

This is a detailed topographic map of the Terrace, British Columbia area. The map features the Skeena River flowing through the center, with Terrace Mountain to the west. Key locations labeled include Terrace, Thornhill, Ferry Island, and Brauns. The map shows various land parcels with their respective lot numbers and elevations. Notable features include the Skeena River, Terrace Mountain, and the surrounding urban and rural areas. The map is oriented with North at the top.

REGIONAL DISTRICT OF KITIMAT - STIKINE

SECOND PRINTING

The Thornhill Official Settlement Plan was first printed prior to introductory readings of the by-law. Amendments made during the process of adoption and subsequent amending by-laws, namely R074-1980, R342-1980, R130-1981, R238-1981, R391-1981 and Amending By-law No. 193, are included in this second printing.

Since the Thornhill Official Settlement Plan was adopted on November 15, 1981, some changes have occurred in the information base. Where these changes are part of the text, they have been indicated by notation in the margins. Where map changes were required, a notation has been placed on the map page indicating the date of revision.

READ a first time this 24th day of November, 1979.

READ a second time as amended this 19th day of September, 1981.

A Public Hearing in respect of this By-law was held the 15th day of April, 1981.

READ a third time this 19th day of September, 1981.

APPROVED by the Ministry of Municipal Affairs on the 15th day of October, 1981.

RECONSIDERED AND FINALLY ADOPTED the 14th day of November, 1981.

Original signed by
John Pousette
Secretary-Administrator

Original signed by
Lee Ellis
Chairman

REGIONAL DISTRICT OF KITIMAT-STIKINE

BY-LAW NO. 132, 1979

A By-law to establish an Official Settlement Plan for Electoral Area "E" of the Regional District of Kitimat-Stikine.

WHEREAS pursuant to Section 809 of the Municipal Act the Regional District of Kitimat-Stikine is required to prepare Official Settlement Plans;

AND WHEREAS the requirements of Section 810 of the Municipal Act for the preparation of an Official Settlement Plan have been duly met;

NOW THEREFORE the Regional Board of the Regional District of Kitimat-Stikine, in open meeting assembled, enacts as follows:

1. This By-law may be cited as "Thornhill Official Settlement Plan By-law No. 132, 1979, for Electoral Area 'E' of the Regional District of Kitimat-Stikine."
2. The attached text entitled "Thornhill Official Settlement Plan" and Schedule 'A' attached thereto comprise the content of the Thornhill Official Settlement Plan and forms part of this by-law.

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District of Terrace
District of Stewart
Village of Hazelton
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B.C. Hydro

B.C. Telephone

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Pollution Control Branch

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THORNHILL OFFICIAL SETTLEMENT PLAN
SUMMARY OF OBJECTIVES, POLICIES, AND PROJECTS

A. OBJECTIVES:

It is the Objective of the Board of the Regional District of Kitimat-Stikine

- O: I 9(1) to provide a viable residential environment for a stable long-term resident population
- O: I 10(1) to indicate areas intended for growth and development within the Settlement Plan time frame
- O: I 11(1) to indicate the preferred sequence for the development of general areas
- O: II 2(1) to encourage the protection of natural drainage courses from pollution and stagnation
- O: II 3(1) to discourage the development of land which endangers the health and/or safety of residents
- O: II 4(1) to encourage, where suitable, the retention and enhancement of natural vegetation and forest cover
- O: II 5(1) to encourage the preservation of significant fish and wildlife habitat
- O: III 1(1) to encourage the rational development of land
- (2) to optimize land use
- O: III 2(1) to preserve existing and potential farmlands for agricultural uses
- O: III 3(1) to provide residential land for a wide spectrum of varying life-styles
- (2) to encourage the provision of guidelines for the safety and health of residents

- O:III 3(3) to provide orderly growth and development of residential areas within the boundaries of Thornhill
- (4) to plan for steady growth while providing contingencies for rapid growth
- O:III 4(1) to provide for commercial facilities in Thornhill which reflect the goals and aspirations of the community
- O:III 5(1) to encourage industrial developments compatible with the aspirations of the community
- O:III 6(1) to have adequate land set aside to allow for the provision of a wide range of community and institutional land uses
- O:III 7(1) to encourage the preservation of environmentally sensitive areas in their natural state
- O:III 8(1) to restrict the development of areas isolated by natural features and/or special constraints
- O: IV 1(1) to strive towards improved infrastructure servicing for Thornhill
- O: IV 2(1) to provide community water services to all areas of Thornhill
- O: IV 3(1) to encourage the disposal of sewerage in a safe and sanitary manner
- O: IV 4(1) to encourage the provision of adequate surface and sub-surface drainage
- O: IV 5(1) to encourage the provision of a safe and efficient vehicular circulation and transportation system to all developed areas of Thornhill
- (2) to encourage the provision of pedestrian and bicycle systems in Thornhill
- O: IV 6(1) to have utility services provided to all areas of Thornhill

B. POLICIES:

It is the Policy of the Board of the Regional District of Kitimat-Stikine

- P: I 9(1) that planning for the settlement area of Thornhill shall be based on stable slow growth conditions with contingencies for rapid growth
- (2) that population growth shall be encouraged to localize in designated areas
- P: I 10(1) that the main emphasis on the direction of growth during the Settlement Plan time frame shall be towards infilling and development of presently built-up areas
- P: I 11(1) that the priority of development shall be as indicated on the Land Use Plan
- (2) that if an area of higher priority as indicated in P: 11(1) above does not proceed with the development of the area, then the preference for development shall be placed on the area of next lower priority
- P: I 12(1) that Detailed Planning Areas shall be designated on the Plan Map
- (2) that no development or subdivision shall occur in a detailed planning area except in accordance with an approved Detailed Plan adopted by the Regional District Board
- (3) that where the designation of Detailed Planning Areas applies to existing built-up areas, all property owners in the Detailed Planning Area shall be given the opportunity to participate in the formulation of the Detailed Plan
- (4) that a Detailed Plan shall be a subdivision layout or development scheme which refines provisions of the Settlement Plan for land uses, density, vehicular and pedestrian circulation, and phasing of development.

- P: II 2(1) that the use or diversion of natural drainage course alignments for the elimination of surface and sub-surface drainage run-off shall be encouraged
- (2) that land uses adjacent to natural drainage courses shall be as identified on the Land Use Plan
- P: II 3(1) that land within flood-prone zones shall be restricted to compatible uses such as agriculture, wildlife reserves, parks, recreation areas, and greenbelts unless riverbank protection measures and/or flood-proofing of structures below the critical floodplain elevations meet the criteria outlined by the Ministry of Environment
- (2) that residential land uses within floodplain zones shall be discouraged
- (3) that, where there is no alternative to development on floodplain, and where mobile homes or buildings to be used for habitation, business, or the storage of goods damageable by floodwaters are to be located or constructed in any area liable to flooding, such buildings or mobile homes shall be adequately floodproofed in accordance with flood-proofing requirements of the Ministry of Environment, and these requirements shall be contained in the appropriate implementing by-laws
- P: II 3(4) that uses requiring placement of fill in river channels or floodways or contributing to debris or effluent discharge into river channels shall generally be discouraged; however, where circumstances require placement of fill or effluent discharge, developments shall conform to pollution control standards of the Ministry of Environment
- (5) that the retention of natural vegetation along water courses shall be encouraged
- (6) that, where planned development or disposal of wastes is to take place near an aquifer which provides, or may in the future provide, a source of water supply for the community, the development shall conform to standards and criteria of the Ministry of Environment

- (7) that building development adjacent to cutbanks shall remain a safe distance away from the cutbanks in accordance to guidelines and regulations of the Ministry of Environment and the implementing by-laws of the Regional District
- (8) that living trees, vegetative ground cover, or soil shall not be removed from any designated open space or cutbank if the instability or potential for erosion of such areas is increased
- P: II 4(1) that lands benefitting from the growth of a stable tree cover such as escarpments, along water courses, and other environmentally sensitive zones shall be protected and enhanced
- (2) that existing forested land identified for its recreation potential shall be encouraged for conservation by means of appropriate land use designations
- (3) that existing trees shall be retained, where possible, to serve as a buffer between differing land uses, and between residential dwellings and traffic arterials
- P: II 5(1) that areas of significant fish and wildlife habitat shall be protected by means of appropriate land use designations and encouragement of adherence to regulations of appropriate agencies
- (2) that building or development in proximity to fish habitat shall adhere to Section 31(1) of the Federal Fisheries Act
- P: III 1(1) that calculations, for the purpose of evaluating subdivision proposals, shall be based on developable area

- P:III 2(1) that lands designated as "Agricultural" on the Land Use Plan shall be reserved for agricultural uses unless exempted by the Agricultural Land Commission
- (2) that all uses and subdivision of ALR land, except those exempted under Section 11(1) of the Act shall be in accordance with the provisions of the Agricultural Land Commission Act, regulations thereto, and orders of the Commission
- (3) that, in the event land is excluded from the Agricultural Land Reserve, the land shall remain in the "Agricultural" designation unless and until the lands are redesignated by by-law amendment
- P:III 3(1) that land use patterns shall be organized so as to minimize the cost of providing infrastructure services
- (2) that land use efficiencies shall be encouraged
- (3) that the provision of services to Thornhill shall be encouraged
- (4) that various types of residential lands shall be provided through appropriate land use designations
- (5) that areas indicated on the Land Use Plan as lower priorities may, in the event of rapid growth, be encouraged to develop

- P:III 3A(1) that different areas within Thornhill shall be provided to allow for varying qualities of urban residential neighbourhoods
- (2) that multi-residential development shall be discouraged until a community sewer system is installed
- (3) that new urban residential subdivisions shall be provided with at least the following services: community water, paved streets, drainage, street lights, electricity, and telephone
- (4) that the Horseshoe area be identified as an area of future urban residential development
- (5) that residential expansion in the Horseshoe area shall be preceded by a careful examination of the impact of residential development on water flows, percolation rates, and drainage requirements
- (6) that the Kirkaldy area shall be identified as an area of future residential expansion
- (7) that the Bench area shall be identified as an area of future residential development
- (8) that the development of the Bench area shall progress in a gradual and incremental manner; unless, in the event of rapid growth, Policy III:3(5) shall apply
- P:III 3B(1) that rural residential lots shall be provided to accommodate rural life-styles
- (2) that rural land uses shall be provided in the Queensway, River Drive, Bench, and Horseshoe areas
- (3) that permanent rural residential areas and transitional rural residential areas shall be provided

- P:III 3B(4) that the rural option shall provide for both active and passive rural uses
- P:III 4A(1) that the development of the Central Commercial area shall reflect the form of future political restructuring
- P:III 4B(1) that a limited number of neighbourhood commercial or convenience stores shall be permitted within residential neighbourhoods so as to provide accessible and convenient commercial services to residents in the neighbourhood
- (2) that those uses which cater to the day to day needs of residents shall be permitted on neighbourhood commercial sites
- P:III 4C(1) that highway commercial uses shall be permitted on the northwest side of Highway 16 along the frontage road
- P:III 5(1) that light industrial development shall be encouraged in designated locations as shown on the Land Use Plan
- (2) that industrial uses shall be located so as to minimize conflict with other land uses
- (3) that industrial uses shall be screened or buffered from other land uses
- (4) that existing industrial uses in nonindustrial areas which are incompatible with surrounding land uses shall be encouraged to relocate in sites designated for industrial use
- (5) that land along River Drive shall be encouraged to evolve as a light industrial area
- (6) that the excavation for gravel shall occur only in designated areas and in accordance with a pit development and reclamation scheme
- (7) that the pit development and reclamation scheme shall be developed in consideration of natural features and planning objectives for the community
- (8) that gravel pits shall be developed and reclaimed so as to allow the land to be used in a productive or amenable manner

- P:III 6(1) that appropriate government agencies shall be encouraged to set aside adequate land for future community and institutional uses
- (2) that lands to be dedicated for community and institutional uses shall be provided in convenient and appropriate locations
- (3) that a hierarchy of parks and open spaces shall be provided for a variety of recreational uses
- (4) that the development of new subdivision areas shall dedicate lands for use as tot lots and neighbourhood parks, and these lands shall be comparable to the average useable land in the parcel to be subdivided
- (5) that land uses in the Horseshoe portion of D.L. 373 shall be the subject of detailed investigation prior to the release of public lands
- P:III 7(1) that areas indicated on the Land Use Plan as "Open Space" shall be encouraged for preservation in their natural state
- P:III 8(1) that areas designated on the Land Use Plan as "Restricted Development" shall be provided expert opinion as to the safety and accessibility of and to the development and adjacent areas
- (2) each subdivided lot shall contain at least one reasonable building site; and, where lots are created which do not have a building site, these lots shall be dedicated as open space
- (3) that land uses on "Restricted Development" areas shall be compatible with adjacent land uses and in accordance with the overall Plan
- (4) that the approval of "Restricted Development" areas shall be at the discretion of the approving authority

- P: IV 1(1) that new subdivision developments shall provide services comparable to or superior to that of the existing level of servicing
- P: IV 2(1) that the areas of lower elevation capable of being serviced by community water shall, all other factors being equal, be given priority in development
- (2) that the subdivision of land and the provision of water lines shall be designed in a manner which allows the accommodation of future infrastructure services and installed to the standards of the Regional District
- (3) that the developer shall be responsible for all off-site and on-site costs of providing community water services to the development area
- (4) that off-site development costs for the development of D.L. 839, 1905, 1907, and S.W. part of D.L. 4000 shall, in addition to the requirements of Policy IV:2(3), also include an appropriate portion of the total cost of trunk main along Krumm Avenue
- (5) that the ownership of the water lines and ancillary equipment for water distribution shall be turned over to the Regional District upon completion of the development
- (6) that the quality of water shall be in compliance to standards established by the Ministry of Health
- (7) that the quantity of water shall be sufficient to provide for fire reserve requirements in addition to domestic needs and shall be subject to requirements of the Controller of Water Rights under the Water Utilities Act and the Ministry of Health
- P: IV 3(1) that where no community sewerage system exists, minimum parcel sizes and density of dwelling units shall, in addition to planning requirements, be in compliance to standards established by the Ministry of Health and/or the Ministry of Environment

- P: IV 3(2) that the location of servicing lines within public rights-of-way be cognizant of future lines to be located in the same right-of-way
- P: IV 4(1) that the resolution of drainage problems shall be conducted in cognizance of potential long-term settlement patterns
- (2) that the creation of drainage courses shall, where appropriate, follow natural drainage courses
- P: IV 5(1) that adequate roadways shall be provided to allow for functional transportation circulation within Thornhill
- (2) that development(s) with access onto designated highways shall be subject to the regulations of the Controlled Access Highways Act
- (3) that each subdivided building lot shall be provided with access to a public right-of-way
- (4) that public transportation modes and terminals for use of residents in the settlement area shall be encouraged
- (5) that new subdivision areas shall provide pedestrian and bicycle systems which are segregated from the vehicular system, and that the provision of pedestrian and bicycle systems for presently built-up areas shall be considered in neighbourhood plans
- P: IV 6(1) that appropriate agencies shall be encouraged to provide utility services to all areas of Thornhill
- (2) that corridors for energy and utility easements shall be coordinated with planned uses of the land

C. PROJECTS AND FURTHER STUDIES:

1. Natural Drainage Courses

The unnamed creek at the base of the Horseshoe escarpment has stagnated into an unpleasant swamp. Action should be taken by the appropriate provincial ministry to re-open this natural channel to allow for proper drainage.

