GOVERNMENT OF BRITISH COLUMBIA

MEMORANDUM

TO Dr. J. C. Fowerake, Head
Groundwater Section
Hydrology Division

FROM A. P. Kohut
Senior Geological Engineer
Groundwater Section

May 30, 1977

SUBJECT Groundwater Potential, Magic Lake Estates

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At the request of Mr. Brady, a review was conducted by Mr. Tradewell under my supervision of available groundwater information for the above. A copy of Mr. Tradewell's report on the known groundwater conditions and prospects for future development is attached. This memorandum summarizes the main points of the report which are particularly significant to future water supply considerations.

It is evident from the geology and limited available storage of the bedrock that large quantities of groundwater are not readily available in the watersheds occupied by Buck and Magic Lakes. Estimates are that from 25 to 80 Igpm might be developed on a continuous basis from wells under optimum conditions without depleting the groundwater resource and/or causing a deterioration in groundwater quality. These figures are based on model considerations developed for Mayne Island and on the basis of available data are considered reasonable estimates of the potential within the areas of interest on North Pender Island. Several wells would probably have to be drilled to prove up this potential, although it may be possible ultimately to rely on only a few successful wells for extracting the equivalent of the annual recharge within the area. It is expected that larger withdrawal rates could lead to a depletion of the resource and/or deterioration in water quality. Careful monitoring of water levels and groundwater chemistry in observation wells should be considered if withdrawal rates in excess of 80 Igpm are maintained for wells in the region.

Although the prospects of obtaining large quantities of groundwater are not encouraging, test drilling to depths of at least 300 feet might be carried out at several sites that warrant investigation. It does not appear groundwater would be sufficient to supply the entire community and at best could only augment the present surface source to a limited degree, possibly 10 percent of the total anticipated requirements.

One remote possibility that might be investigated for improving the water quality from Magic Lake would be to pump from the lake and recharge a shallow gravel deposit in the area. Shallow wells sited in the deposit could yield water of improved quality particularly with respect to removing algae for

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example. A detailed field investigation by a geologist would have to be undertaken to locate a potential site for recharge, and some test drilling would be required to prove up the feasibility of operating such a scheme.

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Attach.