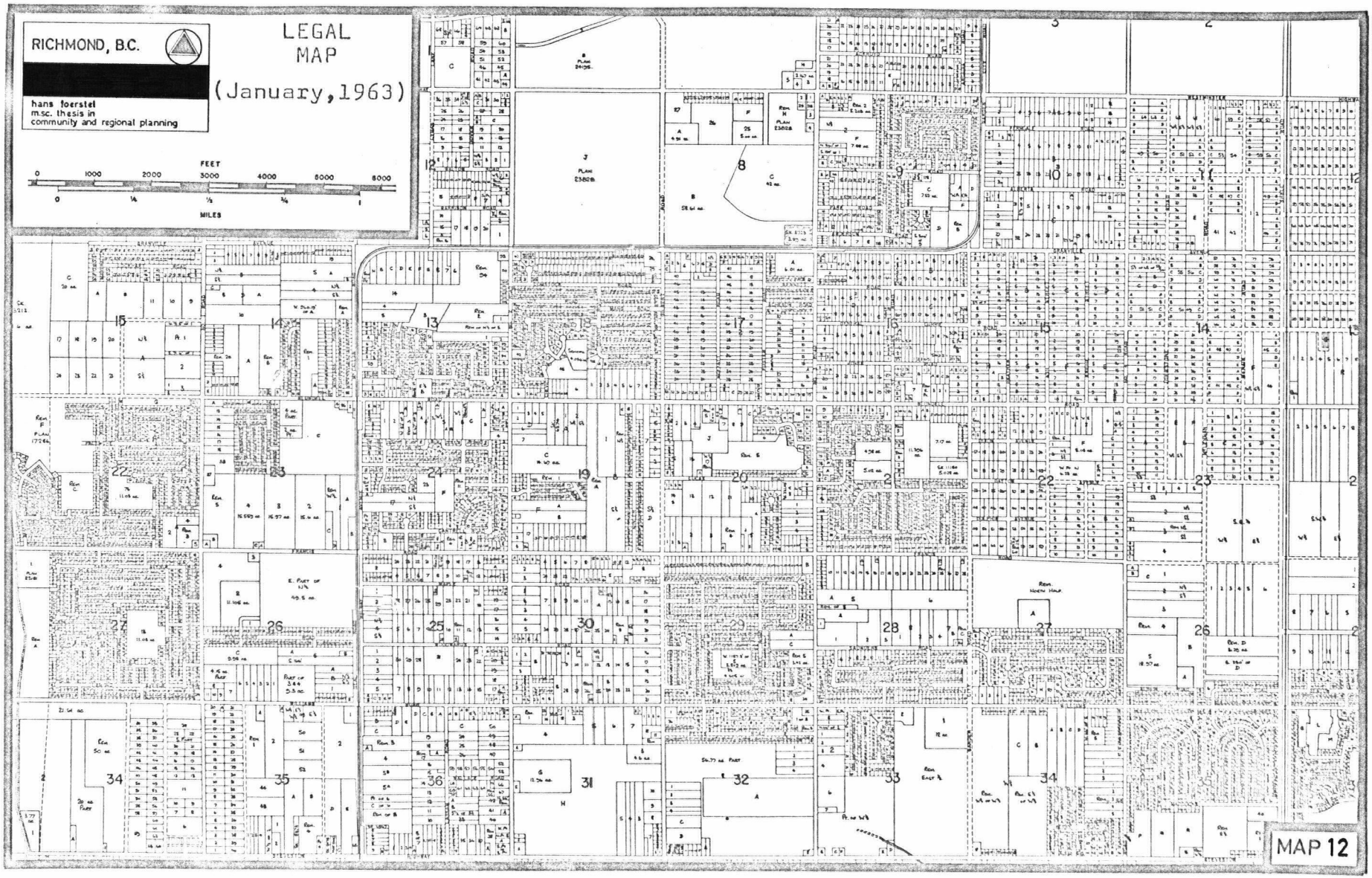

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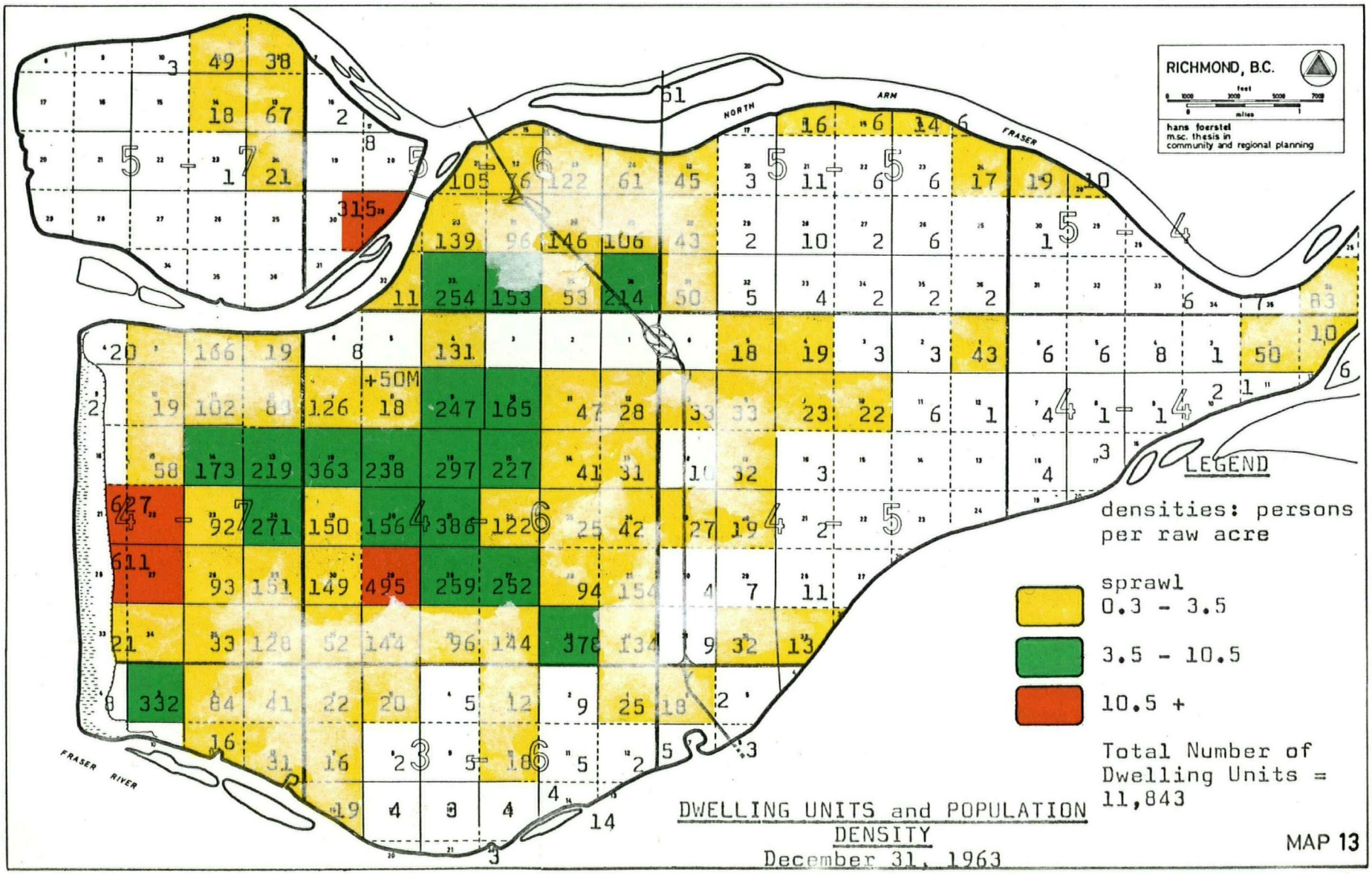

DWELLING UNITS and POPULATION DENSITY
December 31, 1963

MAP 13

price of land significantly influences residential settlement. This generally means building on land at the fringe of existing settlement, preferably in large parcels because of the lower unit land price.

(5) Small Holdings. "Small holdings" parcels are at least one-half acre large.[5] To satisfy the minimum acreage requirement, deep lots with narrow road frontages are created, with large areas of locked land remaining dormant, for it is seldom economical now for a private developer to develop this land. Thus, almost by definition, small holdings develop the symptoms and density of urban sprawl.

(6) Small Holdings in the Wrong Location. The land use pattern encouraged by the zoning of the 1956 zoning bylaw counteracted the natural tendency for urban development to concentrate in the vicinity of the Brighouse commercial area by permitting small holdings in this area. Small holdings were, in fact, designed to provide veterans with a piece of land which, in time of need, would supplement if not constitute their earnings. The 1956 zoning bylaw effectively encouraged small-scale agriculture near the commercial centre of Richmond. This bylaw greatly strengthened urban sprawl tendencies by encouraging low-density development where a higher density would have formed naturally or could have been effected relatively easily, and by opening up rural areas for settlement. For example, of nine residentially-zoned sections changed to small holdings, numbers 10, 15 and 22 of block 4-6 are prime residential areas with a high-

density potential. Ten hitherto rural sections were zoned for small holdings.

Sections 11, 12, 13, 14, 23 and 24 of block 4-6 never were developed because they are located in the great peat bog. In actual fact they are scrub woodland and marsh, unsuited for farming and both unsuited and uneconomical for urban development (Map 2, page 123). Sections 10 and 15 were developed, however; they have now reached (1964) a static population density of 4.1 and 5.6 persons per gross acre, respectively, because much of the perimeter road frontage has been utilized and the locked land is not being developed. For example, a total of 15 new dwellings were added to both sections in the 1960 to 1963 four-year period (Appendix VII, page 221).

2. LAND USE CONTROLS DEVELOPED AFTER THE ESTABLISHMENT OF RICHMOND'S PLANNING DEPARTMENT

a.) A Development Policy

In February, 1957, a Town Planning Department was created as part of the municipal administration. General principles of land use and community development formulated by this department in their first two years of operation were presented to Council as suggestions for a formal policy statement on the development and use of land within the municipality (Appendix V , page 203). It stated, among others, the objective of curbing urban sprawl. A formal policy statement was not adopted by Council, however; the author is not

familiar with the reasons why this action was not taken.

b.) Residential Zoning

(1) General Residential Zoning. Planning Department studies had shown that in 1956 and 1957 there was a large oversupply of residential lots in Richmond. It was decided to estimate the growth of residential development for the five-year period from 1958 to 1963 and to attempt to restrict residential development and subdivision by amending Zoning Bylaw No. 1430. The established zoning would then be reviewed at the end of the five-year period, that is, in 1963. The question of where to restrict and where to encourage development must be considered in the light of another objective. One pressing community development objective was to encourage the concentration of population around the Brighouse area; not only is this Richmond's commercial district, but it is also fairly centrally located in the community, has adequate road access and contains the Municipal Hall. Possibly the availability of a large tract of unsubdivided land (Sections 5, 6, 7 and 8 of block 4-6) in the private so-called Brighouse Estate played a role in pressing for residential development in this area. The sooner the population density can be raised in the Brighouse area, the sooner a large-scale central municipal sewage disposal scheme can be financed. Then a definite policy of capital budgeting and municipal service extension could be enforced and utilized to guide urban development.[6] The obvious aim was thus to prevent residential development at the perimeter and encourage it in

the remainder of the General Residential District.

(a) Amendment Bylaw No. 1528 (April, 1958). The residential districts established by the 1956 zoning bylaw (No. 1430) in the sections marked in map 8, page 139, were changed to a new General Residential District 2, with the remainder of the residentially zoned area changing its name to General Residential District 1. Amendment Bylaw No. 1528 (hereafter referred to as the "1958 zoning bylaw") "froze" development in 20 sections of the total 32 sections zoned residential, by stipulating that "...no lot shall be used as the site for an unsewered dwelling, that is to say, no lot shall be used as a site for a dwelling which is not connected to a public sanitary sewer..."[7] Lots of record at the time of passing of the bylaw can still be built on, of course, for zoning must not be retroactive. In other words, it was not the subdivision of land which was prevented, but rather the building on land, because there did not exist nor was it the immediate intent of the Municipality to construct a public sanitary sewer. Since there would be little incentive to subdivide land if it could not be built on, the rate of subdividing land could be expected to drop sharply.