2. Fish and Wildlife Habitat

The portions of Thornhill Creek below Thornhill Falls have been identified as fish habitat. The CanCel Reload operations should be cognizant of their impact on fish habitat and on the intended future uses of land adjacent to Thornhill Creek. Efforts should be made to re-claim this area. The lands identified as "open-space" on the Land Use Plan should be restored to their natural state to reduce the impact on fish habitat.

3. Agricultural Land Reserves

- a) Areas which are not considered suitable for agricultural purposes due to terrain or natural features are indicated on the Land Use Plan for other land uses; however, the ALR designation is still in force. Exclusion of these lands from the ALR should follow further discussions with the Ministry of Agriculture and landowners involved; and, the procedures for exclusion should be in accordance with procedures prescribed in the Agricultural Land Commission Act.
- b) There is a need to refine the designation of ALR boundaries within the boundaries of Thornhill. It is recommended that the Agricultural Land Commission investigate the designation of ALR lands in Thornhill for specific boundaries with regard to agricultural capability and intended land use planning for the settlement area.

4. Central Commercial

Since the decision for future political restructuring of Thornhill may alter the pattern of commercial development in Thornhill, the central commercial area should be the subject of further study after political re-structuring takes place.

5. Hang Gliding

Thornhill Mountain, due to its steep cliffs and updrafts, is one of the best mountains in B.C. for this sport. Further investigation should be conducted to determine the future of hang gliding, potential aerial conflicts with aircraft traffic, and the land requirements for landing and observation sites in Thornhill.

6. Community and Institutional Lands

A large portion of D.L. 373 in the Horseshoe area adjacent to the existing school and community grounds is owned by the Crown and is presently undeveloped. This area should be designated as an area for further study. The study should be a detailed examination of future school and community requirements, and it should determine the specific allocation of land for institutional, community, and residential uses. Since the land use allocations may be dependent on whether Thornhill is amalgamated with Terrace or is incorporated independently, it is recommended that the study be conducted after the decision for political restructuring.

There is a Ministry of Transportation, Communications, and Highways reserve pending on a portion of D.L. 373 in the Horseshoe area. The reserve is intended for use as a gravel pit. As this is incompatible with intended future use as park and residential, the reserve should be lifted.

7. Restricted Development

The area surrounding the intersection of Highways 16 and 25 should be an area of special consideration since development in this area is constrained by a number of natural and manmade features including the proximity to the river, steep escarpments,

and access onto major arterials. There are small pockets of flat bench lands adjacent to the arterials which potentially are capable of development; however, the constraints of the aforementioned features would likely influence or be influenced by the type of development. This area should be considered as a special area and detailed investigation should be conducted to determine the best allocation of land uses in the vicinity with regard to the natural features and the plans for future expansion of the transportation system.

8. Infrastructure Servicing

The completion of the community water system to the areas in 1980 will make more water available for domestic use. This may influence water tables and seepage rates for septic tanks and tile fields. Present regulations (By-law #37) permit reduced site area if either community water or community sewer is provided. This allows for further subdivision and infilling of developed areas resulting in increased densities. This trend may hasten the time frame for which a community sewer system would be required. The provision of a community sewer system over the spread out area of Thornhill is a costly venture. As the population of Thornhill increases in the future, it is likely that increased residential densities will occur. A community sewer system would be required sometime in the future.

The establishment of a community water system requires the breaking of road surfaces, trenching, and re-surfacing the road. Ideally, the community water and sewer would be laid simultaneously to minimize the cost and disruption; however, the cost of both sewer and water is prohibitive at this time. Depending on the timing of a community sewer system, the road surface would in the future require breaking of paved surfaces, trenching, and resurfacing. The location of water and utility lines must be laid so as to allow the future sewer lines to be laid in the same rights-of-way.

Drainage in Thornhill is presently handled by means of open ditches alongside road surfaces. Culverts are laid where driveways cross the open ditches. In localized areas where ponding of drainage channels occurs, dry wells are established to retain runoff water until it seeps into the ground. The dry well method is an interim

solution which is adequate while development is sparse and there are sufficient open areas to allow the bulk of seepage to occur in a natural manner. As future development and increased population densities evolve, other solutions such as a storm sewer system will be required to handle drainage.

After the community water system is installed and in use, a study should be conducted to determine the effects of increased water usage on water tables and absorption capabilities.

A comprehensive review of methods for handling drainage in Thornhill should be conducted by the responsible provincial Ministry. The study should address the resolution of present and future drainage problems and it should determine threshold levels when adequate infrastructure servicing will be required.

9. Roads and Transportation

A study on the Greater Terrace Transportation Network was undertaken by the Ministry of Highways and Public Works in 1978. The study identified future major arterial alignments for the Greater Terrace area. Some of these alignments link onto existing road patterns in Thornhill. Some details of the study require further investigation. These are:

- a. intersection of Old Lakelse Lake Drive and Crescent Street
- b. intersection of Crescent Street extension (Creek Street) and Krumm Avenue.
- c. cross sectional details of Old Lakelse Lake Drive up the side of the escarpment and the effects of road widening on adjacent lots.
- d. Krumm Ave. extension between Highway 25 and Queensway Drive
- e. investigate the provision of another access into Kirkaldy Subdivision.

Some existing intersections require upgrading and resolution of alignments to permit better traffic circulation and safer intersection details. These are:

- a. the vicinity of Highway 16, Paquette Avenue, River Drive, and Old Lakelse Lake Drive
- b. the intersection of Old Lakelse Lake Drive, Clarke Street and Sande Avenue.

10. Neighbourhood Plans

Although the population of Thornhill with some 4,500 residents is of sufficient size to be considered a single neighbourhood unit, the land area with 4,100 acres and delineated by steep escarpments, arterials and water courses is large enough to warrant further breakdown into smaller units for study.

Four 'neighbourhood' areas are identified for further study. These are the Queensway, Kirkaldy, Central Horseshoe and Bench areas. The Central Horseshoe includes both the Horseshoe and River Drive areas due to the concentration of interrelated commercial and industrial functions.

A Neighbourhood Plan would be an investigation of land use patterns which takes the framework provided by the Settlement Plan and provides detailed plans for the neighbourhood. The Neighbourhood Plan would address such features as threshold densities, housing mixtures, pedestrian systems, location of neighbourhood parks, neighbourhood commercial services, orientation of buildings, aesthetic continuity, streetscape, neighbourhood dynamics, etc. Neighbourhood Plans shall be included as addenda to the Thornhill Official Settlement Plan.

The formulation of the Neighbourhood Plan should be conducted with a high degree of resident involvement. It should reflect the aspirations of residents for the quality of living environment. It should indicate the type of residential environment the residents want and it should provide a framework for how this can be achieved.

I. INTRODUCTION

I. 1 PLAN BOUNDARIES

The boundaries of the Settlement Plan area of Thornhill were established in June, 1975 with the formation of Electoral Area "E" of the Kitimat-Stikine Regional District. Thornhill is bordered on the north and west by the Skeena River and by legally designated lines on the south and east. The area contained within Thornhill and its relationship to adjacent areas is shown on Map 2.

I. 2 RELATIONSHIP TO THE REGIONAL PLAN

Objectives and Policies contained within the Thornhill Settlement Plan are subsequent to Objectives and Policies of the Regional Plan of the Kitimat-Stikine Regional District pursuant to Section 796A of the Municipal Act.

(Regional Plans were eliminated by Municipal Amendment Act, 1983)

I. 3 INTERPRETATION OF THE PLAN

"Planning is essentially a process of anticipating change in land use and determining how best to manage or influence the expected changes...An official settlement plan is a document embodying a statement of the intended future development of a particular area. It should be a flexible tool, responsive to change, which will serve as a guide to day-to-day decision making."¹

The Thornhill Official Settlement Plan is intended to provide broad land use guidelines for the orderly development of the settlement area. Overall land use patterns have been developed in consideration of natural features and planning principles. Boundary situations should be interpreted as general and not specific. For development purposes, the exact location of boundaries between differing land uses should be investigated with site specific information.

Land use designations indicated on the Land Use Plan, Schedule A of the Official Settlement Plan, are generalized for purposes of conceptual land use organization. Detailed land uses are to be as designated on the implementing documents.

¹ Technical Guide for the Preparation of Official Settlement Plans by the Ministry of Municipal Affairs

Policies are categorized under appropriate sections. Some policies may apply to categories other than those under which they are stated. For purposes of brevity, and to avoid repetition the policies have not been restated; therefore, it should be interpreted that policies are generally applicable and not that the policies apply only to the section under which they are stated.

Where contradictions in policies occur for particular situations, the interpretation should be at the discretion of the approving authorities.

I. 4 TIME FRAME

The time frame of a settlement plan is for a 5-10 year period. Considerations for longer term development have been taken into account; however, changes in growth rate, the socio-economic climate and life-style aspirations can change over time. Therefore, the Settlement Plan should be reviewed in five years time. Constant monitoring of evolving land uses and population trends should be an integral part of the planning process.

I. 5 LOCATION

The unorganized area of Thornhill (latitude $54^{\circ} 28'$, longitude $128^{\circ} 35'$) is located 430 air miles north of Vancouver, 90 miles inland from Prince Rupert and adjacent to the District Municipality of Terrace. The boundaries of Thornhill are defined by the Skeena River to the west and north which separates Thornhill from Terrace, and by agricultural, forested and rural land along the east and south sides.

I. 6 CLIMATE

The settlement of Thornhill is located within the West Coast marine climatic zone. The climate of Thornhill is influenced by its location at the junction of the Skeena and Kitimat Valleys and by its proximity to the Skeena River and Thornhill Mountain. The north-south oriented valley ending in the Douglas Channel, causes a funneling effect, producing strong winds from storms in the Gulf of Alaska and strong north winds from Arctic outbreaks. Winters are mild, with only three months, December, January, and February averaging below freezing temperatures. The mildness of the Thornhill climate is illustrated by an average 140 frost-free days per year, compared to 74 in Hazelton and 68 in Prince George. Total precipitation per year averages 52 inches.

I. 7 SETTLEMENT TRENDS

The Settlement of Thornhill began in 1892 when Tom Thornhill settled next to what is known as Little Canyon on the east side of the Skeena River. Little growth took place in the area until 1907-1914 when a flurry of activity was associated with the construction of the Pacific Northern and Omineca Railroad speculative subdivision in the area. The townsite of Copper City was created in 1908 as a result of this speculation. This townsite can still be identified today by several existing dwellings located along Highway 16 East just before the Copper River.

When the Grand Trunk Pacific railroad was built down the Skeena River to Prince Rupert instead of the Copper and Kitimat Valleys to Kitimat, growth in the area concentrated around Terrace, instead of Thornhill which was on the other side of the river from the railroad.

The settlement area of Thornhill began as a scattering of home sites and farms along the then existing roadways: Queensway Drive, Old Lakelse Lake Drive, and the old Highway 16 alignment (now River Drive). These farms and homesteads flourished with fruit orchards, berry patches, and market gardens. Transportation was negligible during this era and the farms and homesteads depended on local markets.

Queensway Drive originally provided trail access to Lakelse Lake by Dorman Road (now Krumm Avenue). It also provided wagon access to the farming communities of Old and New Remo. Queensway Drive still provides access to Old Remo, but construction of Highway 16 to Prince Rupert during World War II eliminated the need of this route for New Remo residents. Queensway Drive also provided access to the Terrace airport, constructed during World War II. This was the only access to the airport until completion of Highway 25 in the 1960's.

Queensway Drive, because of the availability of water and the general fertility of the land, attracted homesteaders to locate along this route. During the 1940's and 1950's these farms and homesteads were further subdivided into smaller holdings to accomodate general growth in the Terrace area. At this time, Terrace was still a very small community, only several blocks in area, with most of the area population scattered around the perimeter of the community on homesteads and farms.

In projecting population over the long run, it can only be assumed that the ups and downs of growth are evened out into a fairly consistent growth rate. The annual rate of population increase in Terrace during the 1961 to 1976 period has been 3.7%. This period is long enough to have seen the economic boom period of the early '60's and the relatively depressed period of the mid 70's. It should be fairly representative of the up and down growth cycle of Terrace.

Growth rates within and adjacent to Terrace have not been uniform. Between 1961-1971, the annual growth in Terrace was 6%, whereas the rural population (Census Subdivision C) tripled over the same time period. Subdivisions at Gossan Creek, Kleanza Creek, Copperville Estates, and along Kalum Lake Drive, established in the 1960's, now have populations in the range of 1,100 people. From an estimated 500 people in 1961, Thornhill grew to 4,000 by 1971, reaching a maximum of about 6,000 people in 1974. The population dropped to 4,023 in 1976.

At the present time, growth in Thornhill and Terrace is comparable, but an economic surge in either Terrace or Kitimat could again stimulate rapid development of unorganized residential areas. Lower taxes, cheaper land, larger lots, and freedom from by-laws and building regulations provide incentives to locate outside the Municipality despite lower service levels.

