



*From the Desk of:*

**PHIL SUDOL**

**TO:** Adam N. Weisenberg  
**CC:** Chris Lane  
**DATE:** March 18, 1998  
**SUBJECT:** Wayland Business Center, Phosphorus Calculation

The EPA Draft NPDES permit for the Wayland Business Center requires a watershed based phosphorus loading reduction. The anticipated flow generated by the facility will be 30,000 gallons per day with an effluent phosphorus limit of 0.5 mg/l. This equates to a discharge of 0.125 pounds/day being discharged from the facility.

$$0.5 \text{ mg/l} = 5.0 \times 10^{-4} \text{ grams/liter}$$

$$(5.0 \times 10^{-4} \text{ grams/liter}) / (0.2646 \text{ liters/gal}) = 1.889 \times 10^{-3} \text{ grams/gal}$$

$$(1.889 \times 10^{-3} \text{ grams/gal}) \times (2.205 \times 10^{-3} \text{ grams/lb}) = 4.16 \times 10^{-6} \text{ lbs/gal}$$

$$(4.16 \times 10^{-6} \text{ lbs/gal}) \times 30,000 \text{ gals} = \underline{0.125 \text{ lbs.}}$$

Standard domestic wastewater that is discharged to a leaching field has a phosphorus concentration of 10 mg/l. The treatment plant will have a limit of 0.5 mg/l, thus, we will be reducing the phosphorus concentration by 9.5 mg/l. The treatment plant will be required to treat an addition 1,582 gallons per day to off set the 0.125 pounds generated by the Wayland Business Center.

$$9.5 \text{ mg/l} = 9.5 \times 10^{-3} \text{ grams/liter}$$

$$(9.5 \times 10^{-3} \text{ grams/liter}) / (0.2646 \text{ liters/gal}) = 3.59 \times 10^{-2} \text{ grams/gal}$$

$$(3.59 \times 10^{-2} \text{ grams/gal}) \times (2.205 \times 10^{-3} \text{ grams/lb}) = 7.9 \times 10^{-5} \text{ lbs/gal}$$

$$0.125 \text{ lbs} / (7.9 \times 10^{-5} \text{ lbs/gal}) = 1,582 \text{ gals}$$

*Applied Environmental Systems, Inc.  
 2 Clerico Lane, P.O. Box 1079  
 Belle Mead, New Jersey 08502  
 908 359-5501 fax 908 359-8286*