

APPENDIX 1—LONG TERM TREND

Trend analysis for flow dependent indicators was conducted by using multiple regression to relate concentration to the independent variables time, flow and seasonality.

The criteria for determining a significant long term trend are as follows:

- the coefficient for time in the regression must be significant; and
- the overall significance of the regression must be < 0.05 .

If the coefficients for flow, seasonality or both are not significant, these variables are removed from the regression.

The value for R^2 is also important when interpreting the relationship and is used as an indication of how well the model is predicting the concentration. As R^2 approaches 1 the trend has a higher correlation with the data points. In the sites monitored the R^2 is usually below 0.5, as there is a relatively large variation.

If a trend is identified it takes the following form:

$$C = B_{Date}X_{Date} + B_{Flow}X_{Flow} + B_{Seas}X_{Seas} + I$$

Where:

C	= Concentration of parameter
I	= Y Intercept
B_{Date}	= B weight for Date
B_{Flow}	= B weight for Flow
B_{Seas}	= B weight for Seasonality
X_{Date}	= Variable Date
X_{Flow}	= Variable Flow
X_{Seas}	= Variable Seasonality

The median for flow and seasonality is then substituted into the equation to result in a 2 dimensional trend of concentration verses time, which is represented on the scatter plot as shown in Appendix 4. For further information on the method, please contact Environment ACT.