### *4.7.6. Total Residual Chlorine (TRC):*

*Daily Maximum Concentration:*

$$[TRC]_{Effluent} = \frac{[Q_{Effluent}\ (ft^3/sec) + 7Q10(ft^3/sec)] \times [TRC]_{Stream}\ (mg/L)}{Q_{Effluent}\ (ft^3/sec)}$$

$$= \frac{(0.155 + 0.09) \times 0.02}{0.154}$$

$$= 0.02 \text{ mg/L}$$

### *4.7.7 Ammonia:*

*Toxicity Analysis:*

The chronic criterion based on *Villosa iris* (rainbow mussel) is determined as follows:

$$CCC = 0.8876 \times \left(\frac{0.0278}{1+10^{7.688\text{-pH}}} + \frac{1.1994}{1+10^{\text{pH-}7.688}}\right) \times 2.126 \times 10^{0.028 \times (20\text{-MAX}(T,7))} \text{ mg/L}$$

Where: pH : pH of receiving stream and discharge
T : Temperature of receiving stream
CCC : Chronic Continuous Concentration

The ammonia effluent limit (monthly average) is then calculated as follows:

$$[NH_3]_{Effluent} =$$

$$\frac{\left(Q_{Effluent}\ (ft^3/sec) + 30Q3(ft^3/sec)\right) \times CCC\ (mg/L) - 30Q3(ft^3/sec) \times [NH_3]_{Stream\ Background}\ (mg/L)}{Q_{Effluent}\ (ft^3/sec)}$$

Refer to *Appendix C* for detailed calculations.

*Weekly Average Concentration:*

$$[C]_{Weekly} = [C]_{Monthly}\ (mg/L) \times 1.5$$

$$= 5.2 \times 1.5$$

$$= 7.8 \text{ mg/L}$$

*Monthly Average Mass Loading:*

$$M_{Monthly} = Q_{Monthly}\ (MGD) \times [C]_{Monthly}\ (mg/L \text{ or } ppm) \times 8.34\ (lbs/gal)$$

$$= 0.1 \times 5.2 \times 8.34$$

$$= 4.3 \text{ lbs/day}$$