Greater Terrace Area

Population 1976

<u>Area</u>	<u>Population</u>
Thornhill	4,023
Jackpine Flats	128
Lakelse Lake	263
Subdivisions-Highway 16 East	580
Usk	196
New Remo	148
Old Remo	30
Kitsumkalum	60
Kalum Lake Drive	484
Terrace	<u>10,251</u>
TOTAL	16,163

The table below indicates population targets by sub-areas of Thornhill. These population targets are intended to reflect the proposed land uses as indicated in the Settlement Plan.

TABLE 2.2 - PROJECTED POPULATION
by Sub-Areas of Thornhill

Area	Year		
	1979	1990	2000
1. Horseshoe	1900	2200	2800
2. Kirkaldy	700	700	1400
3. Queensway	900	1200	1650
4. Bench	850	2400	3000
5. Peripheral	50	100	150
TOTALS	4400	6600	9000

It is the Objective of the Board of the Regional District of Kitimat-Stikine

O: I 9 to provide a viable residential environment for a stable long term resident population.

It is the Policy of the Board of the Regional District of Kitimat-Stikine

P: I 9(1) that planning for the settlement area of Thornhill shall be based on stable slow growth conditions with contingencies for rapid growth

9(2) that population growth shall be encouraged to localize in designated areas.

I. 10

DIRECTIONS OF GROWTH

It is the Objective of the Board of the Regional District of Kitimat-Stikine

O: I 10(1) to indicate areas intended for growth and development within the Settlement Plan time frame.

Presently built-up areas of Queensway, Horseshoe, River Drive, Kirkaldy, and Bench areas are spread out over wide distances separated by natural land forms and major transportation corridors. These areas are sparsely developed with vacant areas between developed lots. This results in costly infrastructure servicing and inefficiencies of land use.

Thornhill is evolving to a stage of development where major infrastructure servicing may be required. The provision of these services will be costly, if not prohibitive, unless cohesive organization of land use patterns takes place.

At the present time there is sufficient vacant land available at projected growth rates to accommodate population increase for most of the Settlement Plan time frame.

Availability of Residential Lots through infilling

	<u>Urban</u>	<u>Rural</u>
Kirkaldy	33	--
Horseshoe	27	24
Bench	92	4
River Drive	--	12
Queensway	<u>54</u>	<u>17</u>
TOTAL	206	57

Infilling of existing vacant lots could accommodate an estimated increase of 263 units, or a population of 1000 at 3.8 persons per unit. Using an estimated population of 4,600 in 1977 and an assumed annual growth rate of 3% per annum, the existing vacant lots could accommodate population increases to 1984.

It is the Policy of the Board of the Regional District of Kitimat-Stikine

P: I 10(1) that the main emphasis on direction of growth during the Settlement Plan time frame shall be towards infilling and development of presently built-up areas.

It is recognized that a number of factors influence the rate of infilling.

These are:

- a. lots available or made available in other areas of Greater Terrace,

- b. the quality of available residential lots,

- c. the growth rate and the susceptibility of the area to rapid growth.

The first two factors can be accommodated by constant monitoring of available lots to ensure that at least one or two years supply of varying qualities of vacant residential lots are available in various locations in Thornhill. The fluctuations in growth rate cannot be foreseen at this time. Should rapid growth occur, the population increase can be accommodated by encouraging development of areas indicated as lower priority.

I. 11 SEQUENCE OF DEVELOPMENT

It is the Objective of the Board of the Regional District of Kitimat-Stikine

O: I 11(1) to indicate the preferred sequence for the development of general areas.

Although the main emphasis for growth and development of Thornhill during the Settlement Plan time frame will be on infilling of presently built-up areas so as to gradually consolidate the scattered nodes of development, it is also important to indicate the preferred sequence for the remaining potentially developable areas. The reasons are as follows:

- a) to serve as contingency in the event of rapid growth
- b) to curtail further fragmentation and "leap-frog" development
- c) to indicate priorities in the development of areas in the event that, should one preferred area not be developable at a particular time, the area next in priority can proceed
- d) infilling of built-up areas usually occurs over a long period of time and may not provide sufficient lots to meet the demand.

The sequence of development as indicated on the Land Use Plan applies to general areas. Within each of these large areas, it is likely that the development will be phased in over a period of time, depending on marketing factors.

The staging priorities are as follows:

- Priority #1 Infilling of presently built-up areas and extension of development in order to rectify existing land use conflicts and traffic circulation problems.
- Priority #2 Expansion in the Central Horseshoe area to establish a concentrated central core around existing commercial, industrial, and institutional functions.
- Priority #3 Expansion to areas which are adjacent to presently built-up areas.
- Priority #4 Development of areas isolated by natural topography, difficult serviceability, or indicated for latter development due to to preference for adjacent areas.
- Priority #5 Areas indicated as lowest priority.

It is the Policy of the Board of the Regional District of Kitimat-Stikine

P: I 11(1) that the priority of development shall be as indicated on the Land Use Plan

- (2) that if an area of higher priority as indicated in P: 11(1) above does not proceed with the development of the area, then the preference for development shall be placed on the area of next lower priority.

I. 12

DETAILED PLANNING AREAS

The intent of land use designations in the Official Settlement Plan is to provide broad land use guidelines for orderly developments of the Thornhill area. Some areas require planning in greater detail, or require refinement of the generalized land use designations, or require gradual development over a period of time. The following situations may be designated as 'Detailed Planning Area' in the Official Settlement Plan:

1. any one of four neighbourhoods as defined in C.10.
2. large areas where phased developments would affect the provision of community and infrastructure facilities such as parks, schools, water and sewer system, roads, etc.
3. areas where boundary conditions between differing land uses require refinement of the Plan.
4. special areas
5. replot areas

It is the Policy of the Board of the Regional District of Kitimat-Stikine

P: I 12(1) that Detailed Planning Areas shall be designated on the Plan map

(2) no development, or subdivision shall occur in a detailed planning area except in accordance with an approved Detailed Plan adopted by the Regional District Board

(3) that where the designation of Detailed Planning Areas applies to existing built-up areas, all property owners in the Detailed Planning Area shall be given the opportunity to participate in the formulation of the Detailed Plan

(4) that a Detailed Plan shall be a subdivision layout or development scheme which refines provisions of the Settlement Plan for land uses, density, vehicular and pedestrian circulation, and phasing of development.

II. NATURAL FEATURES

II. 1 SOILS AND TOPOGRAPHY

Thornhill is naturally divided into two sections by major topographic features. The bottom portion of the settlement is located on a flat bench 200 to 350 feet above sea level. An upper bench, 350 to 500 feet above sea level, is separated from the lower bench by a 100 to 150 foot high escarpment paralleling the river.

Four major soil types occur within the Thornhill area, products of extensive glacial activity which left an unconsolidated overburden of sands, gravels, silts, and clays. Close to the Skeena River, alluvial deposits of sands, silt, and gravels have been formed by river deposition at elevations close to the present river level. At the base of the escarpment and extending into the lower bench, an area of poorly sorted collapsed sediments has formed soils of moderate permeability. Along the eastern and southern edges of Thornhill, clay-based soils with poor drainage characteristics were formed when the slow ablation of a large ice mass left a clay filled depression in the area. The remaining soil type in Thornhill, with moderate to good permeability, was formed by glacio-fluvial deposits.

II. 2 DRAINAGE COURSES

The flow of runoff water through the Settlement of Thornhill is determined by topographic features. The lower flat bench drains directly towards the Skeena River, whereas the upper bench, except for the immediate edge of the escarpment, drains into Thornhill Creek. This creek is the major watercourse in the area. Another unnamed drainage channel crosses the lower bench from the north, forming several large ponds at the base of the escarpment. Drainage from Thornhill Mountain does not reach the settlement area, but flows south to Lakelse Lake via Sockeye Creek. Other drainage channels include the two branches of Marchand Creek in the Queensway area and the unnamed creek along Krumm Avenue extension between Highway 25 and Queensway Drive.

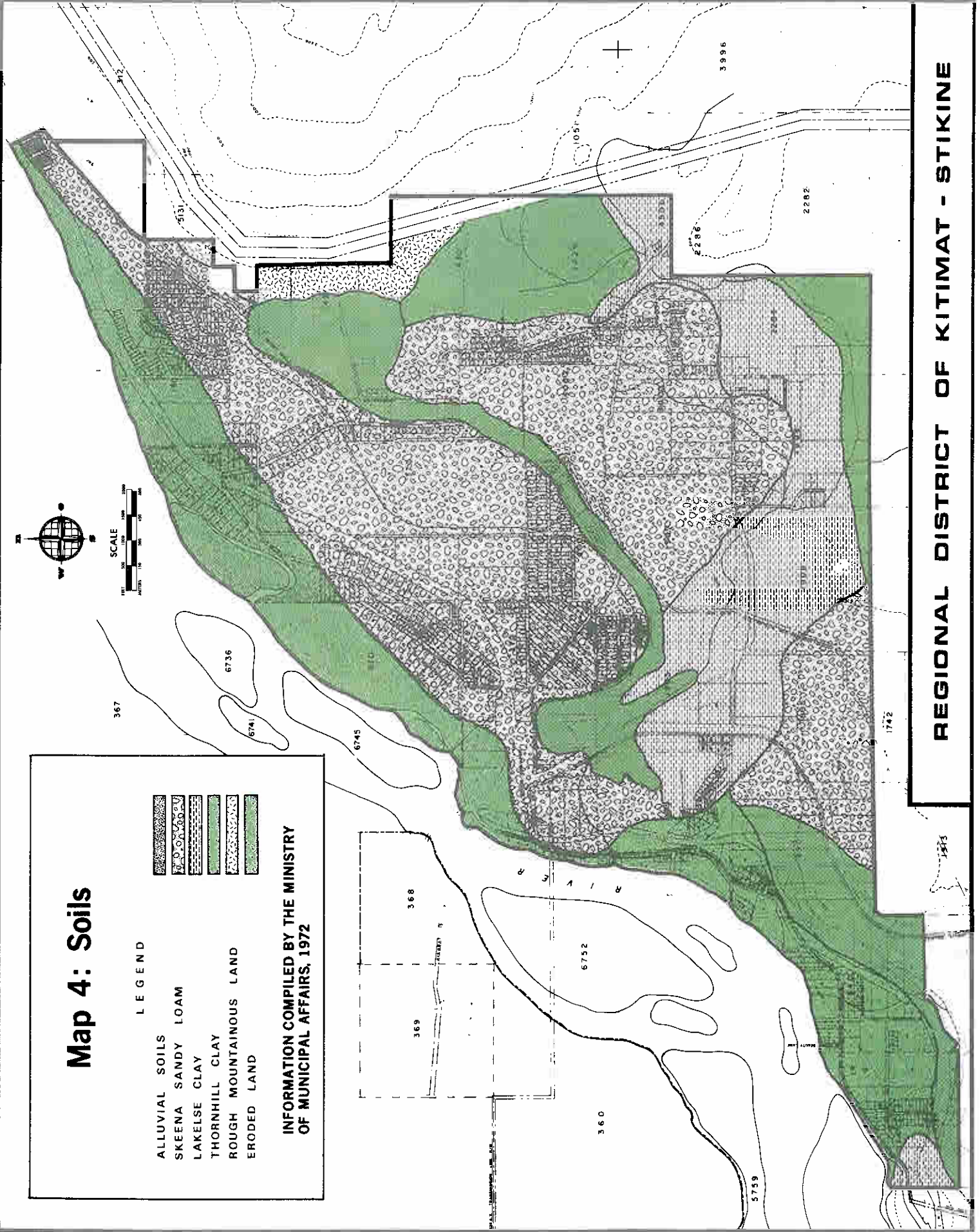
Some flooding occurs within Thornhill. Sections of the lower bench are subject to periodic flooding by the Skeena River and portions of land along Thornhill Creek are also subject to floods.

Map 4: Soils

LEGEND

ALLUVIAL SOILS	
SKEENA SANDY LOAM	
LAKELSE CLAY	
THORNHILL CLAY	
ROUGH MOUNTAINOUS LAND	
ERODED LAND	

INFORMATION COMPILED BY THE MINISTRY
OF MUNICIPAL AFFAIRS, 1972



REGIONAL DISTRICT OF KITIMAT - STIKINE

The major drainage courses which run through the settlement area of Thornhill are:

