Nitrate Dilution Calculation Worksheet

(SWMP Area Excluded)

Nitrate Loading

Residential Septic Systems (assumes 1,000 L/day/lot)

Number of lots with untreated septic systems =	73	lots
Nitrate loading from untreated septic system =	40	grams/lot/day
Total annual nitrate loading from untreated systems =	1065800	grams/year
Total Annual Nitrate Loading from all Systems =	**1065800**	**grams/year**

Dilution Volumes

Infiltration Factors

Topography factor =	0.23
Soil factor =	0.40
Cover factor =	0.16
Combined infiltration factor =	0.79

Precipitation Infiltration

Annual water surplus =	0.380	metres/year
Annual infiltration (Water Surplus x Infiltration Factor) =	0.3002	metres/year

Infiltration Area and Infiltration Volumes

Area available for infiltration (Site Area) =	350,053.1	square metres
Area available for infiltration (Site Area - Hard Surface Area) =	301,953.1	square metres

(assumes 7 metre wide x 1,700 m long interal roadways and 300m2 for each lot house+driveway)
(Minus 14,300m2 for SWMP)

Total Annual Volume of Infiltration (Infiltration x Area) =	90,646	cubic metres/year
Annual Flow from Residential Lots (assuming 1000 L/day/lot) =	26,645	cubic metres/year
Total Annual Volume Available for Dilution =	**117,291**	**cubic metres/year**

Dilution Calculation

$$C_{Nitrate} = \frac{Mass}{Volume} = \frac{Annual\ Nitrate\ Loading(grams/year)}{Annual\ Dilution\ Volume(cubic\ metres/year)} = \frac{grams}{cubic\ metre} = \frac{mg}{L}$$

$$\mathbf{C_{nitrate\ (73\ lots)} = \frac{1065800\ grams/year}{117291\ cubic\ metres/year} = 9.09\ mg/L}$$

$$\mathbf{C_{nitrate\ (81\ lots)} = \frac{1255600\ grams/year}{125752\ cubic\ metres/year} = 9.90\ mg/L}$$

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Nitrate Dilution Calculation Worksheet

(Conventional Method)

Nitrate Loading

Residential Septic Systems (assumes 1,000 L/day/lot)

Number of lots with untreated septic systems =	73	lots
Nitrate loading from untreated septic system =	40	grams/lot/day
Total annual nitrate loading from untreated systems =	1065800	grams/year
Total Annual Nitrate Loading from all Systems =	**1065800**	**grams/year**

Dilution Volumes

Infiltration Factors

Topography factor =	0.23
Soil factor =	0.40
Cover factor =	0.16
Combined infiltration factor =	0.79

Precipitation Infiltration

Annual water surplus =	0.380	metres/year
Annual infiltration (Water Surplus x Infiltration Factor) =	0.3002	metres/year

Infiltration Area and Infiltration Volumes

Area available for infiltration (Site Area) =	350,053.1	square metres
Area available for infiltration (Site Area - Hard Surface Area) =	316,253.1	square metres

(assumes 7 metre wide x 1,700 m long interal roadways and 300m2 for each lot house+driveway)
(Minus 14,300m2 for SWMP)

Total Annual Volume of Infiltration (Infiltration x Area) =	94,939	cubic metres/year
Annual Flow from Residential Lots (assuming 1000 L/day/lot) =	26,645	cubic metres/year
Total Annual Volume Available for Dilution =	**121,584**	**cubic metres/year**

Dilution Calculation

$$C_{Nitrate} = \frac{Mass}{Volume} = \frac{Annual\ Nitrate\ Loading(grams/year)}{Annual\ Dilution\ Volume(cubic\ metres/year)} = \frac{grams}{cubic\ metre} = \frac{mg}{L}$$

$$\mathbf{C_{nitrate\ (73\ lots)} = \frac{1065800\ grams/year}{121584\ cubic\ metres/year} = 8.77\ mg/L}$$

$$\mathbf{C_{nitrate\ (85\ lots)} = \frac{1255600\ grams/year}{125752\ cubic\ metres/year} = 9.94\ mg/L}$$

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