

AGRICULTURAL IRRIGATION POLICY

May 4, 1995

A. BACKGROUND:

This policy statement makes reference to two sources of water; groundwater and surface water. For the purpose of this document groundwater is defined as water that naturally occurs beneath the surface of the ground and is normally extracted by pumping from water wells. Groundwater is frequently referred to as well water. Surface water is defined as that water which naturally occurs in streams, ponds, rivers or estuaries, that can be pumped directly.

1. GROUNDWATER:

- a) Groundwater is considered to be the most viable and sustainable source of water supply for agricultural irrigation purposes. Considering the Island's high rate of recharge to the water table and because extraction for irrigation is of a short term nature each year, at a limited number of locations, it is concluded that this water use would have a negligible impact on the local and regional groundwater reserves.
- b) The extraction of water from subsurface aquifers is controlled with authority provided by the Water Well Regulations made pursuant to the Environmental Protection Act. High capacity wells are not a new issue on Prince Edward Island and the assessment and management of our groundwater resources in relation to agricultural irrigation fit well within the existing process.
- c) Any impact assessment of high capacity wells will consider the potential for interference with other water uses in the area as well as the projected impacts on stream flow. Generally, the more water that is extracted from groundwater supplies, the less water is available for discharge to streams. Preliminary calculations indicate that the impact of irrigation wells located more than 100 metres from a stream would be insignificant. In a worst case situation, agricultural irrigation from groundwater sources could potentially reduce stream flow in the order of 5-8%. The further a well(s) is located from a stream, the less potential there is for impact on that stream, as the influence of the extraction on the water table is dispersed in both space and time.

- d) There will be additional costs associated with the construction and testing of groundwater production wells and equipping same with the appropriate pump to produce 300-400 IGPM. In some areas of the province, particularly in the western portion, it is unlikely that single well yields greater than 100-150 IGPM could be achieved. Lower yielding wells could be used in conjunction with water storage, however, this would add substantially to the cost.

2. SURFACE WATER:

- a) The control of water withdrawal from surface water bodies is currently handled under the authority provided by Section 10 of the Environmental Protection Act. Prior to extracting water from any stream or river, a person must first obtain a Watercourse Alteration Permit (Water Withdrawal Permit). There have been a limited number of permits issued for this purpose in recent years; 2 in 1992, 5 in 1993 and 11 in 1994. The department has recently become aware that a number of farmers have pumped water from streams without permits in the past.
- b) In order to protect stream and fish habitat, it is necessary to maintain a minimum amount of flow (maintenance flow) in the stream at all times. This province, as well as the three other Atlantic Provinces, have traditionally used the somewhat arbitrary criteria of 25% of the mean annual flow (25% MAF) as maintenance flow. Stream flows for a particular stream can be estimated for any time period on the basis of watershed size and historical data from the closest long term stream flow monitoring station. The 25% mean annual flow criteria was adapted many years ago from research work carried out in the northwestern United States.
- c) The Department of Fisheries and Oceans (DFO) has advised that this criteria does not, in their view, adequately protect the aquatic environment in most situations. They correctly observe that this criteria does not take into account the local and regional variability in the groundwater contribution to stream baseflow and does not consider seasonal low flow characteristics of individual basins.
- d) At the present time, DFO, like the Province, has a regulatory mandate and administrative jurisdiction to protect and manage freshwater fish habitat. It is the current policy of the federal department that extraction of water from streams for any purpose should not lower stream flow levels below that to which fish and other aquatic organisms are normally accustomed. They are prescribing that the maintenance flow criteria be based on long term flow frequency data, and that water flow in a stream in any particular month not be lowered below that level which normally exists.