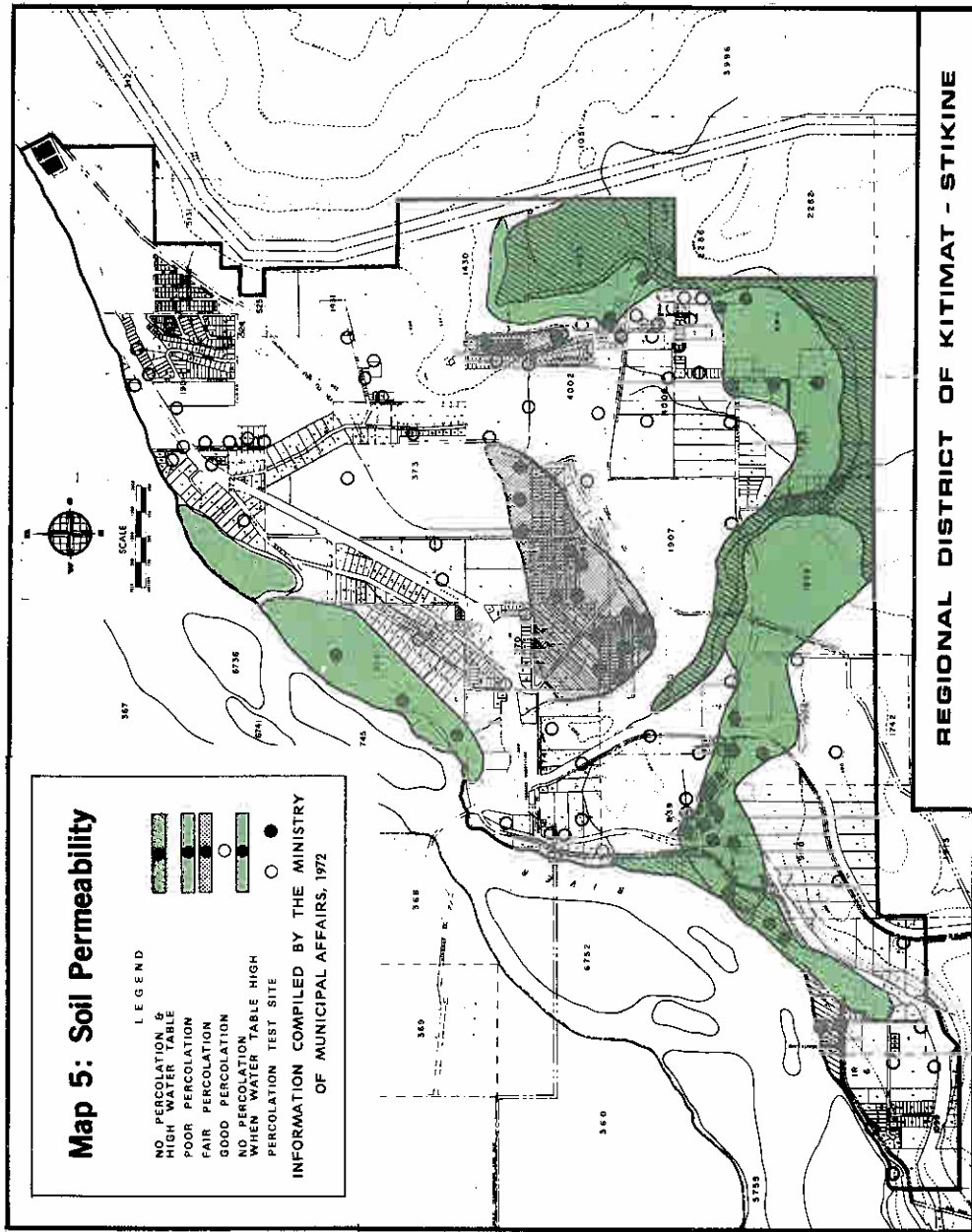
- a) Thornhill Creek flows from the base of Thornhill Mountain, across Old Lakelse Lake Drive, along the southern extremity of Thornhill, across Krumm Avenue, through a swampy area of D.L. 1905, across Highway 25, cascades over Thornhill Falls, and spills out into the Skeena River.
- b) An unnamed creek at the base of the escarpment flows from the Horseshoe area along the base of the escarpment, across Highway 16 and spills out into the Skeena River.
- c) Marchand Creek has two branches flowing through the west end of the Queensway area.

The drainage of Thornhill Creek is fed from Thornhill Mountain and area along its base. The watercourse exists the year round with flows fluctuating according to the seasons. As residential population increases in the Thornhill area, there is a continuing need for the protection of this and the other major drainage courses.

It is the Objective of the Board of the Regional District

O: II 2(1) to encourage the protection of natural drainage courses from pollution and stagnation.

The unnamed creek which flows at the base of the escarpment has been reduced in waterflow. It presently consists of intermittent swampy areas. This may be due in part to the reduction of surface drainage caused by the installation of catchment wells designed to contain run-off water to allow seepage into the soil. The natural drainage has been severed in places by roadbeds which have been laid without proper drainage culverts, and has been confined by the raising of adjacent residential lots to provide building sites. Long term drainage solutions are required for the entire Horseshoe Area (see Drainage (IV.4)) and particularly, this unnamed creek should be investigated as part of the drainage study.



Note: This map provides general information on soil permeability. Approval of sewerage systems is on a site specific basis in accordance with regulations of the Ministry of Health.

It is the Policy of the Board of the Regional District of Kitimat-Stikine

P: II 2(1) that the use or diversion of natural drainage course alignments for the elimination of surface and sub-surface run-off shall be encouraged

(2) that land uses adjacent to natural drainage courses shall be as identified on the Land Use Plan.

II. 3 FLOOD PLAINS AND CUTBANKS

The settlement area of Thornhill is bordered on the north and west by the Skeena River. Some areas, depending on soil and topography, form floodplains while other areas have cutbanks along the river.

It is the Objective of the Board of the Regional District of Kitimat-Stikine

O: II 3(1) to discourage the development of land which endangers the health and/or safety of residents.

Areas subject to flooding have been defined by the Water Resources Service of the Ministry of Environment. Specific building requirements based on 200 year flood levels have been mapped. Local topographical information is applied to determine habitable floor levels in relation to the flood levels.

It is the Policy of the Board of the Regional District of Kitimat-Stikine

P: II 3(1) that land uses within flood-prone zones shall be restricted to compatible uses such as agriculture, wildlife reserves, parks, recreation areas, and greenbelts unless riverbank protection measures and/or flood-proofing of structures below the critical floodplain elevations meet the criteria outlined by the Ministry of Environment

Note: This map is for general information only. For construction purposes, large scale topographic and flood plain maps should be consulted.

P: II 3(2) that residential land use within flood-plain zones shall be discouraged

- (3) that, where there is no alternative to development on the floodplain, and where mobile homes or buildings to be used for habitation, business, or storage of goods damageable by flood waters are to be located or constructed in any area liable to flooding, such buildings or mobile homes shall be adequately floodproofed in accordance with the floodproofing requirements of the Ministry of Environment and these requirements shall be contained in the appropriate implementing by-laws
- (4) that uses requiring placement of fill in river channels or floodways or contributing to debris or effluent discharge into river channels shall generally be discouraged; however, where circumstances require placement of fill or effluent discharge, developments shall conform to pollution control standards of the Ministry of Environment
- (5) that the retention of natural vegetation along watercourses shall be encouraged
- (6) that, where planned development or disposal of wastes is to take place near an aquifer which provides, or may in the future provide, a source of water supply for the community, the development shall conform to standards and criteria of the Ministry of Environment.

Cutbanks are produced along areas where fast moving water currents have eroded the riverbanks. Natural vegetative cover and root systems aid in retarding the rate of surface drainage and in retarding the erosion along the cutbanks.

It is the Policy of the Board of the Regional District of Kitimat-Stikine

P: II 3(7) that building development adjacent to cutbanks shall remain a safe distance away from the cutbanks in accordance to guidelines and regulations of the Ministry of Environment and the implementing by-laws of the Regional District

P: II 3(8) that living trees, vegetative ground cover or soil shall not be removed from any designated open space or cutbank if the instability or potential for erosion of such areas is increased.

II. FORESTS

Forest cover in the Thornhill area consists generally of small stands and a mixture of species. No significant economic potential exists for logging of forest stock in the Thornhill area. Forests, however, can provide amenities to the residential environment such as in buffering, parks, and open spaces; and, the forest cover aids in the retardation of erosion.

It is the Objective of the Board of the Regional District of Kitimat-Stikine

O: II 4(1) to encourage, where suitable, retention and enhancement of natural vegetation and forest cover.

It is the Policy of the Board of the Regional District of Kitimat-Stikine

P: II 4(1) that lands benefitting from the growth of a stable tree cover such as escarpments, along water courses, and other environmentally sensitive zones shall be protected and enhanced

(2) that existing forested land identified for its recreation potential shall be encouraged for conservation by means of appropriate land use designations

(3) that existing trees shall be retained, where possible, to serve as a buffer between differing land uses, and between residential dwellings and traffic arterials.

II. 5 FISH AND WILDLIFE HABITAT

Significant wildlife habitats do not exist within the boundaries of Thornhill. Two streams, Thornhill Creek, and Marchand Creek, are considered as fish habitat. The portion of Thornhill Creek below Thornhill Falls contains salmon spawning grounds and the portion above Thornhill Falls contains trout.

In order to allow for possible future wildlife migrations into the area and to ensure that existing fish and wildlife are protected,

It is the Objective of the Board of the Regional District of Kitimat-Stikine

O: II 5(1) to encourage the preservation of significant fish and wildlife habitat.

It is the Policy of the Board of the Regional District of Kitimat-Stikine

P: II 5(1) that areas of significant fish and wildlife habitat shall be protected by means of appropriate land use designations and encouragement of adherence to regulations of appropriate agencies.

The Federal Fisheries Act Section 31(1) states, "No person shall carry on any work or undertaking that results in the harmful alteration, disruption, or destruction of fish habitat."

It is the Policy of the Board of the Regional District of Kitimat-Stikine

P: II 5(2) that building or development in proximity to fish habitat shall adhere to Section 31(1) of the Federal Fisheries Act.

III. LAND USE

III. 1 GENERAL

The settlement area of Thornhill consists of roughly 4,100 acres of land. The natural constraints of the land -- the Skeena River, steep escarpments, flood plains, drainage courses, major transportation corridors, Agricultural Land Reserves, and utility easements -- reduce the total area capable of development.

It is the Objective of the Board of the Regional District of Kitimat-Stikine

- O:III 1(1) to encourage the rational development of land
(2) to optimize land use.

The table below indicates the degree of development capability

	<u>Area (acres)</u>	<u>%</u>
Non developable	1526	37.1
Restricted developable	318	7.8
Developable	2273	55.1
	<u>4117</u>	<u>100.0</u>

Those areas which are considered "Non-Developable" are indicated on the Land Use Plan as "Open Space," "Transportation Corridors," "Agricultural," and utility easements. Restricted development refers to those areas difficult to develop. These are further explained under separate headings.

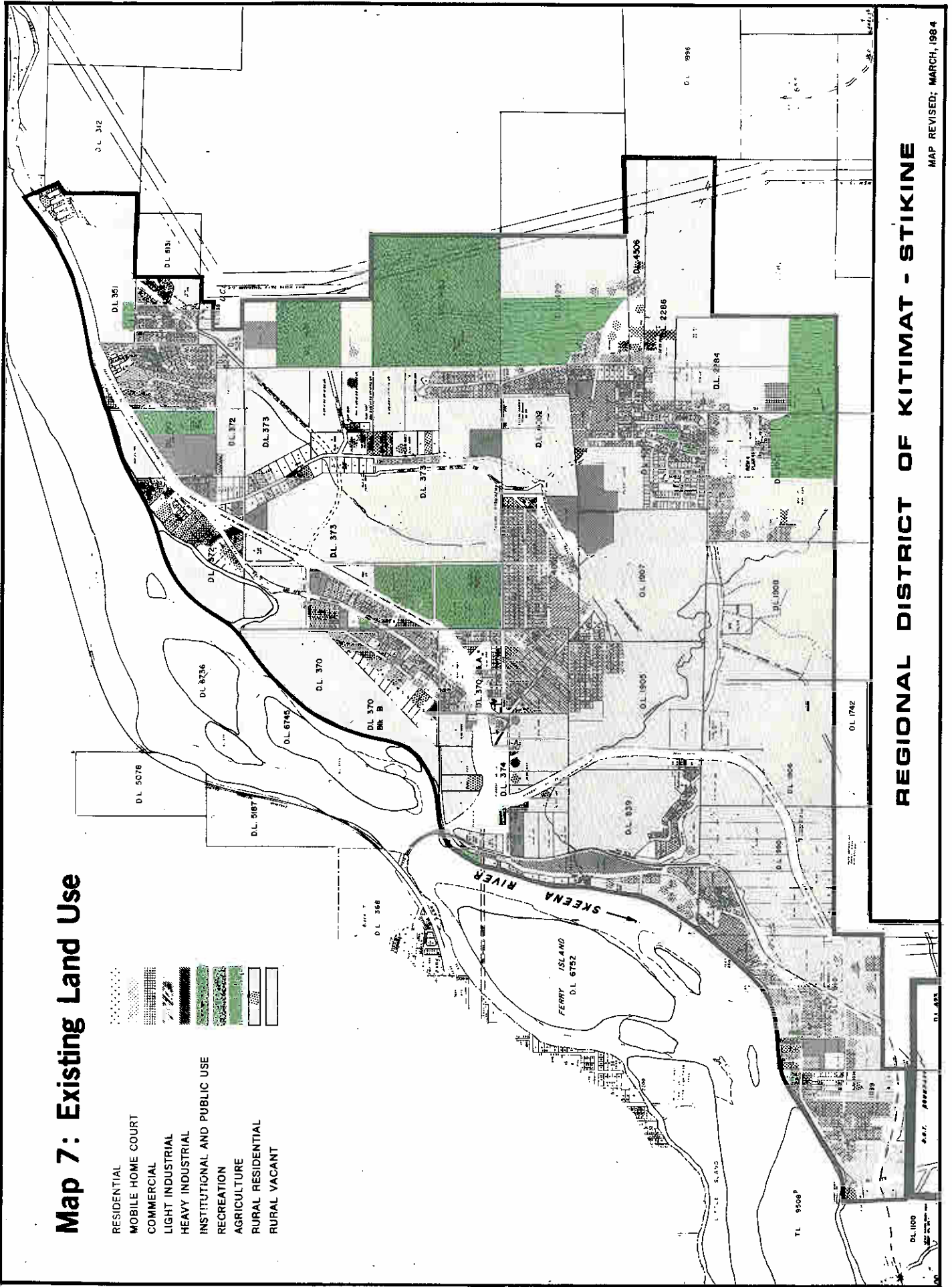
It is the Policy of the Board of the Regional District of Kitimat-Stikine

- P:III 1(1) that calculations, for the purposes of evaluating subdivision proposals, shall be based on developable area.

Developable area is defined as that portion of the total parcel remaining after undevelopable areas including steep escarpments, natural water courses, and other areas designated on the land use plan as Open Space, have been excluded. The developable area is the gross area on which to base further calculations for the purposes of density and provision of neighbourhood parks, pedestrian walkways, and buffer strip dedication.

Map 7: Existing Land Use

- RESIDENTIAL
- MOBILE HOME COURT
- COMMERCIAL
- LIGHT INDUSTRIAL
- HEAVY INDUSTRIAL
- INSTITUTIONAL AND PUBLIC USE
- RECREATION
- AGRICULTURE
- RURAL RESIDENTIAL
- RURAL VACANT



REGIONAL DISTRICT OF KITIMAT - STIKINE

MAP REVISED: MARCH, 1984

The remaining area of roughly 2,300 acres is potentially developable for urban and rural residential, industrial, commercial, institutional, and recreational land uses. The relationship of these land uses to each other and the allocation of suitable land areas for each land use category are dependent on a number of factors including:

- the isolation of the area due to natural features
- major transportation corridors
- traffic circulation
- adjacent and existing land use
- servicing capability
- location of schools and parks
- shape and size of the area
- market demand.

