CHAPTER V

WATER RESOURCES

General

An adequate water supply is essential for the expansion and growth of any industrial or commercial centre. A detailed study of this resource in the Port Hawkesbury Immediate area was conducted during the 1960 field season. The results and implications of this survey may be found in the Preliminary Report, 1961.

SURFACE WATER

Lakes

A number of freshwater lakes surround the Port Hawkesbury Immediate area and are considered as potential water sources. Most of these lakes are shallow and cover less than one hundred and twenty acres.

East of River Inhabitants are the MacMillan Lakes, White Lake, and Shannon Lake. These lakes are relatively shallow and are in part becoming filled with mosses and reverting to peat bogs. The catchment areas of these bodies of water are small and mostly confined to swamp and muskeg ground. Because of these factors and their considerable distance from the Port Hawkesbury area, it is not likely that these natural water reservoirs will be of any importance to the industrial development of the area.

West of River Inhabitants, Landrie Lake, Hector Lake, MacIntyre and Beaver Dam Lakes, and Horton Lake, are located between two and four miles from the town of Port Hawkesbury. For details on Landrie and Hector Lakes, see the Preliminary Report, Port Hawkesbury, 1961.

MacIntyre and Beaver Dam Lakes are considered as a unit body of water because they are only slightly over one-half mile apart and are joined by a stream. The southwestern end of Beaver Dam Lake is slightly more than three miles from the new Port Hawkesbury shopping centre. The catchment area of these lakes is about ten square miles, considerably larger than that of any other lakes in the map area. Part of the rock formation beneath Beaver Dam Lake belongs to the Windsor group. It is

therefore possible that in dry weather water salinity may increase due to adjacent salt-rich formations characteristic of these sediments. No known tests have been made on these lakes to determine the depths or saline factors during wet and dry seasons, but such tests should be carried out in detail before any development plans for the lakes are put into effect.

Horton Lake is situated about four linear miles from the Hawkesbury Heights sub-division, at an elevation of approximately two hundred and seventy feet above sea level in the southern end of the Creighnish Hills. The bedrock underlying the lake is relatively porous, consisting of Horton sandstone and pebble conglomerate. The lake has a catchment area of about two square miles.

During the dry summer months the water level in Horton Lake dropped approximately twelve inches but the lake continued to maintain itself without replenishment from rain. This suggests that the lake is in part fed by a system of springs. It is important to note that it would be possible to raise the water level over thirty feet by constructing a dam about one thousand feet long at the south end of the lake. This would probably triple the water capacity of the lake.

Rivers and Streams

There are no streams in the map area capable of producing a continuous supply of water for domestic or commercial use.

River Inhabitants, which is the only large river in the area, is affected by tides for approximately eight miles from its mouth at Inhabitants Bay, thus leaving the water of this portion of the river unfit for consumption. The majority of the remaining streams are intermittent or are reduced to a mere trickle during the dry summer months.

The area north and northwest of MacIntyre Lake is drained by North West Arm Brook, Lamey Brook, and their tributaries, which empty into River Inhabitants.

SUB-SURFACE WATER RESOURCES

Bored Wells

An adequate supply of water for domestic and minor

industrial use is available below the water table in practically all regions of the map area.

The town of Port Hawkesbury owns several deep wells which range in depth from 150 to 420 feet and produce up to eight gallons a minute. Privately owned wells are common in the area and no problems are encountered in obtaining an adequate flow in the range of approximately six gallons a minute. The depth at which a sufficient quantity of water (Private Domestic Use) will be reached, is about one hundred feet, but varies with the depth of overburden and type of underlying bedrock (See Preliminary Report, Port Hawkesbury project, 1961). It should be noted that in the Port Hastings area the bedrock structures are more complex and may have varying effects on the depth at which water is encountered.

Water Tests in Drill Holes

During the 1961 field season three holes were drilled (See Map No. 2) at various stratigraphic horizons in the Riversdale group in the vicinity of Port Hawkesbury. These holes were drilled primarily to get information on specific sections of the Riversdale lithology but tests were also made on the quantity of available ground water. The holes were two inches in diameter and were drilled to a depth of 75 feet. Hole No. 1 was mostly in massive gray sandstone, Hole No. 2 was in dark grey shale and Hole No. 3 penetrated laminated gray shale and sandstone. Identical tests were carried out on each hole and gave similar results. Water was pumped from the hole for an hour and at the end of that period the quantity of flow was measured. Results showed that all holes were producing in the vicinity of eight gallons a minute over a period of one hour. When the test was completed the water level in each hole rose to within five feet of the surface in a few minutes. It should be noted that the type of pump used for the test would not lift water from a depth greater than twenty-five feet. It is therefore reasonable to assume that these holes or wells are capable of producing in excess of eight gallons a minute which is more than that required for normal domestic private use.

The black shale penetrated in Hole No. 2 was very badly broken and fractured to a depth of forty feet from the surface, and it is probably due to this fracturing that appreciable quantities of water were encountered.

From the tests made in these drill holes, it appears that quantities of water sufficient for present needs are available in the subsurface rock formations. Due to weathering and fracturing of the uppermost portion of the rocks, which renders them permeable and susceptible to the passage of water, normal private domestic requirements probably can be found with relatively shallow drilling regardless of the underlying bedrock lithology. Any industrial concern requiring subsurface water in quantities above the average domestic requirements would be well advised, however, to pay close attention to bedrock conditions, as the most favorable acquifers in the map area appear to be the Riversdale sandstone horizons. At surface these are mostly confined to the north and east of central Port Hawkesbury.