It is now proposed to test the effectiveness of this zoning device in reducing the subdivision and building activity in the General Residential District 2. Unfortunately, subdivisions of land were not recorded by the Municipality before 1958; it would have taken more time and money to gather these data (from the Land Registry Office)

than is available for this study. Ideally, some record of subdivided, but vacant lots would be needed to judge the infilling effect of the bylaw; building permit figures, representing dwelling units, for the period 1955 to 1957 are used to give some indication of the pre-bylaw distribution of building activity (Appendix VII, page 219). In block 4-6, most of the development occurred in the affected sections 27, 29, 32, and 34; the same number of dwelling units was added in both 1957 and 1958 in section 27, although the total for block 4-6 increased from 354 to 662. The 53 new lots subdivided in 1958 may have been subdivided before April of that year, in spite of the bylaw, or else because its full implications were not realized by the subdivider. Cause and effect are not clear for a look at the subdivision concerned (Map 12, page 144) may suggest that the 53 lots were created to fill out the one half of the section. In any case, in the fairly active year of 1959, no land was subdivided in this section; since then, only one lot has been created, and the remainder of the section is intact in two large parcels. Subdivision and building was also severely curtailed in section 28, where the number of new lots decreased from 81 to 15 to 1 in 1958, 1959 and 1960, respectively; the availability of unused road frontage and a number of medium-acreage parcels would probably have led to the creation of a large number of urban size lots on the perimeter roads. It is obvious from Appendix VII, page 219, and Map 12, page 144, that the subdivision of land was

curtailed sharply and large land areas preserved as fairly large parcels.

Residential and agricultural zoning were used by Richmond in the attempt to curb urban sprawl. The effect of the 1958 zoning bylaw has been impressive in this regard. In the first instance, residential development in the over-zoned General Residential District was curtailed in certain perimeter sections by the creation of a new General Residential District 2, several years' supply of residential land being available in the remaining residential district. In the second instance, the small-scale agricultural activity found in the section so zoned received sufficient "protection" against residential infringement in the short boom of 1958 and 1959 to be able to carry on; some sections are now under intensive cultivation, while all sections show some agricultural activity regardless of proximity of residential settlement. At the same time, residential development in the Agricultural District was restricted very effectively by definite, ascertainable regulations; they have not been changed in anyway since enactment. By contrast, the 1949 zoning bylaw had provided for Council's discretion in allowing residential building in the Rural Zone.

(b) Amendment Bylaw No. 1971 (June 10, 1963). When Zoning Bylaw No. 1430 was passed in 1956, a review at the end of five years had been anticipated. This review, although not on schedule, did result in Amendment Bylaw No. 1971

(hereafter referred to as the "1963 zoning bylaw"). The amendments in this bylaw constitute the first step in a two-step revision of the original 1956 zoning bylaw toward a new zoning bylaw, expected to be ready late in 1964. The major change concerning residential development was the creation of a new General Residential District 3. Six out of 18 Residential District I sections were changed to this new District, as were 11 out of the 19 small holdings sections on Lulu Island. This District was designed to be a "hold-zone", where no appreciable development was foreseen for the next 8-12 years. It was decided to make this zone a useful one in the meantime by making the use of the land flexible. Agricultural activity was allowed on any parcel of land over one-half acre; to keep the value of improvements down, a maximum size of non-residential buildings (such as a barn) was stipulated. One urban-sized lot, having an area of between 7,200 and 10,000 square feet, is allowed per acre; in this way a maximum of two lots are created on an acre: a normal lot with a minimum frontage of 66 feet and an L-shaped lot of at least three-quarters of an acre. Experience has shown that the L-shaped lot is more flexible and, in this case, larger than the typical 126 feet wide by 330 feet deep one-half acre lot created when a one-acre parcel is divided into two equal lots.

In attempting to assess the role of the Residential District 3 zoning device one must recognize that the lot pattern in most of the sections so zoned has been inherited;

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hans foerstel
m.sc. thesis in
community and regional planning
NORTH ARM FRASER
FRASER RIVER
ZONING MAP
for
Bylaw No. 1971
(Adopted on
June 10, 1963)
LEGEND
General Residential District 1
Gen. Res. D. 2
Gen. Res. D. 3
Small Holdings D
Agriculture D
General Manufacturing D
(+14 other Dist)
MAP 14

for example, the lot pattern in the vicinity of sections 10 to 15 of block 4-6 was established around 1910. Furthermore, the zoning inherited with most of the sections affected has permitted residential development all along. If this zoning were to have continued, urban sprawl densities would have resulted in any case. Considering the choice that led to District 3: One could have attempted to prevent further residential development; this might have been politically unacceptable or created hardship for landowners and prospective buyers alike. Because Richmond has problems of land fragmentation, of inaccessible and unused rear portions of perimeter property, and of misplaced development in many areas, one could argue in favour of a less prohibitive approach to development in a new "hold-zone". On the other hand, one could recognize the basic disadvantages to sound and desirable immediate development imposed by the existing subdivision pattern, and encourage the most practical and economical use of the land (in this case: agriculture), yet introducing flexibility by permitting some residential development to take place. This has happened with District 3. Map 8, page 139, shows also that the creation of a "hold-zone" may well act as a legal, physical and psychological barrier to residential development outside the Residential District I. A new tenant in District 3 knows that for the next eight to twelve years at least, the population density will be restricted to a low figure and the agricultural use of land will be protected. This may induce him to settle, or keep

him from settling, in Residential District 3. If urban sprawl as an interim stage of urban development is well-nigh unavoidable, as it appears to be in Richmond on the basis of the foregoing discussion, at least some of the disadvantageous effects can be minimized by keeping the land in as profitable a use as possible till the density can be built up.

The creation of District 3 must also be seen in the light of the 1961 policy change of the Central Mortgage and Housing Corporation, in making the insuring of National Housing Act (NHA) loans dependent on the connection of NHA houses to a public sewer. Given Richmond's dependence on NHA mortgages (Table 1, page137) and the possibility that a large public sewage disposal system may not be built for a number of years in the central area, incentives must be given to private money to come in and make up for any decrease in NHA money. The prospect of part-time or full-time profitable farming or other non-urban use of the land may induce residential settlement in District 3; thus the policy of attempting to drain development from the perimeter toward the central Brighouse area, although hampered, is being continued.

(2) Small Holdings Zoning. Under the Veterans' Land Act of 1942, tracts of land were acquired by the federal Department of Veterans Affairs and subdivided into one "acre-type" lots or "one-half acre-type" lots.[8] Small holdings represent the most wasteful type of land development in Richmond; a house can be built on a parcel of 66 feet width or more and a

minimum size of one-half acre. Not only is the population density kept down and perimeter development encouraged, but the rear portions of parcels are rendered inaccessible and unusable.

In 1956, twenty-three sections were zoned for small-holdings; eleven of the 19 sections on Lulu Island were re-zoned to the new Residential District 3 by the 1963 zoning bylaw. There had never been much difference, with regard to the type and clustering of residential building along the perimeter roads, and the services required, between some sections in the General Residential District and the Small Holdings District. Perimeter development was allowed in both districts on a 60 to 66 foot frontage; in the meantime, despite the low population density (by definition) of the Small Holdings District, "a pattern of demands for services evolves which is identical to that of any other recognized residential area in the Municipality".[9] It so happened furthermore, that most of the Small Holdings District in block 4-6 is located in poor soil; thus the redeeming feature of a potential agricultural use on locked land and rear portions of parcels larger than one-half acre is absent on these sections.

c.) Agricultural Zoning

Richmond has two principal land uses: residential and agricultural. Residential zoning in Richmond can be seen in its proper perspective only when considered in connection with agriculture and agricultural zoning. The

Agriculture District of the 1956 zoning bylaw is shown on Map 9, page140; it was not changed in the 1963 general zoning amendment and it is expected that some of the industrially zoned land will be returned to the Agriculture District in the next zoning change. Agriculture has been recognized as an important industry by Richmond, and for this reason the objective of protecting agricultural land from urban encroachment on a long-term basis was formulated. From 1956 on, lots less than 330 feet in width could not be used as sites for dwellings, except those lots with a minimum width of 66 feet registered before the adoption of the bylaw. A lot smaller than 5 acres could not be used as a site for a dwelling while lots larger than 2 acres were acceptable if registered before the date of the bylaw, as were lots larger than 7,920 square feet and registered before January 30, 1950. The minimum size of 5 acres was intended to ensure economically workable agricultural parcels; the minimum frontage specified restricted the number of residences constructed in the Agricultural District (8 per half-mile of road at the maximum) and prevented the creation of long and narrow five-acre lots. Agricultural zoning has indeed kept residential building to a minimum: in the seven-year period between 1957 and 1963, in blocks 3-6, 4-5, 4-4, 5-5, and 5-4, which include a small residential and small-holding district, about 130 dwelling units have been constructed.

To assure adequate land areas for agriculture, the characteristics and use of farmland were studied by the

Richmond Planning Department. Three methods were used to study agricultural land. In one method, the range of dwelling units on agricultural parcels, the range of parcels of agricultural size, and the range of dwelling units on residential lots served as a type of indicator of agricultural land use. "True" agricultural areas are those, by definition, where 65% of the section is cultivated.

TABLE 3 . DEGREE OF CULTIVATION RELATED TO NUMBER OF DWELLING UNITS AND LOTS PER SECTION, AND ACRES PER PARCEL OF LAND

% Cultivated		(1) D.U./Section	(2) Acres/Parcel	(3) Lots/Section
65-70	from	21	4.5	33
96-100	to	3	50.7	2

Source: Richmond Planning Department, Agricultural Statistics (mimeo.), Appendix VII to General Land Use Report, 1961-1981 (March, 1962), p. 4 ff.

It is significant that the range in (3) is considerably greater than in (1), indicating the critical relationship between non-farm residential settlement and percentage of land cultivated. The "urban shadow" effect of non-farm settlement located in areas generally devoted to farm operations in an urbanizing area was mentioned in Chapter II. The data above support the general finding that relatively little non-farm settlement can seriously "disrupt" agricultural activity in its vicinity.

There are 70 true agricultural sections (out of a total area of 156 sections on Lulu Island), according to the definition above. They are located almost exclusively in the clay soil areas; in other words, agricultural producing areas are situated on the best natural soils in Richmond, or conversely, "the lands requiring least capital improvement are under active cultivation".[10] At the perimeter of residential settlement but on residentially subdivided and residentially zoned land, agricultural activity persists inspite of the residential zoning on the land; the creation of Residential District II strengthened this tendency of land use. The 65% cultivated land criterion seemed fairly satisfactory for establishing true agricultural sections. The size of land parcels, the extent of cultivation and the soil quality at any location are closely related, as indicated above. The prime reasons for continued agricultural activity in Richmond are the soil capability, the farmers' technical skills, and the strategic marketing position of the farms within the Vancouver metropolitan area. It appeared from the Planning Department's study that there had been little change, from 1958 to 1960, in the land under cultivation and the average number of dwelling units on agricultural parcels.

In another method, the urban sprawl criteria used by the Lower Mainland Regional Planning Board (Chapter II) were applied to Richmond conditions. Richmond found that

> ...this method of analysis is insufficient in itself, as increased density of housing is not necessarily proportionally related to lack of use of land for agricultural purposes. The existence of many producing small-holding parcels on which houses are located does not necessarily indicate a 'sprawl' area in true perspective, but rather of 'small holdings' enterprises flourishing within the Municipality.[11]

The population density criterion was found useful, however, in pointing out potential or actual urban sprawl areas (Map 13, page145); the population density indicator can then be used for directing residential development. Twenty-two sections in the Agricultural District were at urban sprawl densities at the end of 1963, fifty were at a rural population density.

A third method consists of rating sections for agricultural suitability according to four criteria: (a) the soil quality and capability; (b) the extent of cultivation per section; (c) the density of housing; and (3) the average size of parcels of land. Thirty-three sections were rated accordingly as "true" agricultural. Because of the weight given to density of housing, certain sections with a high intensity of cultivation were not being rated as true agricultural.

The Richmond Planning Department study of agricultural land by the three methods revealed that active agricultural areas are directly related to quality of soil, so that the better the soil the more extensive its cultivation. In sections cultivated to an extent greater than 65%, increasing cultivation effects an increase in size of parcels from 4.6

acres to 50.7 acres per parcel. Large land parcels in Residential Districts have remained in agricultural use, regardless of zoning or proximity to residential settlement.

d.) Subdivision Regulations

Since the subdivision of land is the first step toward the development and use of land, Richmond zoning bylaws include regulations restricting the size and shape of parcels allowed to be created or used in a particular zone. Subdivision regulations, which are separate from zoning regulations, refer not so much to the quantitative aspect of land subdivision but rather to the procedure of getting a subdivision approved and registered and to the construction and servicing of the subdivided land.