These are taken into account in the designations indicated on the Land Use Plan.

III. 2 AGRICULTURE

Agricultural Land Reserves (ALR) have been established by the Agricultural Land Commission on the basis of soil and climatic capability to ensure the continued viability of the Province's farming enterprises.

It is the Objective of the Board of the Regional District of Kitimat-Stikine

O:III 2(1) to preserve potential and existing farmlands for agricultural uses.

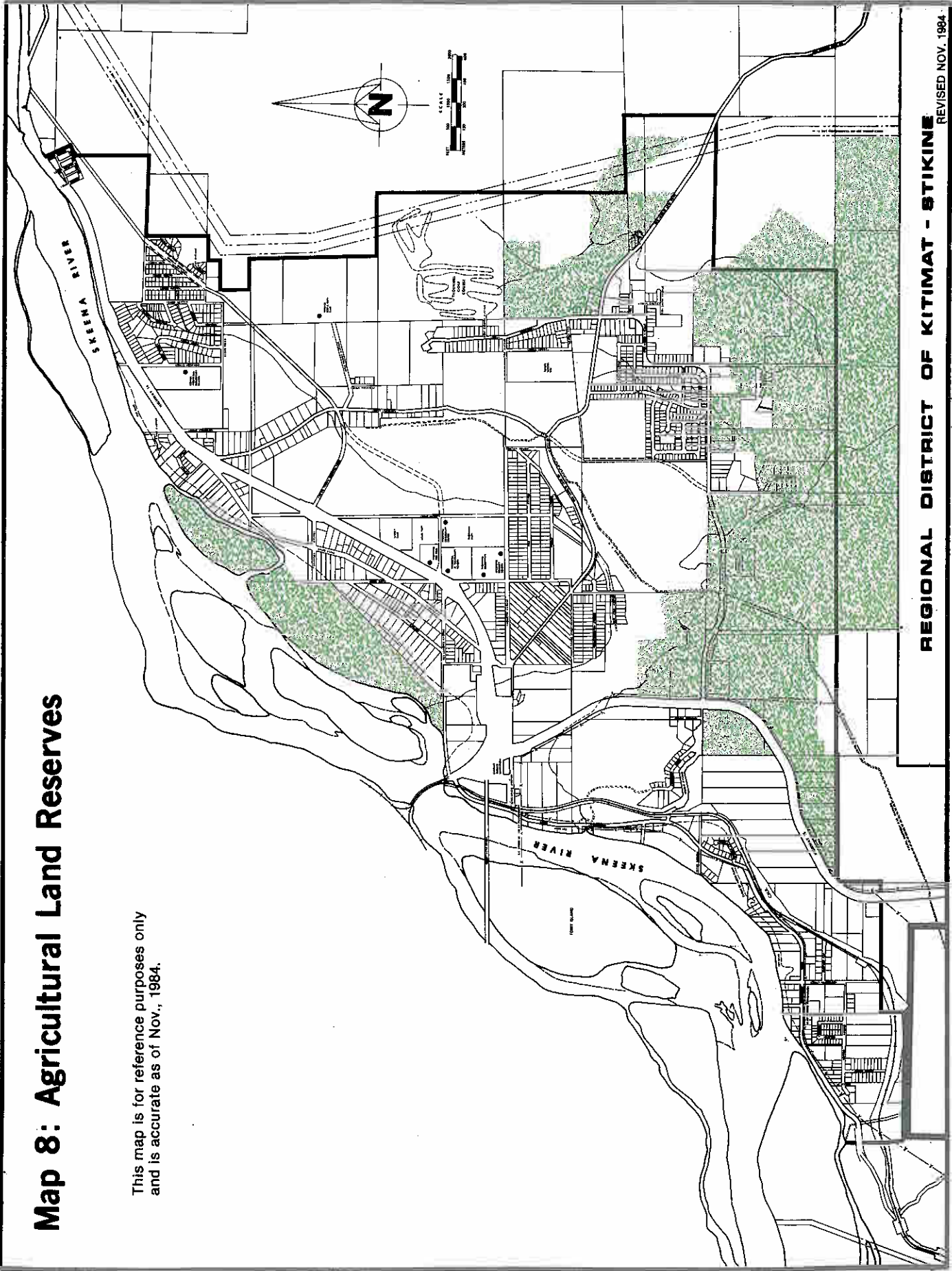
Lands in Thornhill designated as ALR exist along the floodplain of the Skeena River, along the southern boundaries of Thornhill, and a portion along the eastern boundary of Thornhill. Lands within the ALR are subject to the Agricultural Land Commission Act; subdivision and non-farm uses are not permitted unless approved by the Commission.

It is the Policy of the Board of the Regional District of Kitimat-Stikine

P:III 2(1) that lands designated as "Agricultural" on the Land Use Plan shall be reserved for agricultural uses unless exempted by the Agricultural Land Commission.

Map 8: Agricultural Land Reserves

This map is for reference purposes only
and is accurate as of Nov., 1984.



REGIONAL DISTRICT OF KITIMAT - STIKINE

REVISED NOV. 1984

The ALR designations, applied on a broad brush basis, can be exempted according to site specific information regarding the land's agricultural potential.

It is the Policy of the Board of the Regional District of Kitimat-Stikine

P:III 2(2) that all uses and subdivision of ALR land, except those exempted under Section 11(1) of the Act, shall be in accordance with the provisions of the Agricultural Land Commission Act, regulations thereto, and orders of the Commission

(3) that, in the event land is excluded from the Agricultural Land Reserve, the land shall remain in the "Agricultural" designation unless and until the lands are redesignated by by-law amendment.

The lands presently designated as ALR are shown on Map 8. Some of these lands are exempted from the ALR under Section 11 of the Land Commission Act. Other areas not suitable for agricultural purposes due to terrain or natural features are indicated on the Land Use Plan for other land uses; however, the ALR designation is still in force and the land requires exemption by the Agricultural Land Commission.

There is a need to refine the designation of ALR boundaries within Thornhill. It is recommended that the Agricultural Land Commission investigate the designation of ALR lands in Thornhill for specific boundaries with regard to agricultural capability and intended land use planning for the settlement area.

III. 3 RESIDENTIAL LAND USE

This section on residential land use is separated into three categories for purposes of discussion. The "Residential" categories discuss objectives and policies relating generally to all residential land uses and includes the categories of "Urban" and "Rural" residential. "Urban Residential" refers to pockets of concentrated developments. "Rural Residential" refers to small acreages which provide opportunities for a rural lifestyle. Two types of "Rural Residential" are identified: active rural and passive rural.

The nature of settlement patterns by which Thornhill grew influences present and future patterns of residential development. The fact that Thornhill grew as a residential alternative to the urbanizing trends of Terrace indicates that the demand for residential alternatives, lack of regulations, larger lots sizes, and lower taxes is still a strong determinant in future development trends.

It is the Objective of the Board of the Regional District of Kitimat-Stikine

O:III 3(1) to provide residential lands for a wide spectrum of varying life-styles.

It is paramount that, in the provision of residential land, certain minimum standards and guidelines are provided to ensure the safety of residents and to minimize potential land use conflicts.

It is the Objective of the Board of the Regional District of Kitimat-Stikine

O:III 3(2) to encourage the provision of guidelines for the safety and health of residents

(3) to provide orderly growth and development of residential areas within the boundaries of Thornhill.

The susceptibility of the Greater Terrace area to rapid growth requires contingencies for the provision of new residential areas while allowing for incremental growth and development if rapid growth does not occur.

It is the Objective of the Board of the Regional District of Kitimat-Stikine

O:III 3(4) to plan for steady growth while providing contingencies for rapid growth.

The present scattered form of residential development in Thornhill makes the provision of infrastructure servicing very costly.

It is the Policy of the Board of the Regional District of Kitimat-Stikine

P:III 3(1) that land use patterns shall be organized so as to minimize the cost of providing infrastructure services

(2) that land use efficiencies shall be encouraged.

Phase I of the settlement plan process indicated a demand for higher and better levels of residential services in Thornhill.

It is the Policy of the Board of the Regional District of Kitimat-Stikine

P:III 3(3) that the provision of services to Thornhill shall be encouraged.

Concern was expressed for the cost of providing services. In order to strive towards a reasonable level of services while simultaneously catering to a demand for rural lifestyle and lower taxes

It is the Policy of the Board of the Regional District of Kitimat-Stikine

P:III 3(4) that various types of residential lands shall be provided through appropriate land use designations.

This policy is intended to allow for various types of residential development with varying service levels. Residential areas may, for example be designated in implementation documents (zoning by-laws and subdivision control regulations) according to the following categories:

- a) Serviced Residential--areas which will eventually have a full range of services including water, sewer, curb and gutter, utilities, natural gas, paved streets, etc. This category may be delineated into further sub-categories. The following are examples:

- i) single family areas -- quality construction and aesthetic controls
 - ii) mixed -- allows single family, duplexes, and mobile homes; fewer aesthetic and quality controls other than single family areas
 - iii) mobile home parks and subdivisions
 - iv) multi-family (see Policy III 3A(2))
- b) Transitional -- areas with some servicing and larger lots designed to allow for future subdivision; or alternatively, standard building lots with each building to require more than one building lot
 - c) Rural I -- areas intended for passive rural uses, roughly one or two acres in size
 - d) Rural II -- lots over five acres in size with minimum services intended for active rural uses such as hobby farms.

The susceptibility of the area to rapid growth requires contingencies in planning to allow residential areas to be quickly available. Areas have been identified on the Land Use Plan for future residential development by indicating a preferred development sequence. Due to servicing requirements and the present lack of demand, the areas of lower priority might not be developed until rapid growth occurs; however, should rapid growth take place, then demand for lots will increase and servicing of these areas may be economically viable.

It is the Policy of the Board of the Regional District

P:III 3(5) that areas indicated on the Land Use Plan as lower priorities may, in the event of rapid growth, be encouraged to develop.

III. 3A URBAN RESIDENTIAL

Thornhill consists of a varying range of residential dwellings including large single family dwellings, basic shelters, mobile homes, duplexes, four-plexes, and cabins. There exists both a desire for quality residential neighbourhoods and a desire for freedom from rigorous building controls. The latter is desired so that basic shelters can be built, taxes would be lower, and auxiliary buildings and machinery can be placed on lots.

It is the Policy of the Board of the Regional District of Kitimat-Stikine

P:III 3A(1) that different areas within Thornhill shall be provided to allow for varying qualities of urban residential neighbourhoods.

This can be accomplished through subdivision control regulations and zoning by-laws. The zoning by-laws could stipulate certain zones designated as quality residential areas which conform to architectural and aesthetic controls. Other areas could have minimum regulations which permit a diversity of housing types including duplexes, mobile homes, and basic shelters.

With the exception of duplexes, there appears to be little demand for multi-residential development. This may be attributed to:

- a) lack of services, particularly sanitary sewer and the subsequent requirement for relatively large parcels to enable tile fields
- b) lack of CMHC financing
- c) availability of land
- d) inconvenience to central service facilities.

From a planning point of view, multi-residential developments would preferably be located in proximity to commercial and institutional services. The Horseshoe area south of the central commercial area has limited seepage capabilities and with existing lot sizes in the area, it is not likely that the area could handle higher densities.

It is the Policy of the Board of the Regional District of Kitimat-Stikine

P:III 3A(2) that multi-residential development shall be discouraged until a community sewer system is installed.

It should be noted that this policy does not include duplexes which are permitted provided there is sufficient land for sewer absorption.

New areas for residential subdivision should provide services comparable to, or better than those presently in existence.

P:III 3A(3)

that new urban residential subdivisions shall be provided with at least the following services: community water, paved streets, drainage, street lights, electricity, and telephone.

The main areas designated for urban residential land use in Thornhill are the Horseshoe, Kirkaldy, and parts of the Bench area. River Drive and Queensway areas are explained under Rural Residential.

The Horseshoe area is presently building up as an urban residential area and contains the core functions including commercial, educational, and recreational facilities. Community water will be provided to this area in 1980 and it is anticipated that further intensification of residential land uses will occur. Subsurface drainage in parts of the Horseshoe area is limited and it is likely that sanitary sewer and proper drainage facilities will be required in the future.

It is the Policy of the Board of the Regional District of Kitimat-Stikine

P:III 3A(4) that the Horseshoe area be identified as an area of future urban residential development

- (5) that residential expansion in the Horseshoe area shall be preceded by a careful examination of the impact of residential development on water flows, percolation rates, and drainage requirements.

The Kirkaldy area was designed as a residential area and is presently built up. In the main area excluding the lots along the access road, there are 15 vacant lots. The area will be serviced by the new community water system in 1980. The main drawback to the expanded development in this area is the present lack of proper vehicular circulation; however, proper development of the adjacent area may rectify rather than intensify the problem. Kirkaldy Street is the only public road access into the area and many of the residents use the CanCel Road as the secondary route into the subdivision. Residential expansion of this area is identified for the following reasons:

- a) to facilitate better vehicular access and internal circulation
- b) subsurface soil conditions permit adequate seepage for septic tanks and tile fields with reduced parcel sizes
- c) existing school facilities would be more centrally located with expanded residential development
- d) availability of community water.

It is the Policy of the Board of the Regional District of Kitimat-Stikine

P:III 3A(6) that the Kirkaldy area shall be identified as an area of future residential expansion.

The Bench area is presently developing as an urban residential area with concentration occurring generally around the intersection of Old Lakelse Lake Drive and Thornhill Avenue. This area is presently serviced by Woodlands Utilities and is identified as an area of future residential expansion.

It is the Policy of the Board of the Regional District of Kitimat-Stikine

P:III 3A(7) that the Bench area shall be identified as an area of future residential development

(8) that the development of the Bench area shall progress in a gradual and incremental manner; unless, in the event of rapid growth, Policy III 3(5) shall apply.

III. 3B RURAL RESIDENTIAL

The evolution of the Thornhill Settlement area as a rural alternative to urbanization in Terrace and the gradual subdivision of residential lots into smaller parcels has resulted in an assortment of parcel sizes and shapes in scattered locations in Thornhill.

It is the Policy of the Board of the Regional District of Kitimat-Stikine

P:III 3B(1) that rural residential lots shall be provided to accommodate rural life-styles.

