

## **ATTACHMENT 4**

Estimated municipal equivalent daily Nitrogen and Phosphorus discharge from all 7 Puget Sound salmon farms at maximum production

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In 2017 we estimated the total discharge of nitrogen and phosphorus waste from all seven Atlantic salmon net pen aquaculture farms when each was at estimated maximum production based on recent monthly NPDES reports to Washington Department of Ecology. We estimated that the total production to be 2,111, 567 adult salmon each weighing 5.5 kilograms (~ 11 pounds). Over the course of the growing period (approximately 20 months) the estimated total discharge of Nitrogen (N) is 2,595,321 pounds and the total discharge of Phosphorus (P) is 554,244 pounds. These nutrient discharges were equivalent to daily discharges of 4326 pounds of N and 924 pounds of P.

We compared this to municipal the per-person daily discharge of N and P in Puget Sound based on conventional secondary treatment and under the new tertiary treatment of King County's Brightwater waste treatment facility. For conventional treatment, the estimated daily N and P discharge per person is 0.0363 and 0.0027 pounds, respectively. For new tertiary treatment, the values are 0.0195 and 0.0022 pounds per person per day, respectively.

Dividing the total daily discharge of N and P from all seven farms operating a maximum capacity by each of the per person daily municipal discharges yields an estimate of the size of an average Puget Sound municipality that would discharge the same daily total of N and P as all seven farms.

For conventional treatment, the daily discharge of N from all seven farms is equivalent to the daily discharge of a city of 119,173. The daily discharge of P from all seven farms is equivalent to the discharge from a city of 347,164. For cities with Brightwater level waste treatment, the daily discharge of N from all seven farms is equivalent to the discharge from a city of 222,120 and the daily discharge of P from all seven farms is equivalent to the discharge from a city of 426,001.