The subdivision of land before it can become legal (that is, registered), must be approved by an Approving Officer. The whole pattern of subdivision, in fact the pattern of community development, may be determined almost single-handedly (as far as the legislation is concerned) by the Approving Officer when he makes his decisions to approve or not to approve. Richmond has therefore taken the obvious step of making the Town Planner the Approving Officer; furthermore, municipal departments at all concerned with the subdivision and use of land are tied into the subdivision approval procedure; and finally, of supreme importance: a land development policy adopted by the Municipality guides the Approving Officer. This land development policy finds expression in the zoning bylaws which specify the type of use

and direction of development, and the subdivision regulations, which specify the pattern of development and the minimum standards of construction and servicing.

Richmond developed fairly high municipal servicing standards between 1949 and 1952; the latest servicing standards for new residential development (Appendix VI, page 213) were adopted on February 16, 1959, with the realization that new development utilizing existing facilities would not be expected to satisfy these high standards immediately. The approval of a subdivision is also conditional upon the provision of certain basic services, such as paved road access and water supply; if the subdivision of land necessitates the construction of road access, then the whole complement of standards is imposed. Finally, the provision of these facilities is made entirely the developer's financial responsibility. This threefold policy has had an appreciable effect on urban sprawl:

(a) Land cannot be subdivided for residential development until the Approving Officer is assured of the provision of adequate facilities and services; irresponsible large-scale speculation in land is discouraged because of the prospects of expenses in providing these services; because of the cost factor, the subdivision of land is likely to be related reasonably to actual demand, so that large tracts of vacant, subdivided urban lots are unlikely to occur.

(b) The high quality standard of services required for subdivided land is an added deterrent to wanton subdivision of

land; because of the quality of standard, and therefore cost, of development in Richmond, the municipality has not attracted so much development as it would have done with a lower, yet "adequate" standard.

(c) The fact that the municipality will not subsidize new residential development by paying for services required is another powerful deterrent for would-be developers and subdividers. The reasoning behind this policy is based on sound principles: urban development entails services whose cost ought to be manifestly obvious and be borne directly by the beneficiaries of the development. Since single-family houses in Richmond do not yield sufficient municipal revenue to cover the cost of servicing, the municipality with justification refuses to promote residential development actively.[12] The municipality further shows no interest in development which cannot stand the test of the market at the standard of servicing required.

Subdivision regulations in Richmond are supplemented by a 'pre-planning' and consulting service by the Planning Department. Sections where residential development is permitted are "pre-planned" inasmuch as a road system is laid out provisionally so that the inconsistencies and anomalies engendered by piecemeal development are kept to a minimum and a reasonable road pattern is assured. Persons wishing to subdivide land are encouraged to consult with the Planning Department in making their plans, so that an exchange of information can take place between subdivider and

Planning Department. Land development criteria evolved over the years enable the planner to suggest changes, if any, fairly quickly and with some assurance; at the same time, approval becomes ascertainable.

The implication of low-density residential development for the provision of school facilities alone was demonstrated in 1960 by the Town Planner for the Residential District II. Its effect was to concentrate much residential development in already serviced and sewered areas; had it not been enacted, an estimated 500 lots would have been created in various sections of the District in the two years since its creation in April, 1958. There would have been at least three concentrations of 100 lots or more, in areas for which school facilities had not been planned; the cost of 3 new school and park sites and three 3 to 4-room schools would have cost some $100,000 for land and another $100,000 for the buildings.

> This same amount of development concentrated by Zoning control in areas where provision had already been made for school facilities could be catered to by the addition of 10 classrooms to existing schools. The cost of this is estimated at $140,000. Without, at this time, considering the many other advantages obtainable from concentrating Residential density, the saving in school costs alone can be conservatively estimated at $150,000, not counting savings in Administration and Maintenance for such new facilities.[13]

c.) Senior Government Policies

Proper land use planning in Richmond has been hampered by the actions of senior governments. Before the municipality had adopted land use controls, the Federal Department of

Veterans Affairs bought tracts of land (beginning in 1943) to settle veterans of World War II on one or one-half acre parcels of land (small holdings). This program constituted, in effect, a concerted effort to promote urban settlement at sprawl densities. In the author's view, the erroneous assumption was made that veterans would care to and be able to farm - from a physical and economical point of view - to any extent on a part-time basis.[14] Part-time farming is feasible only on those small holdings located on good soil in Richmond, for one thing; even where it is feasible, the rear portion of many small holdings lies idle.[15] The favourable market situation and climate in Richmond have certainly helped to promote more part-time farming than can be expected in most other Canadian communities. A much greater effort should have been made in distinguishing between urban settlement (which even in 1942 could be expected to predominate) and true small holdings development. The stated purpose of settling veterans "on small blocks of land outside high taxation areas"[16] shows the lack of appreciation of trends in urban development and in the standard of municipal servicing, because these very semi-rural areas are now in the process of being urbanized and are taxed more heavily.

A second major influence was the liberal dispensation of National Housing Act mortgage money through the Central Mortgage and Housing Corporation. Single-family housing was promoted for a number of years after World War II as an end in itself, not as a basic and formative step of community

building in a rapidly urbanizing country. Even housing was not seen in proper perspective: there was an overwhelming emphasis on single-family housing and complete disregard for variety in housing. There were no requirements with regard to community planning, and those regarding municipal services have been minimum requirements. Basically, community planning and the provision of municipal services is the concern of local and provincial governments, so that there are certain constitutional limits on the freedom of action of a Federal Crown Corporation.

CMHC's subdivision acceptance policy was to "accept" (not "approve") subdivisions for a specific period of years and this "acceptance" meant that NHA loan insurance would not be withheld from the project on the basis of subdivision design within the specified period of years. Occasional subdivision projects have been refused or rejected on the basis of lack of adequate community facilities, but the "policy" is not properly spelled out and things are therefore done on an ad hoc basis. The difficult role of CMHC is to administer a nominal "housing policy", which is in reality an employment policy. The frequent adjustments in the lending policy dictated by the Federal Government, with the 'on-off' effects on residential construction, are not conducive to planning, so that CMHC has a difficult problem in attempting to reconciling its (unofficial) concern for planning with the performance of its duties.

It is suggested that if a Federal policy requiring public sewer connections for NHA houses had been adopted immediately after 1945, coupled with some minimum standards regarding community planning, much of the development in rural and urbanizing areas would not have taken place in the locations and patterns that it did. Indeed, private money would have shied away from areas not sanctioned by CMHC. Richmond is in a fortunate position in that land use controls were introduced before and during the residential construction boom, in that the viability of agricultural activity prevented greater subdivision and building development than did occur, and in that the municipality was able to impose a public sewer requirement on 20 residentially-zoned sections. On the other hand, Richmond residential development has been much more heavily dependent on NHA mortgage money and mortgage insurance than other municipalities in the Vancouver Metropolitan Area, so that the catalytic or retarding effect of the national mortgage lending policy has been potentially more significant here than elsewhere in the area (Table 1, page 137).

There is no doubt that the policy suggested earlier would have enabled Richmond to restrict residential development to the Brighouse area by providing public sewers there, and only there. Large-scale development at that time would have been feasible in this area, since the fragmentation of land would have been much less serious; when the General Residential District 2 was created in 1958, however, the

large tracts of land needed for this type of development were not available in the Brighouse area. It is true that the creation of District 2 "froze" much of the subdivision in 20 sections, and that only larger, fully-sewered subdivisions have been built since then, but it is also true that the channelling of growth into these subdivisions (map 11, page 143) deflected it away from the Brighouse area and created fairly high-density residential areas distant from, and poorly situated with respect to, the centre of the municipality.

Since January, 1961, the insurance of NHA mortgage loans through CMHC has been made conditional upon the provision of public sewer connections. In Richmond this requirement, although it would have been welcomed years before, now serves to frustrate attempts to concentrate population in the Brighouse area. Septic tank development has been quite feasible there and was encouraged to reach a population density which would support a public sewage disposal system. As a result of CMHC regulations, little NHA money has gone into this area; private money coming in is insufficient for anything but development along existing roads. Road frontage is being used up at an accelerated rate so that, sooner than expected, the problem of a static population density in the whole Brighouse area will have to be faced. Concurrently, residential development is being concentrated in, and further raising the density of, sewered subdivisions, all of which are poorly situated with respect to the central Brighouse

area. CMHC complemented its 1961 policy change by making loans available to municipalities for the construction of public sewage disposal systems, hoping to induce more compact settlement in this way. Richmond could take advantage of this loan fund for financing a large-scale public sewage disposal system, to concentrate residential development in the Brighouse area at this time. The Municipality, one gathers, does not like to construct the sewage disposal system at this particular time, possibly for financial reasons associated with other financial commitments (such as the purchase of the Brighouse Estate).

D. CASE STUDY CONCLUSIONS

The combination of direct land use controls employed in Richmond (that is, chiefly residential and agricultural zoning, and subdivision and servicing regulations) to curb urban sprawl and to regulate and improve the use of land has indeed been very effective in preventing the subdivision and development of agricultural land, and in minimizing subdivision and development in sections already touched by urban sprawl. Although urban sprawl has been curbed in Richmond, many sections in Richmond are still at an urban sprawl density and display the symptoms of urban sprawl areas. The land use situation in most residential sections in Richmond is still a mad quilt of urban use, part-time farming or full-time farming, or no use at all. But there is no doubt that large acreages have been protected from urban sprawl and that this is a great accomplishment.

Urban sprawl is such a long-term detriment because areas affected by it are so extensive and their population so low, that it takes many years to develop these areas fully; at the same time, once urban development has occurred, it is there to stay, so that there are usually very limited opportunities in reverting undeveloped land back to agricultural use for a finite or indefinite period. It is for this reason that so many qualifications are attached to the

author's judgment on the Richmond success in curbing urban sprawl. There is no doubt that it will take many years before the inherited effects of urban sprawl of past years can be corrected and it appears that the kind of painstaking but noticeable progress which Richmond has been making is "success", or rather "being successful", as far as the curbing of urban sprawl is concerned.

The striking characteristic of public administration in Richmond is the apparent continuity of public aim, good political leadership, and the quality of administration; the investigation of this phenomenon might well form the subject of a thesis in the field of political science, public administration, sociology or even psychology. The attitude of a community toward its own development and the future are the very base for sound community planning and, by implication, the curbing of urban sprawl. Zoning can then provide a "framework of thinking", as the Assistant Planner put it, crystallizing in a simple, comprehensible form the land use aims of the community. It is necessary to have a good "political Planning Committee", which can relate community needs and reactions to the planning process itself. It goes without saying that qualified staff in all municipal government departments are essential; "planning" must also be a staff rather than a line function, because more than any other local governmental function, its inherent tendency to initiate, suggest and coordinate is stifled in a line function of authority. On all these counts Richmond scores and it

is important to recognize the role these factors play in the success of land use controls in curbing urban sprawl.

Much of what has been said above can be generalized, with the qualifications pertaining to the phenomenon of urban sprawl itself and those pertaining to the Richmond situation. The latter will be recapitulated to facilitate comparison of this case study with others and to enable the characteristics of Richmond to be reviewed more easily by being assembled in one place.

The island location of Richmond, in close proximity to a major city, coupled with the availability of sizeable areas of good agricultural soil and considerable agricultural skill, have helped various types of agriculture to continue operation and resist urban penetration to a considerable degree. The great peat bog in the centre of Lulu Island has, of course, always acted to contain settlement in the western part of the island. The introduction of zoning in 1949 and fairly high servicing requirements between 1949 and 1952, that is prior to any noticeable upswing of subdivision or building activity in Greater Vancouver or Richmond, indicates good government at the time and must have had a certain "conditioning" effect on the community. The establishment of the Planning Department in 1957 may well have been accelerated by the effects of the new 1956 zoning bylaw, which might be nicknamed a residential "overzoning" bylaw. The cumulative effect of these regulations, successive zoning amendments (1958, 1963), and the adoption of new

subdivision regulations in 1959 have resulted in restrictions, not only to urban sprawl, but to residential development generally. The Municipality recognizes the development-retarding effect of its regulations and the urban sprawl problems this creates for some outlying municipalities; Richmond has therefore been a staunch supporter of the Lower Mainland Regional Planning Board of British Columbia in formulating and propounding a Regional Plan, designed to curb urban sprawl on the regional basis, as it should be.