B. POLICY

1. GROUNDWATER:

- a) The use of groundwater reserves as a source of water supply for agricultural irrigation purposes is considered to be a viable and sustainable option in terms of water availability and environmental impacts. This recognizes that the Province has a generous supply of good quality groundwater that can be managed and utilized as a renewable natural resource. The Department of Environmental Resources will continue to assess applications for high capacity wells on an individual, case by case basis following the existing regulatory and assessment procedures. The regulations currently require that anyone wishing to establish a high capacity well must first obtain a Groundwater Exploration Permit. This permit will prescribe the necessary testing that the proponent will be required to carry out. Once well construction and testing is completed, and provided the impacts on other users and stream flow are considered by the Department to be acceptable, a Groundwater Allocation will be issued.
- b) Under no circumstances will the rate of groundwater extraction be permitted to exceed 50% of the annual recharge for any area influenced by a well. In addition, the groundwater allocation will take into consideration the potential impact on stream flow with specific reference to maintenance flow.
- c) The Department of Environmental Resources will continue to require that "production wells are to have no significant predicted impact on other users". In the case where such interferences are evident, the Department will administer the provisions of the Water Well Regulations that hold the recipient of a groundwater allocation "fully and solely liable for all adverse effects to any party".
- d) In basins where surface water supplies available for extraction have been fully allocated, the Department of Environmental Resources may require that wells be located at such distance from a stream as to render the direct and immediate impacts of the extraction on stream flows as insignificant. In this case, preference will be given to applications for wells that are more than 100 metres from a stream.

2. SURFACE WATER:

a) MAINTENANCE FLOW:

- (i) Maintenance flow for any surface water system will be determined on the basis of flow frequency/flow duration data calculated on the basis of

watershed size above the point of water withdrawal using historical information prorated from the nearest long term stream flow monitoring station.

- (ii) Maintenance flow for any point in a stream will be calculated on the basis of 70% of the flow rate that is exceeded 50% of the time in any month and at no time will the actual rate of flow in the stream be reduced by extraction below that rate which is exceeded 95% of the time.
- (iii) West of Summerside, the stream flow observed per unit area of watershed is generally much less than that east of Summerside. The methodology outlined above in section (ii) accounts for this regional difference and will be utilized in all areas of the province. However, due to the lower basin yields in areas west of Summerside, the amount of available water for extraction per unit area of watershed can be as little as 1/3 to 1/2 of that available east of Summerside.
- (iv) In watersheds where the permitted withdrawal rate approaches 50% of the amount of water that is predicted to be available in excess of maintenance flow, the stream will be equipped with a flow measurement gauge and monitored to ensure that actual stream flow does not drop below maintenance flow level.
- (v) A Watercourse Alteration Permit will be required by any person withdrawing water from a surface water body at a rate in excess of 50 IGPM or when the total daily withdrawal exceeds 10,000 imperial gallons.
- (vi) In an effort to fairly and equitably distribute the surface water resources in any watershed where the demand exceeds the supply, available water will be allocated in allotments of 400 IGPM (500 USGPM). In basins where demand does not exceed supply, an individual farmer may apply for and receive a permit for extraction rates that exceed that amount.
- (vii) With the exception of the water withdrawal allocations associated with storage ponds, water withdrawal allocations are not transferable from one farmer to another, either with the sale or lease of a property or the discontinuance of use of that allocation. Because of the capital investment associated with storage ponds, which are not moveable, the water withdrawal allocation will transfer with the ownership of the property on which the pond is located.

b) ALLOCATION OF AVAILABLE WATER:

The amount of water flow in a stream that is in excess of maintenance flow is considered available for extraction and is termed "**available water**". Available water will be allocated to applicants on the basis of a "**watershed priority list**". The position of any water user on the watershed priority list will dictate their long term priority access to the available water in that system. Watershed priority lists will be established for each watershed by the following method:

- (i) Those users that have obtained Water Withdrawal Permits to extract water for irrigation purposes at specific locations in previous years will have first priority for the issuance of permits in each year. This priority will be limited to a pumping rate of 400 IGPM (500 USGPM) and only at locations specified on previous permits.
- (ii) Those users who owned irrigation equipment in 1994, and have applied for a Water Withdrawal Permit to extract water for irrigation purposes in 1995 will have second priority for the issuance of permits in each year. This priority will be limited to a pumping rate of 400 IGPM (500 USGPM) and only at locations specified on the original 1995 application.
- (iii) All other applicants will have third priority for the issuance of permits for extraction. As above, available water will be allocated in allotments of 400 IGPM (500 USGPM).

Within each priority grouping, the allocation of available water will be based on the date of application. The earliest received application will have priority.