The present intermixing of large rural type lots and smaller urban type lots creates high servicing costs and incompatible neighbouring land uses. These can be overcome in part by identifying large areas for rural residential use. Services can then be minimized for the entire area and it will increase the chances of land use compatibility.

It is the Policy of the Board of the Regional District of Kitimat-Stikine

P:III 3B(2) that rural land uses shall be provided in the Queensway, River Drive, Bench, and Horseshoe areas.

In the Queensway area there exists two major constraints to development. Firstly, a large portion of the area is classified as flood plain and is subject to potential flooding. Some areas are low and swampy while other areas are along cutbanks subject to erosion. Secondly, there are limitations on vehicular circulation with Queensway Drive serving as the only collector. This road links onto the major arterial system only on the north end. Possibilities for another access onto Queensway may be provided by upgrading of Krumm Avenue extension. The only area for potential urban-type residential development is the area on the southwest end of Queensway Drive; however, the potential for proper vehicular circulation with increased densities is constrained by the steep escarpments. Residential densities in the Queensway area should be kept down until adequate solutions to vehicular circulation and flood proofing are resolved. The problem of vehicular circulation is not expected to occur within the time frame of the Settlement Plan at projected growth rates; therefore, intensive development of this area should be avoided. Development and subdivision to small rural acreages or to large residential lots may be appropriate for the area at the western end.

The River Drive area consists of a mixture of uses which have evolved since the road served as the original highway. It is bordered on one side by Highway 16 and on the other side by flood plains and A.L.R. Parcels range in size but most are rural parcel sizes suitable for future light industrial type uses. Other reasons why this area should be suitable for future light industrial are:

- proximity to Terrace
- ability to separate industrial and passenger type traffic at the eastern intersection of River Drive and Highway 16
- width of River Drive right-of-way
- containment of the area due to its location between the River and Highway 16 thus reducing the potential for future land use conflicts.

It is unlikely that the entire area would develop as industrial within the time frame of the Official Settlement Plan. A rural residential area which accommodates quasi-industrial uses as a home occupation is required in the Greater Terrace area, and the River Drive area could serve this purpose as an interim use. The lots along Highway 16 access road are designated for highway commercial use due to its accessibility to passenger type traffic.

The Horsehoe area is designated primarily for urban residential uses. The present strip of rural residential along Crescent Street would remain as rural residential use since the expansion of urban residential uses in the Central Horseshoe and Kirkaldy areas would not likely reach the Crescent Street area within the Settlement Plan time frame at projected growth rates. The properties along Crescent Street may be transitional to urban residential in the very distant future, or they may remain as rural residential. This issue should be re-assessed at the time of Settlement Plan review.

The Bench area contains some rural residential uses. This area is identified as an area for future urban residential uses due to its size and capability for providing urban type services and amenities. For the main part, rural residential on the Bench is considered a transitional land use to be further developed as the community grows. Certain areas on the Bench can remain as permanent rural areas. These are areas where efficiencies of land use and servicing costs are not affected by the location due to natural land features.

It is the Policy of the Board of the Regional District of Kitimat-Stikine

P:III 3B(3) that permanent rural residential areas and transitional rural residential areas shall be provided.

The reasons for rural residential holdings vary. Some want larger amenity lots for view and privacy; some want to have large gardens and some want to run horses, goats, etc. These rural uses are not always compatible. The person who wants an amenity lot and privacy may not want animals nearby. Thus rural residential lots should be provided to allow for various lifestyles and they should be organized to optimize the land use compatibility.

It is the Policy of the Board of the Regional District of Kitimat-Stikine

P:III 3B(4) that the rural option shall provide for both active and passive rural uses.

III. 4 COMMERCIAL LAND USE

It is the Objective of the Board of the Regional District of Kitimat-Stikine

O:III 4(1) to provide for commercial facilities in Thornhill which reflect the goals and aspirations of the community.

III. 4A CENTRAL COMMERCIAL

The proximity of Thornhill to Terrace with its regional commercial outlets reduces the need for an independent commercial structure in Thornhill. Projections for Terrace indicate that, at current usage rates, there is sufficient vacant space and commercially zoned land in Terrace to provide for commercial needs to 1999.

The location of commercial retail facilities in Thornhill depends on the future political restructuring of Thornhill. If Thornhill amalgamates with Terrace, there would likely be emphasis towards concentration of the existing Central Business District in Terrace, with the Central Commercial area of Thornhill being oriented towards local service and highway oriented facilities.

On the other hand, if Thornhill incorporates as an independent community, it is likely that the new municipality will encourage all commercial facilities to locate in its Commercial Centre in order to provide an increased tax base. Depending on factors such as cost of land, servicing levels, density restrictions, parking requirements, etc., the Central Commercial area of Thornhill may develop into a regional-type shopping area in competition with Terrace. This depends on the growth of the Greater Terrace area which is influenced by impact growth tendencies. The two regional shopping centres plus independent shops presently existing in Terrace provide sufficient retail facilities for the immediate future and it is unlikely that a third regional shopping centre would be viable for the Greater Terrace area within the short term planning period; however, a smaller mall development catering to specialized or local clientele may be warranted. Such a shopping mall has been proposed to integrate with the Northern Motor Inn.

It is the Policy of the Board of the Regional District of Kitimat-Stikine

P:III 4A(1) that the development of the Central Commercial area shall reflect the form of future political restructuring.

Since the decision for future restructuring may alter the pattern of commercial development in Thornhill's Central Commercial area it is felt that the policies for implementing the direction and form of commercial growth be left until after the decision has been made.

There exists 24.4 acres of land in Thornhill zoned for the Central Commercial function. This represents 0.8% of total land use in Thornhill. The proposed mall and Northern Motor Inn complex would use approximately 6.4 acres of this land. Thus there is sufficient land presently zoned as Central Commercial for the Settlement Plan time frame.

Due to the shape and location of the area zoned as Central Commercial, no reduction in area is suggested at this time; rather, this area is selected as an area of special consideration and should be the subject of further study after political restructuring in Thornhill takes place.

III. 4B NEIGHBOURHOOD COMMERCIAL

Neighbourhood Commercial sites can vary in size depending on the neighbourhood which is served. In Thornhill, Neighbourhood Commercial sites are identified for each of the following areas:

- a) Horseshoe area presently has two neighbourhood commercial stores of which one is located in the Central Commercial. An additional site may be provided with residential expansion.
- b) Queensway area, due to its length and distance, could contain two sites, depending on population densities.

- c) Kirkaldy area presently has a neighbourhood commercial facility at the Thornhill Motel. Another site which contained a neighbourhood commercial facility no longer exists. A site should be selected which provides walking distance accessibility to the residential neighbourhood.
- d) Bench area presently contains a small neighbourhood commercial store. A four and one-half acre parcel at the intersection of Thornhill Street and Old Lakelse Lake Drive is zoned for neighbourhood commercial use. This site would not likely be developed for commercial use until significant build-up of population on the Bench area.

It is the Policy of the Board of the Regional District of Kitimat-Stikine

P:III 4B(1) that a limited number of neighbourhood commercial or convenience stores shall be permitted within residential neighbourhoods so as to provide accessible and convenient commercial services to residents in the neighbourhood

- (2) that those uses which cater to the day to day needs of residents shall be permitted on neighbourhood commercial sites.

III. 4C HIGHWAY COMMERCIAL

Some highway commercial uses presently exist along the frontage road paralleling Highway 16 East. Retail uses such as service stations, restaurants, motels, automotive sales, etc., which cater to passing vehicular traffic are considered as compatible land uses for this strip.

The area is presently zoned as Light Industrial.

It is the Policy of the Board of the Regional District of Kitimat-Stikine

P:III 4C(1) that highway commercial uses shall be permitted on the northwest side of Highway 16 along the frontage road.

III. 5 INDUSTRIAL

It is the Objective of the Board of the Regional District of Kitimat-Stikine

- O:III 5(1) to encourage industrial developments compatible with the aspirations of the community.

Industrial land use is presently scattered throughout the settlement area of Thornhill. The Regional District Zoning By-law No. 37 zones 543 gross acres (including roads) for light industrial use. This represents 13.2% of total land area in Thornhill. Most of this land is located along Highway 16 East with pockets of industrially zoned land in all of the other areas. As the settlement area of Thornhill grows in the future, there is a need to consolidate the industrial land uses into a cohesive land use pattern. There is presently more land zoned for industrial uses than will be needed within the time frame of the Settlement Plan.

It is the Policy of the Board of the Regional District of Kitimat-Stikine

- P:III 5(1) that light industrial development shall be encouraged in designated locations as shown on the Land Use Plan.

Industrial uses are proposed for location in consolidated areas due to their general unsightyness, incompatibility with residential and other uses, truck traffic, and noise levels.

It is the Policy of the Board of the Regional District of Kitimat-Stikine

- P:III 5(2) that industrial uses shall be located so as to minimize conflict with other land uses

- (3) that industrial uses shall be screened or buffered from other land uses

- (4) that existing industrial in nonindustrial areas which are incompatible with surrounding land uses shall be encouraged to relocate in sites designated for industrial use.

Present industrial uses in those areas not designated for industrial use could remain during the Settlement Plan time frame since there is a surplus of land available for residential and other uses. These uses should be re-assessed in the Settlement Plan Review.

Undeveloped industrial lots in Queensway should revert to residential use for compatibility with long term planning objectives. Developed industrial lots could remain during the Settlement Plan time frame and should be re-assessed in the Settlement Plan Review.

Areas designated as 'Rural Residential' in the River Drive neighbourhood are intended as a transitional area from rural residential to industrial land uses. Due to demand in the Greater Terrace area for combined industrial/residential type uses, such designation for this area allows for the transition into an industrial area while accommodating smaller quasi-industrial operations in the interim. The designation of such an industrial area may alleviate many of the existing land use conflicts scattered throughout Thornhill.

It is the Policy of the Board of the Regional District of Kitimat-Stikine

P:III 5(5) that land along River Drive shall be encouraged to evolve as a light industrial area.

Sand and gravel deposits have been identified in various locations in Thornhill. Areas proposed as active gravel pits during the Settlement Plan time frame have been designated as 'Gravel Excavation and Reclamation' on the Plan Map.

It is the Policy of the Board of the Regional District of Kitimat-Stikine

P:III 5(6) that the excavation for gravel shall occur only in designated areas and in accordance with a pit development and reclamation scheme

(7) that the pit development and reclamation scheme shall be developed in consideration of natural features and planning objectives for the community

(8) that gravel pits shall be developed and reclaimed so as to allow the land to be used in a productive or amenable manner.

III. 6 COMMUNITY AND INSTITUTIONAL

It is the Objective of the Board of the Regional District of Kitimat-Stikine

O:III 6(1) to have adequate land set aside to allow for the provision of a wide range of community and institutional land uses.

It is the Policy of the Board of the Regional District of Kitimat-Stikine

P:III 6(1) that appropriate government agencies shall be encouraged to set aside adequate land for future community and institutional uses

(2) that lands to be dedicated for community and institutional uses shall be in convenient and appropriate locations.

Roughly 245 acres in Thornhill are presently zoned for park and institutional uses. This represents 5.9% of total land area.

Private recreational uses account for 166 acres or 4.1% of total land. These uses include a shooting range and golf course. The shooting range contains roughly 36 acres, of which 12 acres are zoned as Park. The golf course contains 130 acres and is presently zoned as Rural Residential II.

A variety of parks including tot lots, playing fields, and natural open spaces are required to fulfill the needs of the community.

The allocation of these parks should be based on the concept of a hierarchy of open spaces so that opportunities for all types of recreational functions are provided.

It is the Policy of the Board of the Regional District of Kitimat-Stikine

PIII: 6(3) that a hierarchy of parks and open spaces shall be provided for a variety of recreational uses

P:III 6(4)

that the development of new subdivision areas shall dedicate lands for use as tot lots and neighbourhood parks, and these lands shall be comparable to the average useable land in the parcel to be subdivided.

Hang gliding has become an increasingly popular sport in the past few years. Thornhill Mountain, due to its steep cliffs and updrafts, is one of the best mountains in B.C. for this sport. Further investigation should be conducted to determine the future of hang gliding, potential aerial conflicts with aircraft traffic, and the land requirements for landing and observation sites in Thornhill.

A total of 73 acres in Thornhill is held by the Skeena Cassiar School District. 43 acres in two locations are presently in use as school grounds. The other two sites are located on the Bench area; one 20 acre parcel is located north of Old Lakelse Lake Drive, and one 10 acre parcel is located at the intersection of Krumm Avenue and Highway 25. The 20 acre site is of suitable size and appropriate location in terms of anticipated future settlement patterns. The location of the 10 acre parcel on Krumm Avenue and Highway 25 would not likely be developed for a very long time, if ever. The restrictions on development potential of adjacent areas for intensive residential use are too prohibitive for this 10 acre site to be warranted as a school site.

In the Central Horseshoe area 38 acres is presently being used for community purposes. These include a race track and grandstands in Lions Park, playgrounds in Thornhill Park, and the Thornhill Community Centre grounds.

An area of roughly 90 acres adjacent to the existing schools and community grounds is zoned as Park. This large area is owned by the Crown and is presently undeveloped. Portions of this area could be used for residential development and the remainder could be put to future community use. It is suggested that a major portion of the 90 acres be reserved for future park and community use and the remainder be developed in conjunction with the 37 acres of industrial land immediately north of the site for residential purposes. The timing of development for residential lots should have

regard to market conditions. The area should be designated for further study and the study should be completed prior to the release of public lands. The study should be a detailed examination of future school and community requirements and it should determine the specific allocation of land for institutional, community, and residential uses in this area. Since the land use allocations may be dependent on whether Thornhill is amalgamated with Terrace or is incorporated independently, it is recommended that the study be conducted after the decision for political restructuring.

It is the Policy of the Board of the Regional District of Kitimat-Stikine

P:III 6(5) that land uses in the Horseshoe portion of D.L. 373 shall be the subject of detailed investigation prior to the release of public lands.

III. 7 OPEN SPACE

The "Open Space" category consists of steep escarpment (over 30% slope, environmentally sensitive areas (eg. fish habitat below Thornhill Falls), and natural drainage courses isolated by topography (eg. Thornhill Creek).