In looking to the future, one can foresee the difficulties involved in making accessible and bringing into active use the dormant rear land in the Brighouse area, of functionally relating the high-density residential subdivisions at the residential perimeter to the center of development, and of correcting many other land use anomalies. In looking back, the progress that has been made in land use planning and control in Richmond can be appreciated especially at this time; the removal of tolls on the Oak Street Bridge and Deas Island Tunnel (April 1, 1964) would have led normally to a new wave of subdivision and residential development activity in Richmond. Instead, the effect of the toll removal is expected to be minor; and even if major development would result, Richmond is prepared for it. By contrast, a neighbouring municipality to the south of Richmond is relatively unprepared for resisting potential urban development or controlling actual development, so that the effect of the toll removal may well be serious.

The case study confirms the suspicion expressed earlier that a "methodology" for evaluating the effectiveness of land use controls in curbing urban sprawl is extremely difficult to devise, and the attempt to do so in this study must be thought to have failed. Wissink maintains that there must necessarily be "a close adaptation to the actual situation met in the field",[17] presumably because urban sprawl takes so many forms and has not been differentiated sufficiently to allow of one approach to studying it. The following quotation supports this view:

> As each section differs in its development because of a development pattern already underway prior to the introduction of zoning, and also differs because of the effect of the original zoning applied to it and subsequent changes thereto, no two sections necessarily achieve the same density of development when they are considered over a given period of time. Each section will gradually alter its composition as it is affected by zoning changes, external form and shape of its parcels, underground services, land use changes, transportation network changes, and changes in demand and desire on the part of its inhabitants over this period of time.[18]

The problems encountered by the author in devising a theoretical evaluation procedure before having had the benefit of the case study, and the insight gained during the study, would suggest that a case study, such as presented in this chapter, or several such studies, needs to be carried out before a meaningful methodology can be attempted.

Reference Footnotes

[1]J. E. Armstrong, Surficial Geology of Vancouver Area, British Columbia, Canada, Department of Mines and Technical Surveys, Geological Survey of Canada (Ottawa: Queen's Printer, 1956), p. 7.

[2]For a more detailed discussion refer to: Lower Mainland Regional Planning Board of British Columbia, Land for Farming (New Westminster: L.M.R.P.B., 1962), p. 38-41.

[3]Richmond Planning Department, Agricultural Statistics, Appendix VII to General Land Use Report, 1961-1981 (March, 1962), mimeo., p. 59.

[4]The Richmond Planning Department conceived of four density categories: 0-50, 50-100, 100-300, 300-640 dwelling units (d.u.) per gross section (=160 acres). 50 d.u. per 160 acres at 3.7 persons/d.u. = 1.15 persons per gross acre. A "section" in local Richmond terminology is a square of land with sides one-half mile long (=160 acres) and is therefore only a "quarter-section" in strictly legal terms.

[5]"Small Holdings" were created by The Veterans' Land Act 1942, R.S.C. 1952, c. 280 (or R.S.C. 1942-43, c. 33, s.1). The minimum size requirements for small holdings parcels have fluctuated between one-half, one, and one and one-half acres. Lots are being described as being of a certain type, such as the "one-acre type".

[6]Refer to Municipal Act, R.S.B.C. 1960, c. 255, sec. 711, ss.1 (e). (Appendix II, page).

[7]The Corporation of the Township of Richmond, Council Minutes (April, 1958), Amendment Bylaw No. 1528, s. 8, ss. c (ii).

[8]In Richmond, farm land and possessed land of Japanese-Canadian "citizens" began to be acquired in 1943. Over 450 "one-acre" type lots were created in VLA subdivisions; most of the building activity took place from 1946 to 1947.

[9]Richmond Planning Department, Density Study, Appendix III to General Land Use Report, 1961-1981 (March, 1962), mimeo., p. 9.

[10]Richmond Planning Department, Agricultural Statistics, p. 3.

[11]ibid., 8.

[12]The imbalance between the actual annual revenue per dwelling and the cost of servicing were given in a mimeographed report of the Richmond Planning Department, on November 16, 1959:

	Cost of Education Per d.u.	Other Services Per d.u.	Total Cost Per d.u.	Average Tax Revenue Per d.u.	Deficit For The Year
1941	$ 21.00	$ 41.00	$ 62.00		
1946	22.00	54.00	76.00		
1951	54.00	94.00	148.00		
1956	66.00	142.00	208.00	$100.00	$108.00
1959	130.00	207.00	337.00	210.00	127.00

* d.u. = dwelling unit

[13]Richmond Town Planning Department, "Financial Savings Obtainable by Controlled Development, with Richmond Examples" (about 1960), mimeo., p. 2.

[14]The Canada Yearbook 1956 (Ottawa: The Queen's Printer, 1957) stated on page 311 that about 80% of the 29,402 active smallholders in Canada had "vegetable gardens which, it is estimated, saved each smallholder an average of $135". These are very modest returns indeed for a whole class of property under the VLA, where in fact the legislation (Veterans' Land Act, 1942-43, C. 33, S.1) had stated "...whereas part-time farming coupled with other employment is an increasingly important aspect of rural and semi-rural life in Canada;...."

[15]A. D. Crerar states that, at least in Greater Vancouver, 90% of the acreage of small holdings acquired under the V.L.A. is not in agricultural use. In: Resources for Tomorrow, Volume 3 (Ottawa: The Queen's Printer, 1962), p. 194.

[16]Canada Yearbook 1943-44, p. 770.

[17]G. A. Wissink, American Cities in Perspective (Assen, Netherlands: Royal Van Gorcum Ltd., 1962), p. 204.

[18]Richmond Planning Department, Density Study, p. 2.

CHAPTER VI

TOWARD A COMPREHENSIVE LAND DEVELOPMENT POLICY FOR CURBING URBAN SPRAWL

A. THE STUDY IN REVIEW

1. SUMMARY OF STUDY

A statement of the significance of the urban sprawl problem and the role of land-use controls in curbing urban sprawl introduces the study and leads to the first two chapters, in which a comprehensive examination is made of controls having the effect of influencing the use of land, and of the phenomenon of urban sprawl. A number of land use controls are then chosen, in the third chapter, for their potential usefulness in curbing urban sprawl; the role, application and effectiveness of these controls are then examined in detail and discussed. The fourth chapter is devoted to a discussion of potential indicators of the incidence of and changes in the character and location of urban sprawl, so that a methodology for evaluating the effectiveness of selected land use controls for their normal, designed purpose can be developed. Although it was not possible actually to devise a method, a simplified procedure for an exploratory evaluation of the effectiveness of land use controls in curbing urban sprawl is presented for use in the case study. In Chapter V an attempt is made to evaluate the effectiveness of land use controls as they are and have been applied in The Corporation of the Township of Richmond to curb urban sprawl. In order to be able to now draw conclusions from the case study and the theoretical investigation earlier, assumptions, scope, and limitations

of the study are reviewed.

2. REVIEW OF ASSUMPTIONS

The basic assumption, that desirable communities cannot be realized except through a rational use of land made possible by proper community and land use planning, is shown to be valid. The assumed undesirability of urban sprawl is demonstrated to exist, and it is indicated further in what way the pernicious implications of urban sprawl are even more significant for the future than they are for the present. The assumption that land use controls can be used to curb urban sprawl has been proved true, naturally with certain qualifications regarding specific applications of land use controls in particular situations. Finally, another assumption was validated: that the problem of urban sprawl is both a regional and local land use problem and that therefore the Provincial Government has the solemn duty to protect the public interest of the region by ensuring the enactment of a land development policy designed to curb urban sprawl.

3. LIMITATIONS OF THE STUDY

The study is limited in scope; that is, only a select number of land use controls are examined in detail, and the simplified method of approach is tested in only one area. The study also has limitations inherent in the subject matter itself. The land use controls which were investigated in more detail cannot really be fully appreciated unless their

relationships with other factors having the effect of influencing the use of land is known, or at least recognized. Also, the attempt to devise a methodology for evaluating the effectiveness of land use controls in curbing urban sprawl failed substantially. The discussion of potential indicators of the incidence of urban sprawl may serve to focus attention on the value and significance of the various indicators considered; the approach to the case study cannot be termed a "method", for no organized procedure or system of thought is proposed.

The case study itself suffers from a lack of information. Much information which might have been profitably used is not available or could not be reached conveniently. The author was thus unable to follow changes in the actual use of land over the years; no analysis is presented of the type, number and location of residential subdivision activity prior to 1958, or its effects on the type and intensity of land use. Although the dormancy of land is a characteristic in urban sprawl areas, and was pointed out as such in the discussion, no detailed quantitative or qualitative analysis is attempted. Then there are the limitations which the special situation of Richmond impose on a general application of the case study: its island location, the viability of agricultural activity in Richmond, and the fact that land use controls were in effect prior to the first subdivision and building boom.

4. AREAS FOR FURTHER STUDY

The effect of indirect land use controls, such as taxation, fiscal policies, and others mentioned in the first two chapters, on urban sprawl ought to be investigated. In fact, urban sprawl is being subsidized in many ways (see Mason Gaffney's paper, bibliography); a knowledge of the amounts of subsidy involved and their effects is necessary for a full understanding of the phenomenon of urban sprawl and its causes. On the other hand, much greater study should be devoted to what Gaffney calls a "neutral containment policy", which is simply the containment (of urban development) effected by gearing municipal servicing, telephone, transportation and any other charges against residential property to the actual cost of service. At the same time, much more study should be devoted to a "positive containment policy", the provision of pleasant and financially acceptable housing in the central city. As has been pointed out in this study, the curbing of urban sprawl is one thing, the encouragement of and insistence on good urban development is another thing, entirely; the former is a pre-requisite of the latter.

The most promising approach to the study of urban sprawl appears to be to pursue the intensive study of "indirect" land use controls and of the "neutral" and "positive" containment policies proposed by Gaffney. Concurrently, efforts must be made to promote sufficient interest in the problem so that the wisest political decisions can

be reached when the choices of urban development emerging from these studies can be clearly presented for decision and policy-making.

5. RELATION OF THEORETICAL APPROACH TO CASE STUDY RESULTS

The theoretical approach generally is valid, especially for an exploratory study of this nature. The actual operation of land-use controls enacted as law seems deceivingly simple, compared to the nuances considered in a theoretical discussion. Since a municipal bylaw generally is not, and probably cannot be, a very technical statement and must apply to larger areas and many different situations, it is too much to expect a number of different objectives to be achieved by one bylaw. It seems important to establish the main goal to be achieved by a particular land-use control and then to accept the fact that a number of subsidiary objectives may not be able to be realized at the very same time.

In a theoretical approach it is natural to presume that a whole range of direct land-use controls would be at one's disposal. In actual fact, new control devices are generally introduced one by one, as experience is gained with land-use controls, their deficiencies become apparent, and the need for new devices arises. The number of zoning districts in Richmond has risen from the initial five (in 1949) to twenty (in 1963), and such districts as the "Planned Residential District" and Neighbourhood Shopping Centre District" are used to encourage good development, rather than

merely prevent undesirable development. Still, there is very much an emphasis on zoning, with which Richmond has had success, and as yet little experimentation with forms of land-use controls not related to zoning, subdivision regulations, and municipal servicing requirements.

B. CONCLUSIONS AND RECOMMENDATIONS

The form of urban development, because of its significance in the present and the future to a rapidly urbanizing society, deserves the attention of all professions. Community Planners are concerned with urban development, as it relates to the use of land, recognizing its general physical, social, economic, psychological and intangible implications. Urban sprawl as one form of urban development is manifestly wasteful of our relatively fixed land resources, especially those in urbanizing areas, and it has therefore received most attention from planners. Understandably, planners, having been concerned with the phenomenon of urban sprawl more than any other profession because its most lasting effect is in the waste of land and in compromising future development, have attempted to devise new land use controls, or to adapt old ones, for curbing urban sprawl in urbanizing areas.

