

Memorandum

DATE: February 12, 2010

TO: Jeff Willett, City of Stockton

COPY TO: _____

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SUBJECT: **Stockton Ammonia Plots: Data Sources and Calculation Procedures**

Effluent NPDES ammonia data (NH₃ as nitrogen) were collected from the Stockton Regional Water Control Facility (RWCF) between March 2002 and June 2008. On September 18, 2006, nitrification was initiated, and the process stabilized in late June 2007.

Ambient receiving water ammonia data (NH₃ as nitrogen) were also collected from the San Joaquin River stations R-2 and R-2a between January 2002 and October 2008. The 30-day rolling averages¹ of the ambient ammonia data were calculated for comparison with the USEPA chronic 30-day criteria.

The USEPA 1999 Ammonia Criteria Update method was used to calculate the USEPA chronic 30-day criteria (see equation below). These criteria are dependent on the pH and temperature. pH and temperature data from stations R-2 and R-2a were individually averaged for use in the equation. The equation was used for each pH-temperature pair; the 30-day rolling averages¹ were calculated to determine the 30-day average criteria.

USEPA Update Method Equation:

$$\text{Chronic 30-day Average Criteria} = \left\{ \frac{0.0577}{[1+10^{(7.688-pH)}]} + \frac{2.487}{[1+10^{(pH-7.688)}]} \right\} \times \text{Value}$$

where:

Value = Minimum of 2.85 or $1.45 \times 10^{(0.028 \times (25-\text{Temp}))}$

Temp = average of R-2 and R-2a water temperatures in degrees Celsius

pH = average of R-2 and R-2a water pH in standard units

¹ As data were not collected every day, a 30-day average value was calculated for every data point, not for every day, to avoid skewing the averages with empty cells.