Steep escarpments, if denuded, are susceptible to hastened erosion. Preservation of the slopes is important not only for the safety of development on the tableland, but also to those below who will be affected by changes in the character of the natural environment.

Thornhill Creek below Thornhill Falls is identified as a spawning ground for salmon. Development in this area should minimize the disturbance to the spawning grounds. The portions above Thornhill Falls contain trout. The quality of water upstream affects downstream quality and thus efforts should be made to control adjacent development. The portion of Thornhill Creek east of Highway 25 and north of Krumm Avenue meanders between two escarpments creating a swampy area in between. Due to the environmental sensitivity of the Thornhill Creek area, the limitations to development because of swamps, steep escarpments, and rock outcrop, and the opportunities for future use as open space, the areas adjacent to Thornhill Creek are identified for retention as open space.

Flood plains have not been included in the Open Space category since building on these areas is possible provided precaution is taken to floodproof the development.

It is the Objective of the Board of the Regional District of Kitimat-Stikine

O:III 7(1) to encourage the preservation of environmentally sensitive areas in their natural state.

It is the Policy of the Board of the Regional District of Kitimat-Stikine

P:III 7(1) that areas indicated on the Land Use Plan as "Open Space" shall be encouraged for preservation in their natural state.

The term "natural state" often refers to a strict ecological type of preserve where no alterations to the land are permitted. This is not intended to be the case for the Open Space category. "Natural state" refers, in this case, to the development, improvement, or alteration in a manner compatible with the environmental sensitivity of the land. For example, the development of some Open Space areas for parks, pedestrian walkways, picnic sites, etc., are seen as compatible uses, provided that sufficient natural vegetation is retained and natural water courses are not adversely altered.

III. 8 RESTRICTED DEVELOPMENT

"Restricted Development" indicates those areas of land, usually small pockets, which are potentially developable but are constrained by natural features and/or special conditions. The following are some reasons for the designation of these areas as "Restricted Development":

- difficult access due to steep slopes
- flood plains (indicated by dashed lines on Land Use Plan)
- swampy areas due to lack of drainage
- areas along the base of escarpments with unstable slopes
- special areas such as the intersection of major transportation corridors.

It is the Objective of the Board of the Regional District of Kitimat-Stikine

O:III 8(1) to restrict the development of areas isolated by natural features and/or special constraints.

These areas may be developed, but each area must be evaluated on a site specific basis.

It is the Policy of the Board of the Regional District of Kitimat-Stikine

P:III 8(1) that the areas designated on the Land Use Plan as "Restricted Development" shall be provided expert opinion as to the safety and accessibility of and to the development and adjacent areas

(2) each subdivided lot shall contain at least one reasonable building site; and, where lots are created which do not have a building site, these lots shall be dedicated as open space

(3) that land uses on "Restricted Development" areas shall be compatible with adjacent land uses and in accordance with the overall Plan

(4) that the approval of "Restricted Development" areas shall be at the discretion of the approving authority.

The area surrounding the intersection of Highways 16 and 25 should be an area of special consideration since development in this area is constrained by a number of natural and manmade features including the proximity to the river, steep escarpments, and access onto major arterials. There are small pockets of flat bench lands adjacent to the arterials which are potentially capable of development; however, the constraints of the aforementioned features would likely influence or be influenced by the type of development. This area should be considered as a special area and detailed investigation should be conducted to determine the best allocation of land uses in the vicinity with regard to the natural features and the plans for future expansion of the transportation system.

IV. INFRASTRUCTURE SERVICING

IV. 1 GENERAL

The rapid growth of Thornhill in the 60's as an alternate settlement area to Terrace has been attributed to increased services, resulting higher taxes, and more land use restrictions in Terrace. Thornhill developed as an alternate community with basic rudimentary services provided by means of individual septic tanks and wells.

Water services were extended by individuals who sank deep wells which were capable of providing more than sufficient water for their own family needs. Some formed private utility companies which provided water service to small areas within Thornhill. Other private utility companies were formed with the development of subdivisions which provided community water services. Thus a number of small utility companies servicing small areas have evolved. A referendum for community water system servicing the entire lower area was passed in 1979. The provision of community water decreases the chances of potential health hazard; therefore, subdivision of the existing lots to smaller sizes is permitted under the present zoning by-law. With the provision of community water, it is anticipated that water usage levels may be increased, thus putting greater strains on runoff drainage and tilefield absorption capability. This may influence the timing for which sanitary sewer lines and storm sewer drainage will be required.

Thornhill as a settlement area for large residential lots and rural acreages has evolved to a situation which makes infrastructure servicing a relatively expensive proposition.

At the public meeting held for Phase I of the settlement plan process, public sentiment indicated a desire for increased level of services but the public was wary of the cost of these services.

The provision of infrastructure services is dependent on cost, timing, and the desires of residents for increased services. With present inflation it is inevitable that costs will rise as time goes on. As population increases, it is likely that higher servicing levels will be required.

It is the Objective of the Board of the Regional District of Kitimat-Stikine

O: IV 1(1) to strive towards improved infrastructure servicing for Thornhill.

In order that development of Thornhill continues in a progressive manner,

It is the Policy of the Board of the Regional District of Kitimat-Stikine

P: IV 1(1) that new subdivision developments shall provide services comparable to or superior to that of the existing level of servicing.

IV. 2 WATER

The topography divides the Thornhill settlement area into two pressure zones for purposes of water distribution. The higher pressure zone (lower area) includes the Kirkaldy, Horseshoe, River Drive, and Queensway areas; the lower pressure zone (upper areas) includes the Bench and upper Queensway areas.

Water is presently obtained in the lower area by individual wells with the exception of a portion of the Kirkaldy area which is serviced by a private utility, Thornhill Properties Ltd., and parts of D.L. 374 which is serviced by Thornhill Utilities.

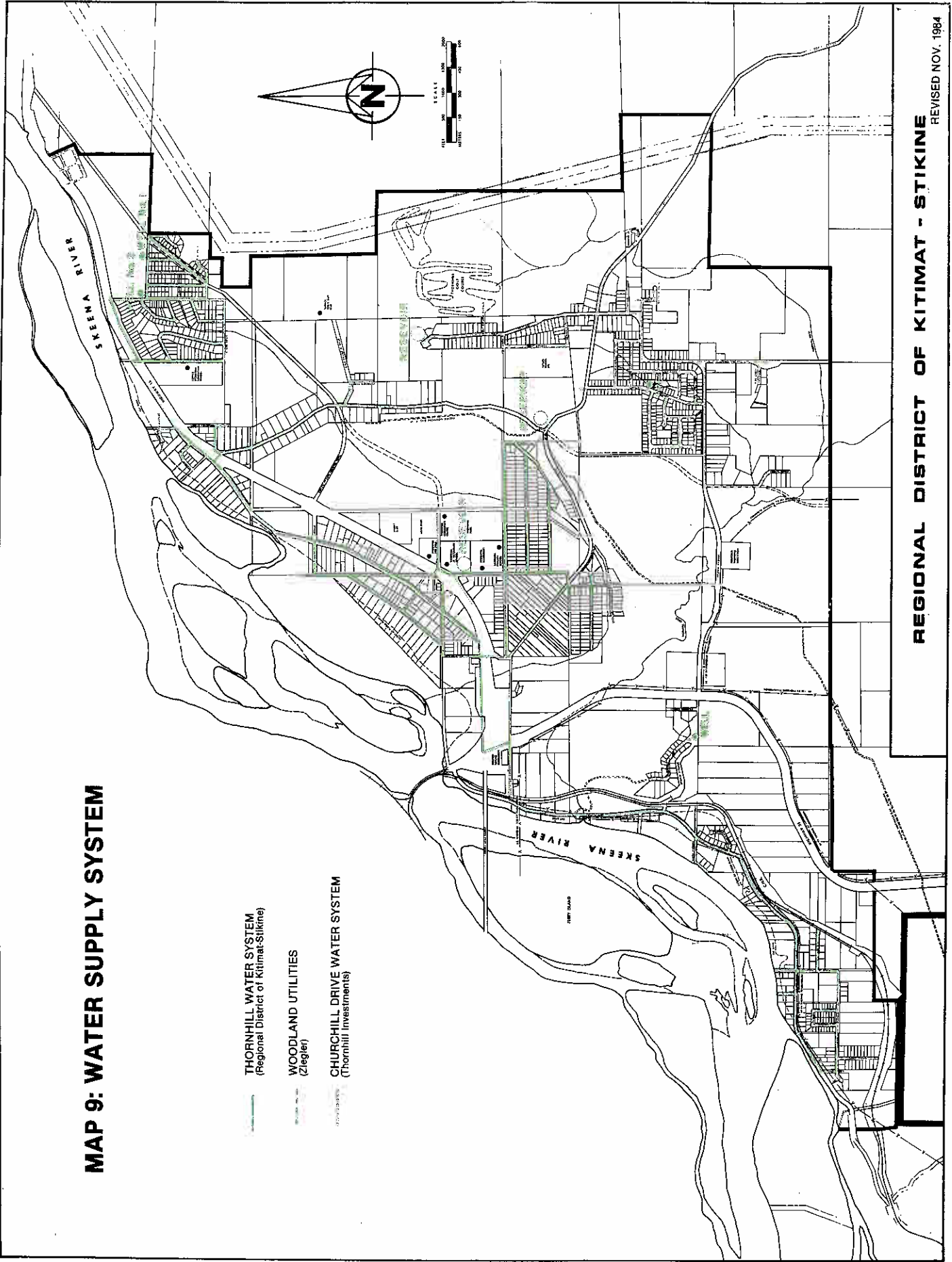
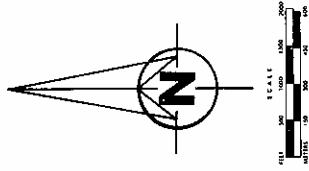
On the Bench area, Woodland Utilities provides water services to approximately 270 households.

The Skeena-Cassiar School District has its own water intake gallery on the Skeena River with pump and distribution lines to the schools.

An Overall Water Master Plan was designed by Stanley and Associates in 1979 to provide for the distribution of water in the Thornhill area. The system is proposed for installation in stages. The initial stage is to provide the water supply source, reservoir, and mains to service the lower areas and is targeted for completion in 1980. No date has been set for the second stage, which is to integrate the first stage of the water system with the Woodlands Utilities system.

MAP 9: WATER SUPPLY SYSTEM

- THORNHILL WATER SYSTEM
(Regional District of Kitimat-Stikine)
- WOODLAND UTILITIES
(Ziegler)
- CHURCHILL DRIVE WATER SYSTEM
(Thornhill Investments)



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The Woodland Utilities could continue to service the Bench area during the interim until the system was integrated with the Thornhill Community Water System by providing a trunk main linking from Queensway to the Woodlands Utilities system.

It is the Objective of the Board of the Regional District of Kitimat-Stikine

O: IV 2(1) to provide community water services to all areas of Thornhill.

The commitment of capital investment for the community water system allows for the development of the lower areas to be serviced with water. Much of the lower area is presently underdeveloped or undeveloped. The most cost efficient direction of short term future growth is to allow initially those areas serviceable by community water to develop. Thus, infilling and development of lower areas is identified as a priority within the time frame of the Settlement Plan. Development should also have consideration for patterns of future infrastructure servicing.

It is the Policy of the Board of the Regional District of Kitimat-Stikine

P: IV 2(1) that the areas of lower elevation capable of being serviced by community water shall, all other factors being equal, be given priority in development

(2) that the subdivision of land and the provision of water lines shall be designed in a manner which allows the accommodation of future infrastructure services and installed to the standards of the Regional District.

The installation of the community water system to the lower areas may allow opportunities for development of certain areas on the Bench. These are as follows:

- a) D.L. 839 could be provided with community water by installation of a booster station in the lower Queensway area, or by a provision of a trunk line along Krumm Avenue
- b) D.L. 1907 and the S.W. portion of D.L. 4000 may be serviced by water either:

- i) by increasing the pumping capacity of the Woodlands Utilities well and by providing increased capacity of the reservoir, or
- ii) by providing a booster pump at the community reservoir, or
- iii) by pumping from the community reservoir to an additional reservoir at the site of the Woodlands Utilities reservoir.

In order to provide community water services for the development of these areas on the Bench and Upper Queensway areas, additional capital expenditures would be required. The provision of water to the lower areas can provide water to a sufficient land area beyond the needs of the Settlement Plan time frame. Capital expenditures to provide water to the lower areas has already been committed.

However, if property owners on the Bench and Upper Queensway area wish to subdivide and develop their properties, it may be done in accordance to established planning guidelines and as indicated in the policies below.

It is the Policy of the Board of the Regional District of Kitimat-Stikine

P: IV 2(3) that the developer shall be responsible for all off-site costs and on-site costs of providing community water services to the development area.

The off-site costs to the developer would include contribution to existing, or the enlargement and provision of additional reservoirs, pumps, wells, booster stations, trunk mains and other equipment and associated properties necessary for the servicing of the development area.

It is the Policy of the Board of the Regional District of Kitimat-Stikine

P: IV 2(4) that off-site development costs for the development of D.L. 839, 1905, 1907, and S.W. part of D.L. 4000 shall, in addition to the requirements of Policy IV 2(3), also include an appropriate portion of the total cost of trunk main along Krumm Avenue.

This trunk will be required in the future to close the water system and provide the link from Queensway to the adjacent Woodlands Utilities system.

It is the Policy of the Board of the Regional District of Kitimat-Stikine

P: IV 2(5) that the ownership of the water lines and ancillary equipment for water distribution shall be turned over to the Regional District upon completion of the development.

Maintenance and operation costs will then be a responsibility of the Regional District. These costs will be recovered by the Regional District by specified mill rate levy to benefitting areas.

The quality and quantity of water are important considerations in the provision of adequate water supply. The quality is important for health and sanitation reasons, and the quantity is important in providing for firefighting pressures.

It is the Policy of the Board of the Regional District of Kitimat-Stikine

P: IV 2(6) that the quality of water shall be in compliance to standards established by the Ministry of Health

(7) that the quantity of water shall be sufficient to provide for fire reserve requirements in addition to domestic needs and shall be subject to requirements of the Controller of Water Rights under the Water Utilities Act and the Ministry of Health.

