

NOTICE: This copy is being provided subject to Section 27(2)(f) of the Federal Copyright Act and in accordance with the Freedom of Information and Protection of Privacy Act. Any subsequent reproduction or use requires permission from the holder of copyright

DISTRICT OF MAPLE RIDGE DRAINAGE SURVEY

7. ADEQUACY OF EXISTING DRAINAGE

This chapter discusses the principal drainage basins within the District of Maple Ridge and examines the adequacy of their overall drainage capabilities. Chapter 8 deals with specific drainage conditions of the urban area sub-basins which is further expanded in the individual basin studies.

Drainage Basins and Major Watercourses

The study area boundary encompasses the District of Maple Ridge, and all other land outside the District which is in the drainage catchment areas affecting the Municipality. The total catchment or the study area is about 54,950 ha (135,710 ac.). The study area boundary is defined in Figure No. 4.

Within the study area are identified eight distinct major watersheds or basins that are tributary to either the Fraser, Pitt, or Stave Rivers. The major drainage basins are presented on Figure No. 4 and a summary of their data is presented in Figure No. 30. Figure No. 30 describes drainage basin size, use, topography, character and the main drainage channel characteristics.

Comments on urban impacts and recommendations for detailed analysis are also set out in Figure No. 30.

Small Basins Directly Tributary to Fraser, Pitt and Stave Rivers

A number of small basins drain directly to the Fraser, Pitt and Stave Rivers. The total land area of these small basins is about 10,615 ha (26,220 ac.). The area lies mainly tributary to the Pitt River.

Fraser River

For urban storm drainage, the relative proximity of the Fraser River is fortunate for Maple Ridge. The river has almost a limitless capacity to accept stormwater flows and, with a few minor exceptions, the river level is low enough to readily serve Maple Ridge watercourses and storm drains.

Approximately 298 hectares (737 acres) of urban Maple Ridge sub-basins lie directly tributary to the River from Hammond to Kanaka Creek. Drainage areas east of Kanaka Creek include the low lying Albion industrial area, and the steep slopes of Thornhill - Ruskin and Whonnock Lake. Future drainage of Thornhill will require review of diversion techniques to exclude its runoff from the low lying dyked Albion area.

Between Hammond and Haney, the bank area immediately adjacent to the Fraser River is unstable and is affected by urban runoff which drains to the river.

South Alouette River

The South Alouette Watershed is most important for Maple Ridge because it contains most of the urban development area currently drained by Coho, McKenney and some other major tributary streams.

The South Alouette River basin is the largest basin and occupies about 25,670 ha (63,400 ac.) or 46.7 percent of the total study area. The basin is mainly located in Golden Ears Provincial Park and the District of Maple Ridge although portions are located within the Districts of Mission and Pitt Meadows.

The flow in the watercourse, is regulated by a B.C. Hydro owned and operated dam, established in 1925. Water from Alouette Lake above the dam is transferred to Stave Lake through an underground aqueduct to supplement Hydro requirements.

Past flows in the South Alouette River have been kept relatively low by available storage in the Alouette Lake hydro dam (even though this storage is not intended for flood control). However, once the storage volume is exhausted (which has happened periodically during heavy rainfall), relatively large quantities of water have been discharged into the South Alouette River, the channel of which is now inadequate as a result of encroaching development and accumulations of sediments. Ironically, the dam may have contributed to the reduced capacity of the river channel by reducing peak flows that would have, otherwise, kept the channel scoured out. Since it is understood that generation of electric energy will require that the dam be kept near full in the critical winter period, the probability of peak flows being buffered by the dam, even on an unplanned basis, can be anticipated to decrease in the future. The problem becomes further complicated because fisheries authorities appear to be set against any capacity improvements by channel dredging.

The South Alouette River constitutes one of the most serious drainage problems in Maple Ridge. The channel is grossly inadequate for the potential flood flows, and arrangements should be made to regularly dredge the river to restore capacity.

The urban development basins draining to the South Alouette River face a number of problems because development partly progressed without much regard for drainage. In the McKenney Creek basin, the creek channel south of the Lougheed Highway is inadequate and considerable growth has taken place without adequate storm discharge facilities. In the Coho basin the channel of the creek from the river to past 232nd Street is inadequate.

North Alouette River

The North Alouette basin is the third largest basin and occupies a total land area of 4,555 ha (11,250 ac.) or 8.2 percent of the study area. It is mainly located within the District. The major watercourse is the North Alouette River. Several lakes are found in the upper reaches.

This river basin is much smaller than that of the South Alouette but it discharges into the same lowland area. The limited adequacy of the river channel in the sensitive lower reaches is illustrated by its confluence with the South Alouette at times of flood. Backwater conditions from the Fraser River and Pitt River create high water flood conditions in both Alouette Rivers to above 232nd Street.