

EXHIBIT NUMBER: PA-17  
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(Commission Secretary)

## P Load Contribution Calculations

To calculate the percentage of P loss from 11,650,000 acres would contribute 937 or 1200 metric tonnes to Lake Winnipeg, the following calculations were used.

Note: The Lake Winnipeg Stewardship Board – interim report, estimated that agriculture in Manitoba contributed 937 metric tonnes of P to the total P load. The Lake Winnipeg Stewardship Board 's final report, amended this amount to 1200 metric tonnes.

Using 15 ppm soil test P as the provincial average for all Manitoba cropland, the total Phosphorus soil test P in tonnes is found as:

$$\begin{aligned} 11,650,000 \text{ acres} \times 15 \text{ ppm} \times 2 &= 349,500,000 \text{ lbs of P} \\ 349,500,000 \text{ lbs of P} / 2000 \text{ lbs/ton} &= 174,750 \text{ tons of P} \\ 174,750 \text{ tons of P} \times .907 &= 158,498.25 \text{ tonnes of P} \end{aligned}$$

To calculate what the percentage loss of the total P would contribute 937 tonnes, or 1200 tonnes of P to Lake Winnipeg:

$$\begin{aligned} 937 \text{ tonnes} / 158,498 \times 100 &= .59 \% \text{ (constant factor)} \\ 1200 \text{ tonnes} / 158,498 \times 100 &= .757 \% \text{ (constant factor)} \end{aligned}$$

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To calculate this tonnage contribution at differing soil test concentrations, the following calculation can be used:

$$\begin{aligned} 742,000 \text{ acres} \times \text{ppm} \times 2 &= \text{lbs of P} \\ \text{lbs of P} / 2000 \times .907 &= \text{tonnes of P} \\ \text{Tonnes of P} \times \text{factor of } .757, \text{ or } .59 &= \text{tonnes of P contributed to Lake Winnipeg} \end{aligned}$$

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To calculate the percentage of contribution to Lake Winnipeg, choose one of the three source categories:

- 1) "Total P Load to Lake Winnipeg (All Sources)"
- 2) "Total P Load to Lake Winnipeg (All Manitoba Sources)"
- 3) "Total P Load to Lake Winnipeg (All Manitoba Agriculture Sources)"

$$\text{Tonnage of P contributed} / \text{source category} \times 100 = \% \text{ contribution of source category}$$