

Appendix K

NORTH TYNDAL WELL FIELD

2.0 North Tyndal Wellfield

The North Tyndal Wellfield is located 15 KM North of the Town of Amherst in a generally low lying flat area between McLellans Brook and the Green Road on Route 302. See Figure 2.

Forest Cover

The majority of the wellfield area is in forest cover typical of the eastern lowlands forest region. Low slopes and soil conditions create impeded drainage in many areas, which favours softwood stands of black spruce, red spruce, balsam fir and tamarack. In some areas, these are associated with red maple, sugar maple, yellow birch and white birch. Much of the study area has severe limitations to the growth of commercial forests (Canada land inventory). Provincial forest inventory mapping of the area indicates the predominance of softwoods, Nova Scotia Department of lands and Forest, 1969) .

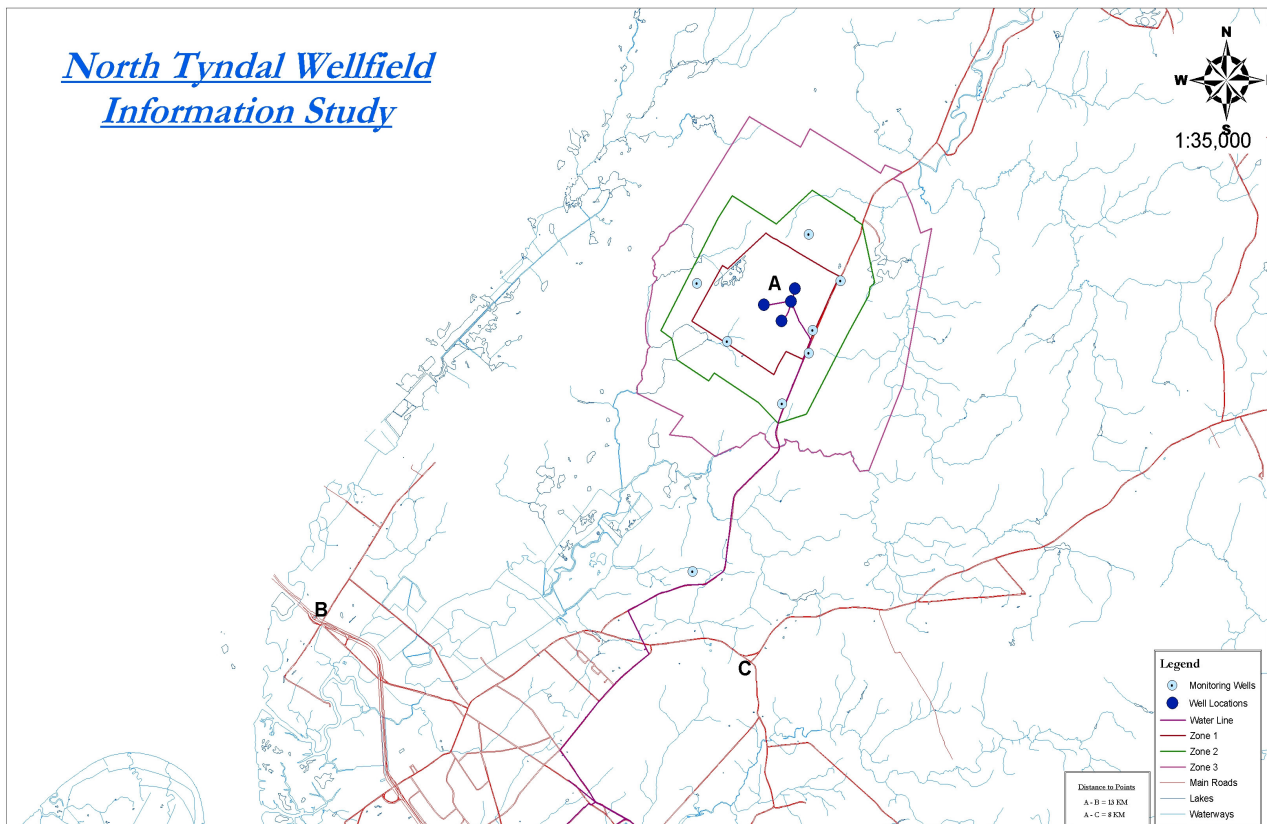


Figure 2 Wellfield area showing zones of protection.

Soils

Within the Wellfield area the soils are classified as the Debert Series occurring as a reddish brown, brown to dark brown sandy loam over a slowly permeable yellowish red to reddish brown sandy loam. Localized areas of humified peat and moss also occur, and in fact there is more than 200 Hectares of peat bog in the protected water area.

The surficial geology of this area occurs as reddish brown silty sand and clay tills, Classified as the Eatonville-Hants Till series. These units are moderately compact to compact, massive and range in thickness from 10 to 65 feet and underlie the soil series. The provenance of these tills is the Carboniferous red bed sequences of the Cumberland Basin.

Geological logs from the North Tyndal drilling program indicate a surficial geological horizon comprised of a red brown sandy clay till. This till unit varied in thickness from five to ten meters in the 1987 series boreholes. The thickness of the overburden in the vicinity of Well 90-1 was two and a half meters. The overburden has been removed by quarrying activity in the immediate area of the NSDOE test hole #1.

Bedrock Geology

The bedrock geology of the wellfield area occurs within the Cumberland structural basin which is comprised of Carboniferous sedimentary sequences. The North Tyndal aquifer geology occurs in the "Balfron" formation strata of the "Pictou group" which represents the final stage of Sediment deposition in the Cumberland Basin. These strata have a fluvial provenance and rest disconformably , or with angular unconformity on basement rock. The sediments of this group generally consist of interbedded cyclical fluvial channel and over bank deposits, comprised of soft micaceous reddish brown and greyish red sandstones, that vary from very fine to medium grained, and red brown green mottling. Localized conglomeratic zones also occur within the Pictou Group. Test wells constructed by R. White Well Drilling and supervised by Porter Dillon Ltd. along the Tyndal Road encountered medium to coarse grained reddish brown micaceous sandstone and greyish red conglomeratic beds with shale rip up clast in the matrix. These lithologies are indicative of channel lag deposits. Interbedded fine grained sandstone, siltstone and shale units were also encountered which are typical of fluvial overbank deposits.

Hydrogeology

As part of the Amherst Wellfield Exploration Program Porter Dillon Ltd evaluated the aquifer characteristics of the North Tyndal Site through the analysis of four pump test programs. Testing was conducted on the NSDOE test Hole no. 1

located in the sandstone quarry and on Wells 87-5, 87-3 and 90-1. Results were evaluated according to the Thesis modified non-equilibrium equation developed by Cooper and Jacob (1946).