IV. 3 SANITARY SEWAGE

The disposal of sanitary sewage in Thornhill is presently by means of individual septic tanks and tile fields.

It is the Objective of the Regional District of Kitimat-Stikine

O: IV 3(1) to encourage the disposal of sewerage in a safe and sanitary manner.

The Thornhill Engineering Study conducted in 1979 by Stanley and Associates states that the provision of sanitary sewer lines is not warranted at this time; however, no projection is made as to when a community sewer system might be required.

The provision of a community water system to the lower areas will make more water available for domestic use. This may influence water tables and seepage rates for septic tanks and tile fields. Present regulations (By-law No. 37) permit reduced site area if either community water or community sewer is provided. This allows for further subdivision and infilling of developed areas resulting in increased

densities. This trend may hasten the time frame for which a community sewer system would be required. The provision of a community sewer system over the spread out area of Thornhill is a costly venture. As the population of Thornhill increases in the future, it is likely that increased residential densities will occur. A community sewer system would be required sometime in the future.

Some areas of Thornhill have better percolation and seepage rates than other areas. Without a community sewer system, the ability of the ground to contain sewerage disposal is dependant upon the rate of seepage.

It is the Policy of the Board of the Regional District of Kitimat-Stikine

P: IV 3(1) that where no community sewerage system exists, minimum parcel sizes and density of dwelling units shall, in addition to planning requirements, be in compliance to standards established by the Ministry of Health and/or the Ministry of Environment.

These standards may vary from area to area depending upon the subsurface soil and drainage conditions.

The establishment of a community water system requires the breaking of road surfaces, trenching, and resurfacing the road. Ideally, the community water and sewer would be laid simultaneously to minimize the cost and disruption; however, the cost of both sewer and water is prohibitive at this time. Depending on the timing of a community sewer system, the road surface would in the future require breaking of paved surfaces, trenching, and resurfacing. The location of water and utility lines must be laid so as to allow the future sewer lines to be laid in the same rights-of-way.

It is the Policy of the Board of the Regional District of Kitimat-Stikine

P: IV 3(2) that the location of servicing lines within public rights-of-way be cognizant of future lines to be located in the same rights-of-way.

IV. 4 DRAINAGE

The natural topography of the land and the composition of sub-surface soils establishes patterns of natural drainage. As precipitation or spring melting occurs, the water seeps into the soil to form underground drainage channels. Where soil permeability does not permit the continuous seepage of water, surface drainage channels occur. The natural surface drainage courses are evidenced in Thornhill by Thornhill Creek, an unnamed creek at the base of the escarpment, by Marchand Creek in the Queensway area, and numerous small channels.

The composition of natural drainage courses are altered as man develops the land. The creation of roads, driveways, parking lots, and road surfaces reduces the land surface capable of natural drainage. As Thornhill continues to develop, there will be a continued reduction in land surface for seepage; there will be further alterations in the pattern of surface drainage; and, there will be an increase of water flow due to human consumption and use.

It is the Objective of the Board of the Regional District of Kitimat-Stikine

O: IV 4(1) to encourage the provision of adequate surface and sub-surface drainage.

Drainage in Thornhill is presently handled by means of open ditches alongside road surfaces. Culverts are laid where driveways cross the open ditches. In localized areas where ponding of drainage channels occurs, dry wells are established to retain runoff water until it seeps into the ground. The dry well method is an interim solution which is adequate while development is sparse and there are sufficient open areas to allow the bulk of seepage to occur in a natural manner. As future development and increased population densities evolve, other solutions such as a storm sewer system will be required to handle the drainage.

It is the Policy of the Board of the Regional District of Kitimat-Stikine

P: IV 4(1) that the resolution of drainage problems shall be conducted in cognizance of potential long-term settlement patterns

(2) that the creation of drainage courses shall, where appropriate, follow natural drainage courses.

A comprehensive review of methods for handling drainage in Thornhill should be conducted by the responsible provincial Ministry. The study should address the resolution of present and future drainage problems and it should determine threshold levels when adequate infrastructure servicing will be required.

IV. 5 ROADS AND TRANSPORTATION

It is the Objective of the Board of the Regional District of Kitimat-Stikine

O: IV 5(1) to encourage the provision of a safe and efficient vehicular circulation and transportation system to all developed areas of Thornhill

(2) to encourage the provision of pedestrian and bicycle systems in Thornhill.

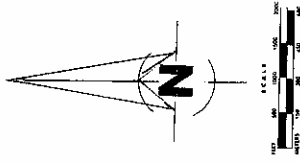
Roads in the settlement area of Thornhill are built and maintained by the Ministry of Transportation, Communications, and Highways. The major transportation links including Highways 16 and 25, and the residential collectors, Queensway Drive, River Drive, and Krumm Avenue, are presently paved. In addition, Kirkaldy Street, Clarke Street, and the streets in Woodland Subdivision are paved. There are 15.5 miles of paved road surface in Thornhill including 5.7 miles of provincial highways.

(A paving program was undertaken in 1983. Most streets in Thornhill are now paved.)

Public gravelled roads service residential areas and constitute 12.4 miles of the total 30 miles of roads in Thornhill.

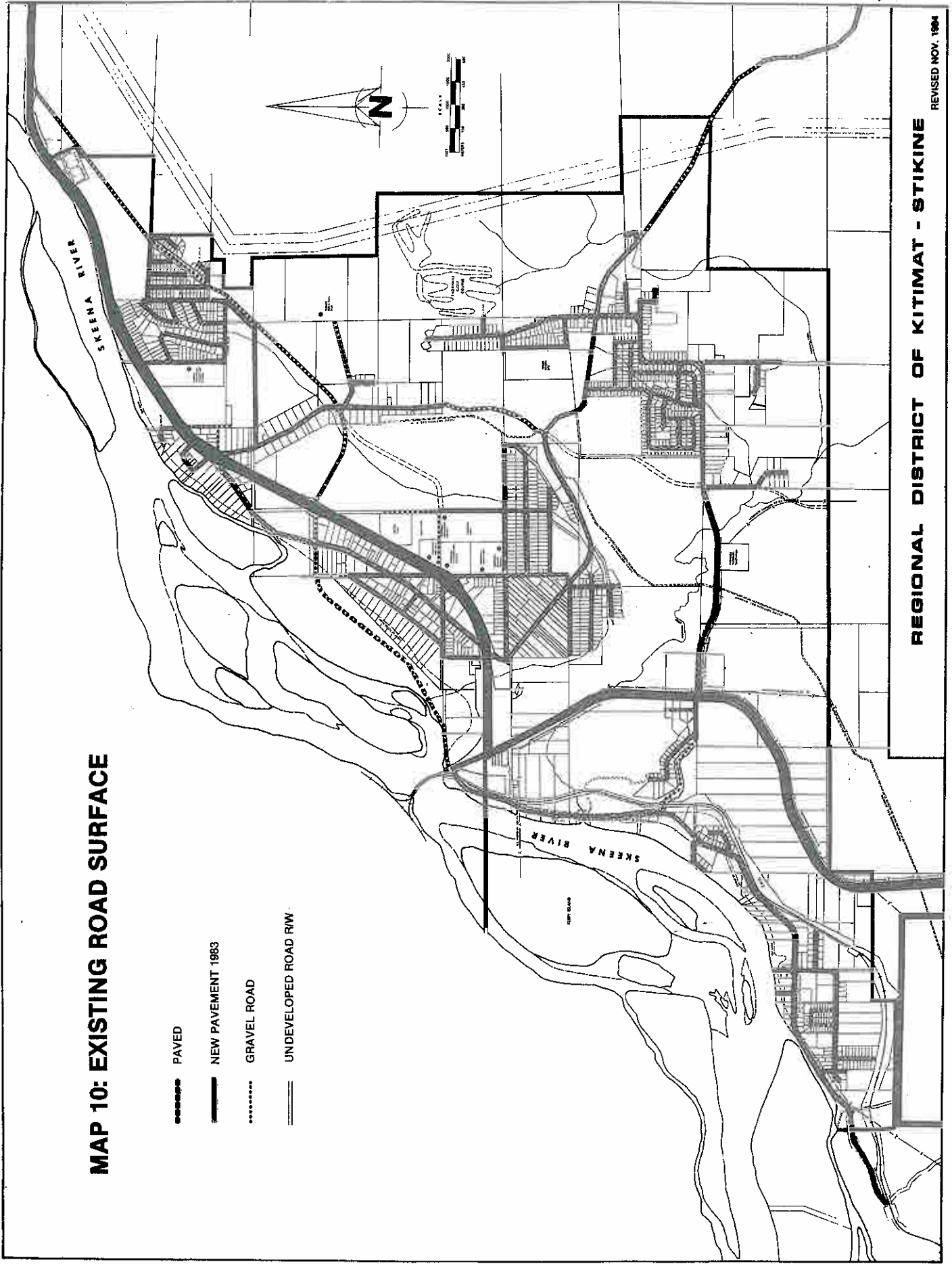
MAP 10: EXISTING ROAD SURFACE

- PAVED
- NEW PAVEMENT 1983
- GRAVEL ROAD
- UNDEVELOPED ROAD RW



REGIONAL DISTRICT OF KITIMAT - STIKINE

REVISED NOV. 1984



The CanCel Road, a private logging road, runs parallel to Highway 16 on the south side, crosses Highway 16 at Century Street and continues to parallel the direction of the highway on the north side. There is roughly 2.2 miles of gravelled private road. The CanCel Road provides the only other access, other than Kirkaldy Street, into the Kirkaldy residential area. It is also the potential east-west link between Kirkaldy and the Central Horseshoe area.

It is the Policy of the Board of the Regional District of Kitimat-Stikine

P: IV 5(1) that adequate roadways shall be provided to allow for functional transportation circulation within Thornhill

(2) that development(s) with access onto designated highways shall be subject to the regulations of the Controlled Access Highways Act

(3) that each subdivided building lot shall be provided with access to a public right-of-way.

A number of transportation corridors pass through Thornhill. Highway 16 provides the east-west vehicular link; Highway 25 provides similar access to Lakelse Lake and to Kitimat; and the CNR tracks run parallel to the Skeena River along the side of the Queensway escarpment. Terminals for public transportation are located in Terrace--these are the Greyhound Bus depot and the CNR station.

Minor arterials to local destinations also pass through Thornhill. Queensway Drive provides access to Old Remo and the west side of Lakelse Lake. Old Lakelse Lake Road provides access to rural subdivisions in Jackpine Flats and is an alternate route to Lakelse Lake. The CanCel Road is a private road for movement of logging vehicles; this road extends along the Copper River and dwindles into a four-wheel drive road through the Telkway Pass.

A study on the Greater Terrace Transportation Network was undertaken by the Ministry of Highways and Public Works in 1978. The study identified future major arterial

alignments for the Greater Terrace area. Some of these alignments link onto existing road patterns in Thornhill. Some details of the study require further investigation. These are:

- a) intersection of Old Lakelse Lake Drive and Crescent Street
- b) intersection of Crescent Street extension (Creek Street) and Krumm Avenue
- c) cross sectional details of Old Lakelse Lake Drive up the side of the escarpment and the effects of road widening on adjacent lands
- d) Krumm Ave. extension between Highway 25 and Queensway
- e) investigate the provision of another access into Kirkaldy subdivision.

Some existing intersections require upgrading and resolution of alignments to permit better traffic circulation and safer intersection details. These are:

- a) the vicinity of Highway 16, Paquette Ave., River Drive, and Old Lakelse Lake Drive
- b) the intersection of Old Lakelse Lake Drive, Clarke Street, and Sande Avenue.

Public transportation links between Terrace and Thornhill are non-existent. Residents rely either on private vehicles, taxis, or hitch-hiking. At the time of study, the Urban Transit Authority was in the process of investigating the possibility of providing urban transit services to the Greater Terrace area.

It is the Policy of the Board of the Regional District of Kitimat-Stikine

P: IV 5(4) that public transportation modes and terminals for use of residents in the settlement area shall be encouraged.

Pedestrian and bicycle systems are non-existent at the present time in Thornhill. Joggers and bicycles use the sides of roads which conflict with vehicular traffic. New subdivisions should be cognizant of the need for pedestrian and bicycle systems and this system should be integrated with the open space systems throughout the residential subdivision. Pedestrian and bicycle routes through the existing areas should be integrated where possible with the overall open space systems.

It is the Policy of the Board of the Regional District of Kitimat-Stikine

P: IV 5(5) that new subdivision areas shall provide pedestrian and bicycle systems which are segregated from the vehicular system, and that the provision of pedestrian and bicycle systems for presently built-up areas shall be considered in neighbourhood plans.

IV. 6 UTILITIES

The Thornhill settlement area is serviced, or can be serviced, by all available utilities including electricity, telephone, natural gas, and cablevision.

It is the Objective of the Board of the Regional District of Kitimat-Stikine

O: IV 6(1) to have utility services provided to all areas of Thornhill.

Electricity is presently supplied to all areas of Thornhill. Hook-up and delivery are provided by B.C. Hydro. Relocation of the B.C. Hydro substation site presently located near the intersection of Highway 16 and 25 is planned for the mid-1980's. The new site, Thornhill substation, is to be located along Krumm Avenue between Highway 25 and Thornhill Creek. The 138KV transmission will be tapped from the main Skeena substation south of the airport.

Natural gas is presently provided to some areas of Thornhill with potential for providing services to the remaining areas dependent on service demand. The lines are buried in 3' trenches on public rights-of-way or on PNG easements. At the present time there are roughly 50-60 hookups in the Kirkaldy, Horseshoe, and River Drive areas. The Queensway area could be serviced by extension of a feeder line back from the regulator station located at Queensway Drive and Thornhill Creek. The Bench area presently does not have natural gas services although the main line easement runs through the Bench area. In order to provide natural gas to the Bench area, a regulator station would have to be built to tap the main line and reduce gas pressure for residential distribution.

(Natural gas service is now available to all areas of Thornhill-1984)

All areas of Thornhill are covered by the cablevision services which utilize the telephone poles for delivery.

It is the Policy of the Board of the Regional District of Kitimat-Stikine

P: IV 6(1) that appropriate agencies shall be encouraged to provide utility services to all areas of Thornhill

(2) that corridors for energy and utility easements shall be coordinated with planned uses of the land.