Land use controls are almost always negative in approach: they prohibit. The whole trend in planning has been towards measures aimed at promoting positive planning ideas and objectives. Nowhere is this more necessary than in the case of urban sprawl; so disrupted is the land use pattern by urban sprawl, and so lasting its effects, that the mere curbing of it is entirely insufficient as far as

land use planning is concerned. If the effects of existing urban sprawl are to be minimized or neutralized and if the community is to develop in an orderly fashion, then the curbing of potentially new urban sprawl must be matched by policies and programmes directed at promoting sound, attractive development.

This conclusion can also be reached in another way: since urban sprawl is a form of urban development, and the latter is a phenomenon of our times, the mere curbing of urban sprawl will do nothing to ensure a more desirable form and distribution of development. A policy directed at curbing urban sprawl therefore ought to be a component part of a larger policy having the objective of promoting desirable forms of urban development. Both the problems of curbing urban sprawl and the formulation of goals relating to urban development in general are so important that society as a whole must concern itself with it. It is therefore imperative for each community to consider its approach to urban development and to promote and insist on a sound type of development.

A consideration of land use controls and the phenomenon of urban sprawl reveals that, on a local level, there are a number of land use controls in existence which can be used effectively to curb urban sprawl. Zoning, subdivision regulations, and municipal servicing requirements and policies are three types of controls which can, and have been shown to, curb urban sprawl within a municipal boundary. The

techniques themselves have proved to be simple in operation, although their effects cannot be traced conclusively. It is also difficult to evaluate their effectiveness by truly objective procedures.

The actual initial application of these controls in an attempt to curb urban sprawl may involve a highly political crusade, demanding strategy and good, continuous leadership, whether this is the planner's job or not (there are arguments in favour of either attitude), he may indeed be involved in the political process. The curbing of urban sprawl on a local level is feasible under the existing legislation, but there is no compulsion for it to be done. The argument that the increased efficiency of urban development and the saving of tax dollars should be sufficient incentive or encouragement is impractical because the efficiency argument has in fact not led to the curbing of or concentrated efforts at curbing urban sprawl. The very fact that urban sprawl has progressed in the Lower Mainland of British Columbia, for example, for many years without being curbed positively in a coordinated, concerted manner indicates that a much more positive approach must be devised. The Provincial Government is the responsible body charged with <u>governing</u> the affairs of the province; it therefore has the clear responsibility of ensuring that urban sprawl is curbed and that development takes place in a coordinated, efficient, and attractive manner.

It is suggested that remedial provincial and municipal legislation can be drawn up immediately on the basis of experience gained so far with urban sprawl. The greatest amount of knowledge and experience has been gained in the realm of negative controls, such as zoning and subdivision control. They are certainly the most "accessible" at the present time and fit in best with the existing governmental and administrative framework. Presuming the continued toleration of a large number of independent local governments, the coordination of local controls with regional needs could be undertaken by a regional planning agency with authority to specify the general distribution of land uses.

There is much less experience to date with the servicing principle, which states that only economically serviceable development should be permitted. Area-wide coordination on this principle would be relatively easy, since the type and direction of development could be established far in advance of actual development. Urban growth would be retained inside compact increments contiguous with existing settlement, by abolishing subsidies to sprawl and by initiating an economic graduation of rates for urban services. This type of control over urban sprawl might be called "neutral containment". Considerable research should be undertaken on this principle, for it is sound and basic to proper urban development.

The objective is not merely to curb urban sprawl or to contain urban development, but rather to create that

urban environment which generates the greatest satisfaction. The question of what these specific satisfactions are, and what the environment should be, may well never be resolved, but in the meantime one can be sure that the curbing of urban sprawl is a first and crucial step toward realizing that urban environment.

Proper urban development has significance for society as a whole and is not only a matter of land use. The use of land is furthermore influenced by a number of indirect controls which are beyond the control of local governments, but are within the control and power, and should be the concern of the Provincial Government. Given the pressing need for containing urban sprawl on an area-wide basis, it can be concluded "THAT THE RESPONSIBILITY FOR CURBING URBAN SPRAWL LIES WITH THE PROVINCIAL GOVERNMENT WHICH SHOULD ENSURE THAT ITS MUNICIPALITIES IMPLEMENT A COMPREHENSIVE LAND DEVELOPMENT POLICY".

APPENDIX I

LAND REGISTRY ACT, R.S.B.C. 1960, C.208

APPROVAL OF SUBDIVISION PLANS

(Sections 88 to 98)

Certain designations prohibited on subdivision plans.

85. No subdivision plan shall be deposited which designates the land subdivided as being a city, town, townsite, port, borough, or village, or as a separate part thereof or an addition thereto. R.S. 1948, c. 171, s. 85.

Requirements as to subdivisions.

86. All subdivisions shall comply with the following requirements, in addition to all other requirements contained in this Part:—

(*a*) Necessary and reasonable access to all new parcels and through the land subdivided to lands lying beyond or around shall to the extent of the owner's control be provided by a sufficient public highway, and all existing highways provided for in subdivision plans of adjoining lands or otherwise legally established shall be continued without unnecessary jogs:

(*b*) Where the land subdivided borders on the shore of any navigable water, access shall be given by sufficient public highways to such navigable water at distances not greater than ten chains between centre lines, or, in district municipalities or unorganized territory where the parcels into which the land is subdivided exceed one acre, at distances not greater than twenty chains between centre lines:

(*c*) Suitable lanes shall be provided in continuation of existing lanes and in every case where lanes are considered necessary by the approving officer. R.S. 1948, c. 171, s. 86; 1954, c. 18, s. 3.

Power of Attorney-General to grant relief.

87. The Attorney-General may, upon application supported by statutory declaration, grant relief, either wholly or in part, from a strict compliance with the provisions of section 85 or clause (*b*) of section 86. R.S. 1948, c. 171, s. 87.

Approval of Subdivision Plans

Requirements as to approval of subdivision plan.

88. No subdivision plan shall be received on deposit in any Land Registry Office unless it has first been approved by the approving officer or is ordered to be deposited by order of a Judge of the Supreme Court as provided in section 98. R.S. 1948, c. 171, s. 88; 1950, c. 36, s. 3.

Tender of plan for approval.

89. Where a subdivision plan deals with lands in a municipality, it shall be tendered to the Clerk of the municipality, and where it deals with lands in unorganized territory to the Chief Engineer or the District Engineer of the Department of Highways, for examination and approval by the approving officer, and shall be accompanied by an examination fee of two dollars and a certificate that all taxes which have been assessed on the land subdivided have been paid, and in a case where local improvement taxes, rates, or assessments are payable in annual instalments that all instalments owing at the date of the certificate have been paid. R.S. 1948, c. 171, s. 89; 1961, c. 33, s. 10.

Requirements where plan tendered later than three months after survey.

90. Where a subdivision plan is tendered for examination and approval after the expiration of three months from the date of the completion of the survey, the approving officer may require that the surveyor inspect the survey and satisfy himself that all posts and monuments are in place and that the survey has not been affected by any intervening survey or railway or right-of-way location, and certify the same on the plan by the word "inspected," with the date and his signature. The surveyor may so inspect and certify before the plan is tendered for approval. R.S. 1948, c. 171, s. 90.

Time-limit for approval.

91. (1) Every subdivision plan shall be approved or rejected by the approving officer within a time fixed by regulation of the Lieutenant-Governor in Council.

Approving officer.

(2) The approving officer shall be, in the case of

(*a*) a municipality, the Municipal Engineer, or else an officer duly authorized by the Council of the municipality;

(*b*) unorganized territory, the Deputy Minister of Highways, the Chief Engineer or Assistant Chief Engineer of the Department of Highways, or a person authorized by the Lieutenant-Governor in Council.

(3) Where any subdivision plan relates to land in any improvement district under the *Water Act* or in a local district municipality, the approving officer shall, within seven days after the subdivision plan is tendered for approval, notify the Trustees of the improvement district, or the local district municipality, that the subdivision plan has been tendered for approval.

(4) Where any subdivision plan deals with land in a municipality adjacent to a controlled access highway within the meaning of the *Controlled Access Highways Act*, the approving officer shall not approve the plan unless and until it has first been approved by the approving officer for unorganized territory.

(5) The approving officer for unorganized territory shall not approve a plan dealing with land adjacent to a controlled access highway if it does not conform to the orders and regulations made under the *Controlled Access Highways Act* in respect to the highway. R.S. 1948, c. 171, s. 91; 1949, c. 34, s. 4; 1954, c. 18, s. 4; 1955, c. 39, s. 2; 1961, c. 33, s. 11; 1963, c. 22, s. 3.

Requirements of approving officer.

92. The person tendering a subdivision plan for examination and approval shall also comply with the following requirements, if the approving officer so demands:—

(*a*) Furnish profiles of every new highway shown on the plan and such topographical details as may indicate the engineering problems to be dealt with in opening up the highways shown upon the plan:

(*b*) Furnish a sketch showing that the parcels into which the land is subdivided by the plan can conveniently be further subdi-

vided into further small parcels, but this shall only be demanded if in the opinion of the approving officer the situation of the land is such that there is reason to anticipate its resubdivision. R.S. 1948, c. 171, s. 92.

Extra-municipal lands.

93. (1) In case the lands subdivided are not within a municipality, the approving officer may, at the cost of the owner of the lands, personally examine or have an examination and report made on the subdivision, and may refuse to approve the plan if he considers that

(*a*) the roads shown within the plan are not graded and gravelled to his satisfaction;

(*b*) the land covered by the plan has not adequate drainage installations;

(*c*) the deposit of the plan is against the public interest;

(*d*) the plan does not comply with the provisions of this Act relative to access and sufficiency of highway allowances shown within the plan, and with all regulations of the Lieutenant-Governor in Council in regard to subdivision plans.

(2) The Lieutenant-Governor in Council may from time to time by Proclamation prescribe additional reasons for refusal by the approving officer to approve the plan. R.S. 1948, c. 171, s. 93; 1950, c. 36, s. 4; 1961, c. 33, s. 12.

Lands within municipality.

94. Where the lands being subdivided are within a municipality, the approving officer may refuse to approve of the subdivision where it does not conform to the by-laws of the municipality regulating the subdivision of land. R.S. 1948, c. 171, s. 94; 1954, c. 18, s. 5.

Basis of consideration of highway allowances.

95. In considering the sufficiency of the highway allowances shown upon the plan, the approving officer shall take into consideration whether the land subdivided is

(*a*) business property within cities or towns;

(*b*) residential property within cities or towns or the suburbs thereof; or

(*c*) country lands;

and he shall also consider the configuration of the land, the relation of the highway allowances to any existing main highway or approach, whether by land or water, and any local circumstances, and on the question of width, whether the respective highways shown are likely to be required or used as main roads or as secondary roads, or merely as roads of access to a few parcels, or as lanes. R.S. 1948, c. 171, s. 95.

Grounds for refusing approval of subdivision.

96. In considering an application before him for subdivision approval, the approving officer may hear objections from any interested persons, and may refuse to approve the subdivision if in his opinion the anticipated development of the subdivision would injuriously affect the established amenities of adjoining or adjacent properties or would be against the public interest. R.S. 1948, c. 171, s. 96; 1954, c. 18, s. 6.

Written approval.

97. When the plan is approved, the approving officer shall write thereon "Approved under the *Land Registry Act*," with the date of approval, and shall sign the same and append his official designation, for example, "City Engineer, City of ," or "Chief Engineer, Department of Highways." R.S. 1948, c. 171, s. 97; 1961, c. 33, s. 13.

Appeal to Supreme Court Judge.

98. (1) If the plan has been rejected by the approving officer or has not been approved by him within the time limited by section 91, the owner of the land covered by the plan may, within twenty-one days after receipt by the person who tendered the plan for approval of the notice of the approving officer's refusal to approve the plan, or in a case where the plan has not been approved within the time limited by section 91, within twenty-one days after the expiration of that time, appeal to a Judge of the Supreme Court in Chambers in a summary way by petition, which shall be supported by an affidavit of the owner or his solicitor or agent, stating fully and fairly all the material facts of the case, and that to the best of the information, knowledge, and belief of the deponent all facts and things material to the application for approval have been fully and fairly disclosed.

(2) The approving officer shall be served with the petition, together with copies of all material and exhibits proposed to be used on the hearing.

(3) At least ten days' notice shall be given of the time and place of hearing, and at that time and place all parties interested (whether served with the petition or not) may appear and be heard.