At the time of application, every applicant must indicate the quantity of water they require at each pumping location and the years (ie: each year, every second year, every third year, etc.) that the water will be required. Permits will be issued only for those years when the applicant requires the available water for irrigation purposes. Once established in the first year of application, the pattern of usage (the years which the applicant has previously indicated that they will require the water at a site) must not change. Should the permit holder wish to change their usage pattern, their priority level will be lost. This restriction is necessary so that the available water in the stream can be allocated to other users during years when the priority permit holder does not require irrigation water from the site.

In years when a priority permit holder does not require irrigation water, available water will be issued to the next applicant on the watershed priority list. This applicant must also indicate the years when water will be required. A permit will not be issued if future plans of the new applicant conflict with those of existing permit holders. Once an applicant has been issued a Water Withdrawal Permit for the extraction of water for irrigation the applicant will, in subsequent years, be listed in the highest priority grouping for the years indicated on their application that they require irrigation water.

In years where a user has priority for allocation of available water at a particular site, the user must be granted a Water Withdrawal Permit for the extraction of water for irrigation in order to retain their priority listing. Once a priority listing has been lost, the users priority listing will drop to the next appropriate level.

The construction of storage ponds adjacent to streams, at suitable locations, will be encouraged. The combined benefit of the stored water and the reduced rate of withdrawal from the stream will substantially reduce the impact on stream flow. Any applicant willing to construct a storage pond(s), provided water is predicted to be available, will be given a Water Withdrawal Permit. These ponds could be constructed adjacent to streams with recharge by gravity flow through a pipe(s) connecting it to the main stream. If local topography is not suitable for the construction of a stream side pond, a storage pond remote from the stream could be constructed and recharged by pumping continuously from the stream at a substantially lower rate than that required for direct withdrawal. These ponds would have to be designed and approved by the Departments of Agriculture and Environmental Resources.

Many stream systems in the province have instream impoundments or ponds (*i.e.* Scales Pond, Wrights Pond). It is anticipated that these ponds can be managed to maximize the amount of water available for withdrawal purposes by taking full advantage of the stored water while maintaining fish passage into the pond and maintenance flow levels in the stream below the pond. Water Withdrawal Permits for the extraction of water from these ponds for irrigation will be issued in consultation with the organizations responsible for the management of the pond and will also respect the priority listing of users, fish passage requirements and downstream maintenance flow requirements.

In watersheds where there is a high demand for the available water for irrigation, maximum utilization will only occur with a high degree of cooperation among farmers and with the Departments of Environmental Resources and Agriculture. To facilitate this cooperation, an *ad hoc* committee will be formed for the watershed consisting of each irrigating farmer and representatives from the two departments. The mandate of the committee will be to coordinate various irrigating activities such

as management of pond levels, alternating extraction activities or other sharing mechanisms. While the committee will coordinate options for water extraction, it will not conduct management activities. In addition, the committee will not have the mandate to alter the established priority list for the watershed. Any changes to the issuance of permits must be by agreement with the affected persons on the priority list.

c) CESSATION OF EXTRACTION UNDER LOW FLOW CONDITIONS:

In the event that stream flows should approach maintenance flow levels, in any year, at any gauging station, users above that point will be shut down in the following priority:

- (i) Permit holders not using storage ponds will be shut down in reverse order of their priority listing as determined using the criteria outlined in Subsection B(2)(b) above.
- (ii) Any permit holders with an approved water storage pond(s) will have priority over those irrigating directly from a stream. Permit holders using storage ponds will be shut down in reverse order of their priority listing as determined using the criteria outlined in Subsection B(2)(b) above.

d) WATER WITHDRAWAL FEES:

There will be a \$300.00 annual water withdrawal fee applied to each Water Withdrawal Permit issued for each site for the extraction of water for irrigation. Extraction points on a stream used by the same permit holder that are less than 500 metres apart may be considered to be one site. This revenue is required to offset the costs associated with the administration and implementation of the monitoring program, and to cover costs associated with stream flow monitoring (gauging).

The Department of Environmental Resources will issue an invoice to all irrigators who are scheduled to extract water in the coming year. The invoice will be issued in early January and payment must be received by February 15. Upon receipt of payment the Department will issue a Water Withdrawal Permit, valid for the coming irrigation season. Permits must be visibly displayed at each extraction site. If no payment is received the irrigator will lose their position on the long term priority listing for that extraction site.