(4) The Judge may make any order he sees fit as to the notification of other parties of the hearing, and upon the hearing he may make such order in the premises as the circumstances of the case require, and may order that the plan be deposited if it is otherwise in order, and may make such order as to costs of the parties appearing on such petition as he may see fit. R.S. 1948, c. 171, s. 98; 1950, c. 36, s. 5.

Deposit of Subdivision Plans

Time-limit for deposit of approved plan with Registrar.

99. Every plan shall be tendered for deposit with the Registrar within sixty days after it has been approved by the approving officer, or within such further time as the Registrar, on application made to him before the expiration of the time allowed for deposit, may from time to time for sufficient cause allow. If the plan is not so tendered for deposit within the time allowed, the approval of the plan shall be deemed to be revoked. R.S. 1948, c. 171, s. 99; 1955, c. 39, s. 3.

Power of Lieut.-Governor in Council to forbid deposit of plan.

100. The Lieutenant-Governor in Council may at any time, whenever it appears that the deposit of a subdivision plan is against the public interest, and whether the same has been approved or has not been approved, and notwithstanding such right of appeal, instruct the Registrar not to receive the plan on deposit. R.S. 1948, c. 171, s. 100.

APPENDIX II

MUNICIPAL ACT, R.S.B.C. 1960, C.255

DIVISION (4).-SUBDIVISION OF LAND

(Sections 711 to 711 A)

(*d*) with respect to matters mentioned in subsection (3) of section 705 and subsection (7) of section 711.

(2) Notification of the appeal shall be given by the Board to the owners and occupiers of all real property located adjacent to the property with respect to which the appeal is being heard, and public notice of the hearing shall be given if the matter is deemed by the Board to be of sufficient importance.

(3) The decision in writing of all or of a majority of the members of the Board is the decision of the Board.

(4) An appeal lies to a Judge of the County Court from a decision of the Board under clauses (*a*) and (*b*) of subsection (1), but all other decisions of the Board are final and binding. 1957, c. 42, s. 706; 1958, c. 32, s. 311; 1960, c. 37, s. 30; 1961, c. 43, s. 44; 1962, c. 41, s. 30.

Expenses of Board.

710. (1) No member of a Zoning Board of Appeal shall receive compensation for his services other than allowances for actual expenses necessarily incurred in the discharge of his official duties.

(2) The Council shall include in its annual budget such sums as are necessary to defray the expenses of the Board. 1957, c. 42, s. 707.

Division (4).—Subdivision of Land

Regulations concerning parcels, zones, and highways.

711. (1) The Council may regulate the subdivision of land, and for that purpose may by by-law

(*a*) regulate the area, shape, and dimensions of parcels of land and the dimensions, locations, alignment, and gradient of highways in connection with the subdivision of land, and may make different regulations for different uses and for different zones of the municipality;

(*b*) prescribe minimum standards with respect to the matters contained in clauses (*a*) and (*d*);

(*c*) require that a proposed subdivision

(i) be suited to the configuration of the land being subdivided; and

(ii) be suited to the use to which it is intended; and

(iii) shall not make impracticable the future subdivision of the land within the proposed subdivision or of any adjacent land;

(*d*) require that the highways within the subdivision be cleared, drained, and surfaced to a prescribed standard, but excluding the construction of sidewalks and boulevards;

(*e*) where the municipality has a sewage-disposal system, require that a sewage-collection system be provided in accordance with standards set out in the by-law, make provision for the connection of the system with the established sewage-disposal system of the municipality, and provide that the lands included in the subdivision shall be exempt from, but only

from, the charges imposed in the municipality for works of a like nature for a period of time calculated to be sufficient to amortize the actual cost of the collection system computed at an interest rate not exceeding four per centum per annum; but if the municipality requires that any main of such collection system be of a diameter in excess of that required to service the subdivision, the municipality shall assume and pay the cost providing the excess capacity.

(2) Subject to section 713, the owner of land being subdivided shall provide, without compensation, land for highways in accordance with a by-law under subsection (1).

(3) Every approving officer shall give due regard to and take cognizance of any official community plan when dealing with applications for the approval of any plan of subdivision.

(4) The approving officer may refuse to approve a subdivision plan if he is of the opinion that the cost to the municipality of providing public utilities or other municipal works or services would be excessive.

(5) In addition to any other powers exercisable or exercised under this Act, the Council may by by-law require that where the nearest boundary of any land proposed to be subdivided is two thousand feet or more in distance, or such greater distance specified in the by-law, from an established trunk water-main or a trunk sanitary sewer, or both, provision be made by the owner of the land for the installation of water-mains or sanitary sewers, or both, including trunk water-mains or trunk sanitary sewers, or both, from such established trunk water-main or trunk sanitary sewer, or both, in and to the proposed subdivision, according to minimum standards prescribed in the by-law.

(6) A by-law under subsection (5) may provide for the sharing of the cost, or any portion thereof, of any trunk water-main or trunk sanitary sewer, or both, between the municipality and the owner of the land proposed to be subdivided.

(7) Where land proposed to be subdivided is in an area of the municipality zoned for agricultural, rural, or industrial use, an appeal lies to the Zoning Board of Appeal from the enforcement of any provisions of a by-law enacted under subsection (5), and the provisions of clause (*c*) of subsection (1) of section 709 shall, mutatis mutandis, apply. 1957, c. 42, s. 708; 1958, c. 32, s. 312; 1960, c. 37, s. 31; 1961, c. 43, s. 45; 1962, c. 41, s. 31.

Examination.

711A. (1) Where a physical examination of lands is required, the approving officer may, at the cost of the owner of the land proposed to be subdivided, personally examine or have an examination or report made on the proposed subdivision, but the owner shall not be charged an amount greater than one-tenth of one per centum of the assessed value of the land included in the subdivision as shown on the real-property assessment roll at the time of subdivision.

APPENDIX III

MUNICIPAL ACT, R.S.B.C. 1960, C.255

HEALTH AND WELFARE

(Sections 634 to 636)

(*b*) to expend moneys for the purpose aforesaid within the amount appropriated therefor by the Council; and

(*c*) to expend other moneys lawfully received by the Commission for the purpose aforesaid.

Name of. (2) The Commission to whom powers are granted under subsection (1) shall, upon and after the adoption of the by-law, be known as the "Parks and Recreation Commission" or "Civic Properties and Recreation Commission," as the case may be. 1958, c. 32, s. 291.

PART XVIII

HEALTH AND WELFARE

Restriction. **633.** Except for sections 636, 637, 638, and 639, this Part does not apply to a local district. 1957, c. 42, s. 633.

Division (1).—Health

Regulation, control, and penalties. **634.** (1) Subject to the *Health Act*, the Council may by by-law

(*a*) regulate persons, their premises and their activities, to further the care, protection, promotion, and preservation of the health of the inhabitants of the municipality;

(*b*) make regulations to prohibit the creation of insanitary conditions;

(*c*) require any person to remedy or remove any insanitary condition for which he is responsible, or which exists on property owned, occupied, or controlled by him.

Chlorination and fluoridation of water. (2) Subject to the *Health Act*, the Council may undertake such measures as are deemed necessary for the preservation of public health and the maintenance of sanitary conditions in the municipality, including the chlorination and fluoridation of the water-supply.

Assent of electors for fluoridation. (3) Notwithstanding subsection (2), the Council shall not fluoridate the water-supply unless and until three-fifths of the electors who vote on the question are in favour of fluoridation.

Approval of Deputy Minister of Health. (4) Any regulation made by or contained in any by-law adopted under subsection (1) is not valid until approved by the Deputy Minister of Health, who is hereby empowered to consider and deal therewith accordingly. 1957, c. 42, s. 634; 1958, c. 32, s. 292.

Application to Judge for order to abate conditions dangerous to public health. **635.** A Judge of the Supreme Court or a Judge of the County Court may, upon the certificate of the Medical Health Officer, or any person fulfilling the duties of a Medical Health Officer, appointed by any municipality, stating that there exists, in his opinion, serious apprehension of an epidemic breaking out within the municipality or of the spreading of any contagious or infectious disease of a serious character, and that there exists a real necessity for urgency, and upon the evidence by affidavit of such Medical Health Officer or other person as aforesaid as to the existence of danger to the public safety or health, declare any building, structure, or erection of any kind, or any drain, ditch,

watercourse, pond, surface water, or any other matter or thing in or upon any private lands, street, or highway, or in or about any building or structure, a nuisance and dangerous to the public safety or health; and, further, may upon motion made to him, with such notice to the owner or occupier of any of the premises aforesaid (if any) or otherwise as he may direct, and after hearing the parties (if any) appearing thereupon, make such mandatory or other order as may be deemed necessary for the abatement of such nuisance; and, further, may by such order name the time within which the same shall be obeyed or complied with and by whom, and in default of compliance may order that anything in the said order directed or required to be done may be done under the direction of the said Medical Health Officer or other person, and by the same or a further order may determine who shall bear and pay the costs and expenses incidental thereto, and the cost of any application made under this section. 1957, c. 42, s. 635; 1958, c. 32, s. 293.

Establishment of hospitals.

636. (1) The Council may by by-law, with the assent of the owner-electors, establish a public hospital within the meaning of the *Hospital Act*, and for that purpose acquire, by purchase, lease, or otherwise, accept, and hold real and personal property either within or without the municipality.

Establishment of nursing homes, isolation and chronic hospitals.

(2) The Council of a city, town, or district municipality may by by-law, with the assent of the owner-electors, establish an isolation hospital, a nursing home, or a hospital for treatment of chronic cases, and for such purposes, or any of them, acquire, by purchase, lease, or otherwise, accept, and hold real and personal property.

Health centres.

(3) The Council of a city, town, district, or village municipality may by by-law establish a health centre, and for that purpose acquire real and personal property by purchase, lease, or otherwise and accept and hold real and personal property.

Operate and improve hospitals and like institutions.

(4) The Council may, on any property acquired or held for any or all of the purposes mentioned in subsections (1), (2), and (3), construct, maintain, operate, improve, and use buildings and other improvements and provide any necessary accommodation, facilities, or equipment therefor.

Establishment of board of management.

(5) The Council may by by-law establish a board of management to operate any or all of the institutions mentioned in subsections (1), (2), and (3), whose members shall serve without remuneration, and the Council may delegate to the board such administrative powers of the Council as the Council deems expedient, but not extending to or including any of the powers of Council which are exercisable by by-law only.

Establishment of health services.

(6) The Council may provide any health services to and for the inhabitants of the municipality operated in conjunction with any or all of the purposes mentioned in subsections (1), (2), and (3) as the Council deems expedient. 1957, c. 42, s. 636; 1958, c. 32, s. 294.

APPENDIX IV

SOIL CLASSIFICATIONS

Class	Index Rating	Soil description
I	-	Very good soils with level topography, very few stones, desirable structure and moisture holding capacity; above average in fertility and capable of producing sustained yields of all climatically suited crops.
II	55+	Good soils with uniform characteristics but having slight deductions for one or more factors; capable of producing good crops under moderately good management practices.
III	39 to 54	Fair soils with moderate deductions for several soil factors; slight crop limitations, and good management practices required for satisfactory returns.
IV	25 to 38	Fair to poor soils, generally limited for some crops; low productivity may be due to need for irrigation, drainage, fertilizer or other intensive management practices.
V	0 to 25	Poor to doubtful soils, for the most part not suited for general farming purposes; cultivation and productivity restricted because of steep slopes, stoniness, coarse textures resulting in droughtiness, low fertility or need of extensive drainage work; may be made productive when there is considerably more demand for land or newer and better methods of farming are developed. In most instances they do have value as forest or range lands.*

*Source: Lower Mainland Regional Planning Board of British Columbia, Land for Farming (New Westminster: L.M.R.P.B., 1962), Table 8, p.38.

APPENDIX V

SUGGESTIONS RELATING TO OBJECTS AND POLICIES TO BE ESTABLISHED CONCERNING THE DEVELOPMENT OF THE MUNICIPALITY OF RICHMOND

The Corporation of the
Township of Richmond.

RICHMOND, B. C.

Planning Department,
7th December 1959

Reeve and Council,
Municipality of Richmond

OBJECTIVES OF A COMMUNITY DEVELOPMENT PLAN

The general objective may be considered as being:-

1. Its consideration as a statement of policy and a programme designed to encourage and to promote the orderly and economic growth of the Municipality and having regard to:

   (a) The prevention of sprawl and similar uneconomical development.

   (b) The maintenance of stability in property values.

   (c) The provision of adequate and necessary Municipal services.

   (d) The provision of satisfactory recreational facilities.

2. Its consideration as a means of translating such policies into a practical plan suited to the physical conditions of the area and establishing means of implementing these policies.

   All resulting in the preservation of as desirable an environment as can possibly be achieved in which to live, work and play and thus promote the best public interest.

The following suggestions should be considered as applicable to basic policies, which have some direct bearing on the spatial designation of the various land use areas. They are generally dealt with under the major use categories, and are forwarded for your consideration.

Respectfully submitted

Wm. Kerr
Town Planner

7th, Dec. 1959.

RESIDENTIAL

We have seen from previous studies and reports that for a considerable time period our critical development problem has been in the realm of the economics pertaining to residential growth.

It is also evident that by our "Suburban" character there seems no relief in sight in this field.

It can also be said that the burden faced in Residential expansion is largely created by the accepted necessity for, and the costs of Education.

It is well known that strong attempts are being made to obtain a measure of relief in school costs by representation to senior levels of government to assume a more equitable share of these costs, and it is to be hoped that these efforts will be continued and ultimately rewarded.

As well as efforts such as this, we must, however, be prepared to do everything possible at our own level to ensure orderly and economic development. This in itself will greatly ease the burden of Servicing Costs to the Community.

A major factor in ensuring a development growth that is in the best public interest will be our Land Use Plan.

In order therefore to ensure the maximum use of existing services and to minimize public expense in the provision of new facilities the following basic policies regarding future residential development is suggested:-

1. That wherever possible residential growth be directed into areas considered most economical from the public viewpoint by reason of

(a) Minimum public expenditures required to provide desirable Municipal services including fullest use of existing services.

(b) Minimum public expenditures required to provide educational facilities with the following precedence:-

(i) Areas where additions can be made to existing schools.

(ii) Areas where new buildings might be necessary but where sites have already been acquired or are provided for in current referenda.

2. That efforts be made to obtain the co-operation of Central Mortgage and Housing Corporation to ensure that mortgage lending areas are compatible with our Land Use Zoning.

3. That an attempt be made to ensure that areas where development can be encouraged are expanded only after the need or demand for additional sites can be demonstrated.

4. That, in order to facilitate the building up of partially developed residential areas, where increase of density is desirable, assistance be given where necessary to encourage land consolidation schemes either by co-operative ventures or formal re-plotting schemes, and that consideration be given to use of all available powers to assist such schemes.

5. That as much flexibility as possible be introduced to our legislation to encourage the development of a balanced community, offering a variety of residential accommodation suitable to fulfill the demands of all ages and income groups.

6. That, in order to effect the greatest possible degree of stability in urban development and land values, necessitating controls beyond our own boundaries, the concept of a Regional Plan be supported.

Such an implement, amongst many other advantages, would control uneconomic sprawl and the trend to decentralize land development in the search for cheaper land and lower standards of services, in turn leading to a demand for greater highway expenditures to relieve the congestion of commuter traffic. It would also be a means of ensuring that vital and valuable agricultural land is conserved and not prematurely lost.

7. That insofar as electrical and telephone utilities are concerned our policy be to continue the exploration of ways and means to have these put underground and for the present that dwellings be served from the rear of lots wherever practicable.

In support of the foregoing suggestions it is pointed out that, at present, and considering our Residential and Small Holdings Zoned areas we are accommodating some 32,000 of our population in approximately 35% of the areas so zoned.

Very broadly the balance could accommodate anticipated growth for some 15 to 20 years.

This means that for a protracted period of time we encourage our uneconomical density of population, and require a large percentage of our residents to contend with deadend roads and utilities, inefficient and unsatisfactory public transit facilities, and inadequate and inconveniently located local shopping outlets.

As far as school facilities are concerned, it is understood that a 10 to 12 room elementary school can be considered the most desirable, economically and operationally.

Low densities encourage too many small two to five room schools. We presently have some five such schools within our developable area.

For example, in any relatively undeveloped quarter section, the opening up of 100 lots, amounting to some 20% of the potential would require a two-room school.

Including land at present values, this entails an expenditure of some $58,000.00, whereas the channelling of 100 lots into an already partially developed area might only occasion

the addition of two rooms to an existing school at a cost of perhaps $20-25,000.00.

We can, in the next five years, look forward to an elementary school enrolment increase of some 2100, necessitating some 60 to 70 additional classrooms and it is felt that, with proper control, it may be possible to provide the accommodation by extension to existing schools and the construction of new facilities only on sites already provided for.

In regard to density and as an example, the Broadmoor area, while not entirely developed, generates a gross density of 3.1 dwellings per acre and a net density of 4.4 dwellings per acre. This results in a gross of approximately 12 persons per acre which is a minimum desirable inconsidering transit and shopping facilities, etc. This quarter section is, so far, the densest residential development in the Municipality.

INDUSTRIAL DEVELOPMENT

In this field and considering the general slowness of Industrial expansion in the Province, we can lay claim to obtaining our share.

One of the main factors to be combatted concerning Industrial development is the often excessive values placed on raw land.

This has had the effect, on occasions, of forcing Industry to acquire perimeter land with the resultant pressure on the Municipality to rezone and provide services.

It is felt that our basic policy here should be to:-

1. Encourage and promote such developments only where adequate Municipal services can be provided and to extend services only on a programmed basis when the need to open up additional land is shown.

   It is felt the above policy would be more easily maintained if 2 below is also considered.

2. Where it can be demonstrated that any bona-fide industry is deterred from locating in the Municipality by the excessive cost of land that

   (a) We be prepared to mediate and negotiate with the parties concerned to the extent of, perhaps, establishing a competent appraisal of the property value at our expense, or on a similar basis to the present policy of providing informative briefs to Industries.

   Or

   (b) When all other methods fail, we should be prepared to consider expropriation.

COMMERCIAL DEVELOPMENT

It is felt that Commercial development, which is very largely dependent upon residential growth be generally encouraged within the following policy framework:-

1. That Brighouse and especially No. 3 Road between Westminster Highway and Granville Avenue be encouraged to develop as our Central Shopping and Business district, with special study being given to ways and means of "opening up" the considerable area of presently zoned land on the east side of No. 3 Road.

2. That, dependent on a need being shown by sufficient increase of residential density, neighborhood type convenience centres as a local service to residents be considered.

3. That the Central Commercial Area in Steveston be specially studied.

RECREATIONAL DEVELOPMENT

It is suggested that the following be considered as basic policies.

1. That where practicable local park and recreational facilities be combined with school uses and school sites.

2. That the following minimum standard of recreational facilities be considered desirable.

   (a) For active recreation space, three acres per 1,000 population.

   (b) For passive recreation space, one acre per 1,000 population.

   (c) For a community park -
   (I) Adjoining a high school - 20 acres
   (II) Separate - 33 acres

   (d) For a Neighborhood Park -
   (I) Adjoining an elementary school - 7 acres
   (II) Separate -12 acres
   (These standards are as previously presented in the 1957 report by the L.M.R.P.B. - "Schools and Parks for Richmond").

   (e) That special natural features, for example, beach areas be preserved and acquired at the earliest time.

3. That current efforts be maintained to ensure the preservation and development of Iona Island for recreational purposes.

4. That the concept of a "breathing space" be kept in mind when consideration is given to suitable land use for some $\frac{1}{2}$ mile south of Steveston Highway and $\frac{1}{4}$ mile East and West of the Deas Island Tunnel Thruway.

AGRICULTURAL DEVELOPMENT

In view of the concensus of all logical estimates of projected population growth and the necessity to control development density as a means of achieving an orderly and economic growth, it can be seen that for a very considerable period of time a major portion of our Municipality will be best utilized for farming.

One senses, particularly in the Greater Vancouver area,

an unfortunate philosophy indicating that a farm use of land can be considered interim. This may be reflected in a lack of incentive to make the fullest use of such areas.

It seems necessary that we consider Agriculture as a most important industry and especially an industry that is not over demanding in its servicing requirements.

With such a thought in mind, our policy could be:

1. To advocate an up-to-date economic analysis of farming in the Region. This might be considered a base study leading to a Regional Land Use Plan.

2. To encourage consolidation of suitable land into economically workable units.

3. To explore all possible means, including assessment and tax bases to encourage a profitable continuance of farming as a means of livelihood.

GENERAL

1. Capital Budgetting.

   It is greatly to be hoped that having weighed the various land use and development policies which have been suggested, Council will give the most careful consideration to the adoption of a policy requiring Capital works borrowing to be based on, say a five year programme instead of the present ad-hoc system.

   This is considered essential to the orderly operation and implementation of our long range Development Plan.

   It might also be adopted as a policy that, where the Municipal Act might be at variance with this concept, the necessary legislation be sought to make it possible.

2. Community Appearance.

   During the last three years our efforts have largely been directed towards rationalizing the physical and economic facets of Community Development.

It is now respectfully suggested that it would be timely to give serious consideration to policies designed to encourage neighborhood beautification and involving such matters as Street tree planting, boulevard maintenance, etc.

APPENDIX VI

THE CORPORATION OF THE TOWNSHIP OF RICHMOND

Richmond Municipal Offices,

Richmond, B. C.

NOTES FOR THE INFORMATION AND GUIDANCE OF LAND OWNERS, SUBDIVIDERS AND LAND DEVELOPERS RELEVANT TO THE SUBDIVISION OF RESIDENTIAL LAND WITHIN THE MUNICIPALITY OF RICHMOND

Planning Department,

September, 1961.

1. GENERAL

The subdivision of land to thereby create new and additional sites for dwelling units is an extremely important aspect of the proper planning and development of any community.

A foremost thought in the mind of any person proposing a subdivision of land must necessarily be that they are contemplating an action which is, for all practical purposes, a permanent thing.

Viewed in this light the formal processes leading up to the final act of a new plan being registered, while, perhaps, appearing complex and time consuming, assume their proper focus.

There is considered to be sufficient documentation in existence to make all concerned property owners aware of the pit-falls and problems that can be caused by premature or improperly planned and controlled development and it is not the purpose of this brochure to enlarge on these particular factors.

In our municipality, and especially in our residentially zoned areas, the transformation from a predominantly rural to a suburban residential community is well advanced.

This necessarily brings in its train the need for a fairly high standard of urban services and in the general public interest these are required to be installed by any subdivider and subsequently assumed by the municipality for perpetual maintenance.

2. DEFINITION

In Richmond we consider Residential Subdivisions in two categories - MAJOR and MINOR and their definition, which is not based on area or dimension is as follows:

A MAJOR SUBDIVISION - is a subdivision which requires for purposes of access to or beyond any parcels or lots being created the construction of any new roads and services.

A MINOR SUBDIVISION - is one where lots or parcels are created, properly served by access and utilities from existing roads and services, (For example the simple division of a large lot into two parts).

3. ZONING

It has to be appreciated that the notes in this publication presuppose that the land proposed for subdivision is correctly zoned for Residential Development.

As you are no doubt aware the permitted uses of land are detailed in the Municipality's "Zoning By-Law" No. 1430 and Amendments thereto. Copies of the Zoning By-Law are obtainable from the Municipal Clerk's Office for the nominal charge of $2.00 and maps showing the actual lands within each zoning category may be inspected at the Municipal Offices.

4. SUBDIVISION STANDARDS

The standard of servicing required for Residential Subdivision, together with detailed Engineering Specifications, are set forth in the "Subdivision Control By-Law No. 1639". Copies of this By-Law are also obtainable from the Municipal Clerk's Office at a price of $2.00. Certain other requirements are to be found in By-Law No. 1316.

The following summary regarding minimum lot sizes and services required is published for your information and for that purpose has been extracted from the various By-Laws.

N.B. THE PREVAILING STANDARDS FOR GENERAL RESIDENTIAL DISTRICTS I AND II ARE SIMILAR BUT IT IS EMPHASIZED THAT NO DWELLING CAN BE ERECTED IN GENERAL RESIDENTIAL DISTRICT II UNLESS IT CAN BE CONNECTED TO A MUNICIPAL SANITARY SEWER EXCEPT UPON A LOT REGISTERED AT THE LAND REGISTRY OFFICE PRIOR TO APRIL 8, 1958.

5. MINIMUM LOT DIMENSIONS

Zone	Frontage	Depth	Area	Remarks
Gen. Res. I	66' for rectangular lots - for non-rectangular lots 50' at street line and require 66' width at 30' set-back	115'	7920 sq. ft. except if on sewer then 7,000 sq. ft.	N.B. in all cases average width of 66' must be achieved
Gen. Res. II	"	-	7,000 sq. ft. since no building permitted unless on sanitary sewer.	"

Zone	Frontage	Depth	Area	Remarks
Small Holdings	-	-	1/2 Acre	Frontage determined by compliance with Sec. 712 of the Municipal Act.
Agricultural District	330'	-	5 Acres	

NOTES:

1. The above lots are for single family dwellings only. In General Residential District I and II but NOT in Small Holdings or Agricultural Districts lots to accommodate duplex dwellings may be created if complying to the following dimensions:

Minimum frontage - 80'
Minimum area - 12,000 sq. ft. without sewer
9,600 sq. ft. with sewer

2. In Residential District I where a lane is provided at the rear of lots, the area can be reduced to 7,260 sq. ft.

3. In addition to standards set by the Municipal By-Laws all lots and parcels require to comply with Section 712 of the Municipal Act which states in part:

"A prescribed minimum frontage shall not be less than one-tenth of the perimeter of the parcel".

In our Small Holdings District this implies a minimum frontage of 74' - 75'.

In special cases this provision can be waived by an affirmative vote of at least two-thirds of all the members of the Municipal Council.

6. STANDARD OF SERVICES

In connection with subdivision for residential purposes in the various zones shown above the following municipal services are specified:

A. (1) Storm drainage by storm sewer.
(2) Concrete curb and gutter.
(3) Sidewalks - one side of internal roads residential.
(4) Paved roads - 26' asphaltic surface on specified base.
(5) Water supply - minimum diameter of main - 6" and includes provision of valves, fire hydrants, etc.

(6) Finished boulevards - shaped and graded.
(7) Street lighting - ornamental type.
(8) Lanes (where required) - 16' wide compacted gravel.
(9) Walkways (where required) - 8' compacted gravel base with 5' wide asphaltic strip.

B. Electrical power, gas and telephone service are installed by the respective Utility Companies and pole lines are to be located in back of lot lanes or easement wherever possible.

NOTES

1. Where lanes required 20' wide allowance is necessary.
2. Where walkways are required 10' wide allowance is necessary.
3. The full cost of all the works detailed above and required in any major subdivision is required to be borne by the subdivider.
4. The installation of hydro, gas and telephone utilities is arranged with the Utility Company concerned.
5. The requirement for lanes and walkways will be determined during the designing of the subdivision and the subdivider is advised that where lanes are not required easements in favour of the municipality and/or a Utility Company will be requested for the installation of services above and below ground at the rear of lots.
6. Road allowances are as follows:
   Main roads - 80'
   Secondary roads - 66'
   Access roads - 56'
   This latter can be taken as the normal internal subdivision road.
7. Where a utility easement is required, it will normally be of 20' width.
8. From the foregoing, the reader will doubtless realize that, at least insofar as a major subdivision is concerned, there are numerous factors requiring to be considered and ironed out even before any subdivision proposal can be set down on paper.

   The Planning, Engineering and Financing Considerations can readily be seen to involve the subdivider with all municipal departments.

   Whilst the formal approval of a subdivision rests with the Approving Officer designated by statute, we alone cannot evaluate the subdivision without advice from all departments in the municipal administration and from various other interested bodies.

In the Municipality of Richmond the Town Planner is the Approving Officer and the Planning Department is the co-ordinating agency for subdivision processing.

9. The following section of this brochure sets forth details of the procedures adopted in Richmond, leading to final approval and registration of new subdivision plans.

   The procedure is designed to help and expedite a subdivider's application, but it should be realized that time is required to properly analyse and process an application.

   Your co-operation and compliance with the requirements for study and submission of your application will be sincerely appreciated and will expedite your application to its final approval.

Author's personal comment: The instruction continues for another eight pages; the tone and content of this excerpt indicates the approach to planning and public relations on behalf of planning in Richmond.

APPENDIX VII

NET DWELLING UNIT INCREASE AND NEW RESIDENTIAL LOTS (1955 TO 1963) IN...

BLOCK 4 NORTH, RANGE 6 WEST: TABLE 4

BLOCK 4 NORTH, RANGE 7 WEST: TABLE 5

BLOCK 5 NORTH, RANGE 6 WEST: TABLE 6

SUMMARY TABLE: TABLE 7

APPENDIX VII

TABLE 4

NET DWELLING UNIT INCREASE AND NEW RESIDENTIAL LOTS IN BLOCK 4 NORTH, RANGE 6 WEST

1955 - 1963

	1955		1956		1957		1958		1959	
BLOCK	*	**	*	**	*	**	*	**	*	**
2			1							
3	1									
4	2		2		2		9	9		1
5										
6										
7										
8	10				2		1		1	1
9	20		15		9		25	9	16	8
10	1						2	1	7	2
11	3		1		3		1			
12	1						1	2		4
13	1		2				1	1		
14			3		1					
15	4		1		5		12	6	4	
16	12		8		3		10	6	9	6
17	15		3		8		2	2	3	4
18	80		28		9		29	47	36	3
19	9		27		8		27	35	11	4
20	13		17				36	40	2	1
21	106		23		14		5		8	73
22			2		4		7	7	0	3
23									2	1
24					1		2			
25					3		49	2	59	4
26	3						72		12	
27	59		41		44		45	53	23	
28	10				1		106	81	52	15
29	38		105		161		38	81	47	
30	8		3		10		9	7	8	3
31	3				2		3			
32	11		38		43		14	1		
33	16		8		1		17		18	
34	31		31		19		18		7	
35	66				1		118	84	99	163
36	6		2				3		66	
TOTAL	529		361		354		662	474	490	296

Note: * Dwelling Units
** Residential Lots

Figures of new subdivided residential lots not available before 1958.

Source: Richmond Planning Department and Building Department Records.

TABLE 4--Continued

1960		1961		1962		1963		Total	
*	**	*	**	*	**	*	**	*	**
								1	-
	1				2			1	3
4	2	2	1			3	3	24	15
			2				2		4
								-	-
						102	592	102	592
	1				1	265	5	279	8
4		6		14	2	7	9	116	28
2	2	1	1			2	4	15	10
								-	-
		1		2	4	1	4	6	14
4	2	1		2	1		1	11	5
	1					1		5	1
3	1	3	4	4	1		3	36	15
7	1	3	3	2	3			54	19
2		3				2	2	38	8
2		9	1	15		15		223	51
1	2	2	1	5		2		92	42
3	3	8	5	2	3	8	1	89	53
19	3	20		5	1	6		206	77
5	5	3	5	4	3		3	25	26
1	1		1					-	3
2	2				1	3		8	3
5								116	6
	1		1					87	2
10	1	12		7		2		243	54
3	1	3	2	2	3	2		179	102
9		20		4		10		432	81
6	4	5	1	2		4	2	55	17
2				3	4	1		14	4
				2	1	1		109	2
2		1	1		1			63	2
2		5		5	1	2		120	1
16		11	111	43		12	2	366	360
13		5		7		18		120	-
127	34	124	140	130	32	467	633		

APPENDIX VII

TABLE 5

NET DWELLING UNIT INCREASE AND NEW RESIDENTIAL LOTS IN BLOCK 4 NORTH, RANGE 7 WEST

1955 - 1963

BLOCK	1955		1956		1957		1958		1959	
	*	**	*	**	*	**	*	**	*	**
1							1	1		1
2	10		9				49	1	9	5
3										
4	1						2			
9	1									
10	1		1				1		4	
11	19				2		2		1	
12	7		6		3		2	2	5	3
13					2		25	72	89	100+
14	3		13		9		14	2	6	
15	4				3		2	15	6	
16										
21S										
22			40		54		134		94	
23	9				1		25	66	25	1
24	4				7		35	140	62	33
25	5		2		18		13	4	5	4
26	10		10		17		29			2
27S					69		209	210	257	167
28										
33										
34							1			
35			1							1
36	3				6		2		3	
TOTAL	77		82		191		546	513	566	317

Note: * Dwelling Units
** Residential Lots

Figures of new subdivided residential lots not available before 1958.

Source: Richmond Planning Department and Building Department Records.

TABLE 5--Continued

1960		1961		1962		1963		Total	
*	**	*	**	*	**	*	**	*	**
1	1							2	3
	6		2		5	6	6	83	25
								-	-
								3	-
								1	-
		1						8	-
1		5		4		2		36	-
1	3	1	1		4	2	1	27	14
30	1	6	12	8	2	5	3	165	190
1	1	1		1	2	1	1	49	6
		7		1		3		26	15
								-	-
								-	-
45		73		36		100		576	-
7		6		4	2	1		78	69
14	4	20	5	21	1	24		187	183
2	2	4	4	1	1	1	1	51	16
2		2		3		4	1	77	3
26		20	1	9		17		607	378
			1					-	1
					7		26	-	33
								1	-
								1	1
	1	1	3	2	2	2	8	19	14
130	19	146	29	90	26	168	47		

APPENDIX VII

TABLE 6

NET DWELLING UNIT INCREASE AND NEW RESIDENTIAL LOTS IN BLOCK 5 NORTH, RANGE 6 WEST

1955 - 1963

BLOCK	1955		1956		1957		1958		1959	
	*	**	*	**	*	**	*	**	*	**
7										
15										
17										
18										
19										
20										
21									1	5
22	10		3		3		1		1	1
23	1						4	3	5	2
24			1		1		2			1
25	6		3		4		1		1	3
26	23		10		8		24		6	3
27	4						2	3	4	4
28			1				1			
29										1
30										
31										
32	1									
33	2				1		75		16	2
34	5		2		2		1	1	2	1
35			2		1		2	2		2
36	16		15		14		31	55	29	5
TOTAL	68		37		34		134	64	65	30

Note: * Dwelling Units
** Residential Lots

Figures of new subdivided residential lots not available before 1958

Source: Richmond Planning Department and Building Department Records.

TABLE 6--Continued

1960		1961		1962		1963		Total	
*	**	*	**	*	**	*	**	*	**
	1							-	-
	1							-	1
								-	-
								-	-
								-	-
	1							-	1
			1				2	1	8
		1	1		1			20	2
	4	3	2	4	12	3	7	20	30
			1	1				5	2
	1	2		2		1		18	4
	3			2	1	3		76	7
	5	2	4	1	2	2		15	18
	1			1	1	3		6	2
								-	1
								-	-
								-	-
								1	-
		2	1	10		5	1	111	4
	1	2			3	2		16	6
	2	1	1	1				7	7
	11	1	1	3	3	5		114	75
	30	14	12	25	22	25	10		

APPENDIX VII

TABLE 7

SUMMARY TABLE SHOWING NET DWELLING UNIT INCREASE AND NEW RESIDENTIAL LOTS IN RICHMOND BY BLOCK AND RANGE 1955 TO 1963

BLOCK	1955		1956		1957		1958		1959	
	*	**	*	**	*	**	*	**	*	**
3 - 5	1		-		-		-		Negligible	
3 - 6	2		-		-		1		1	4
3 - 7	15		11		19		46	39	38	14
4 - 4	4		2		1		3		1	2
4 - 5	20		8		18		17	1	17	1
4 - 6	529		361		354		662	474	490	296
4 - 7	77		82		191		546	513	566	317
5 - 4	3		2		-		-		Negligible	
5 - 5	2		18		10		8	2	7	
5 - 6	68		37		34		134	64	65	30
5 - 7	4		1		8		3		8	
TOTAL	725		522		635		1,420	1,093	1,193	664

Note: * Dwelling Units
** Residential Lots

Figures of new subdivided residential lots not available before 1958.

Source: Richmond Planning Department and Building Department Records.

TABLE 7--Continued

1960		1961		1962		1963		Total	
*	**	*	**	*	**	*	**	*	**
-		-		-		-		1	-
2		1	3	-		-		7	7
16	3	5	3	8	4	27	10	185	-
	3	1		2		1	1	15	6
5	4	5	2	8	6	6	11	104	25
127	34	124	140	130	32	467	633	3,244	1,609
130	19	146	29	90	26	168	47	1,996	951
								-	-
2	1	2	2	5		2	5	56	10
	30	14	12	25	22	25	10	402	168
3	2	1		1		-	1	29	3
285	96	299	191	269	90	695	718		

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