



PRAIRIE PROVINCES WATER BOARD

Report #179

Appendices E, Part 1 (AB-SK Boundary)
Long-Term Trends in Water Quality Parameters
At Twelve Transboundary River Reaches
(From the beginning of the data record until the end of 2013)

Prepared for the Prairie Provinces Water Board
By the Committee on Water Quality

March 2018

Appendix E: Metals Trending Graphs Part 1
Alberta/Saskatchewan Border

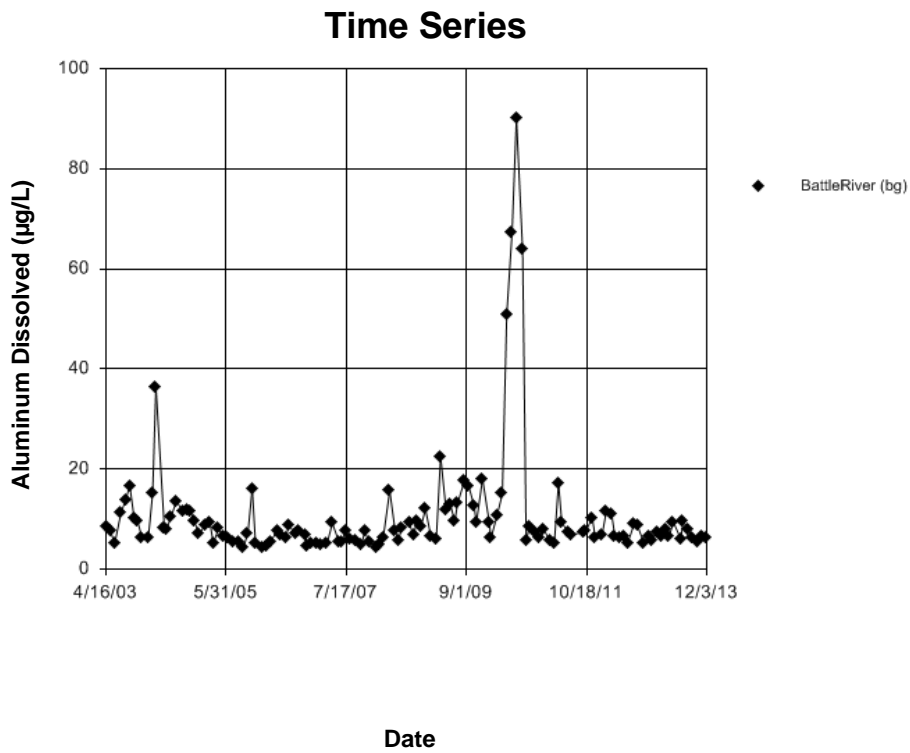


Figure E1 Battle River: Aluminum Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 5.446
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 5.446
 Adjusted Kruskal-Wallis statistic (H') = 5.446

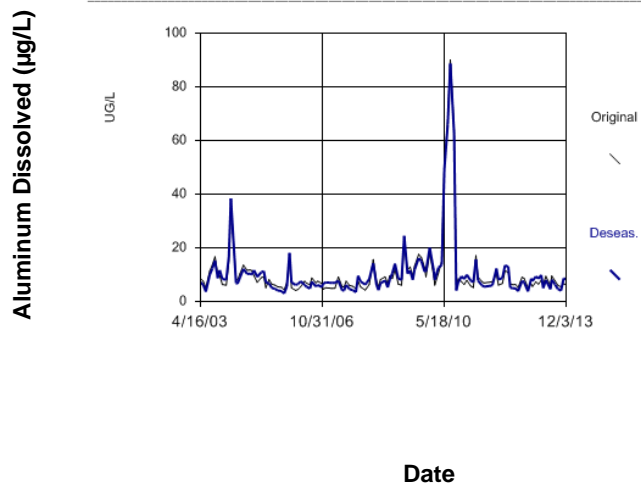


Figure E2 Battle River: Aluminum Dissolved

Seasonal Kendall

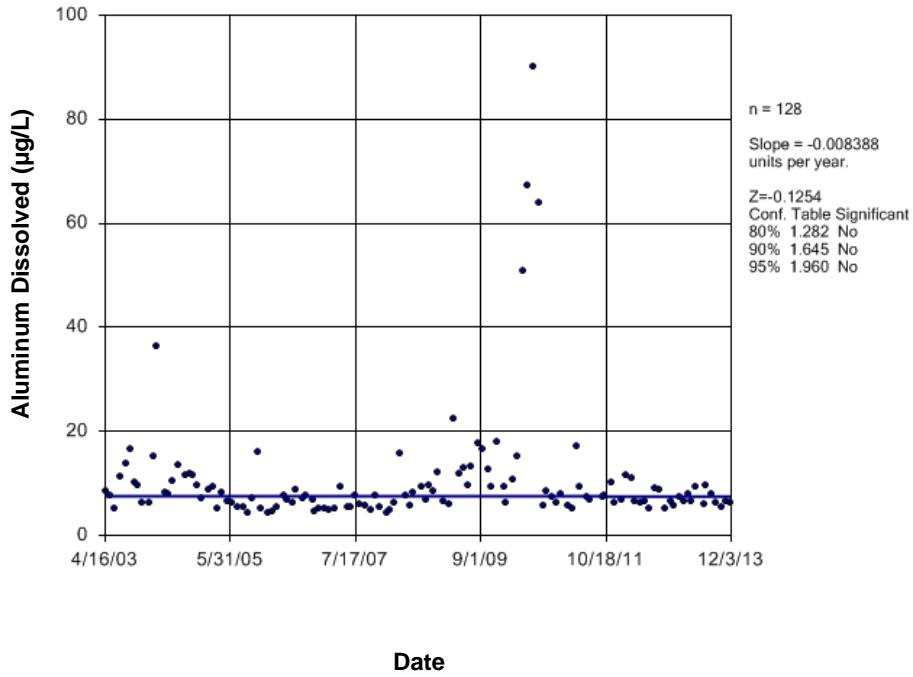


Figure E3 Battle River: Aluminum Dissolved

Time Series

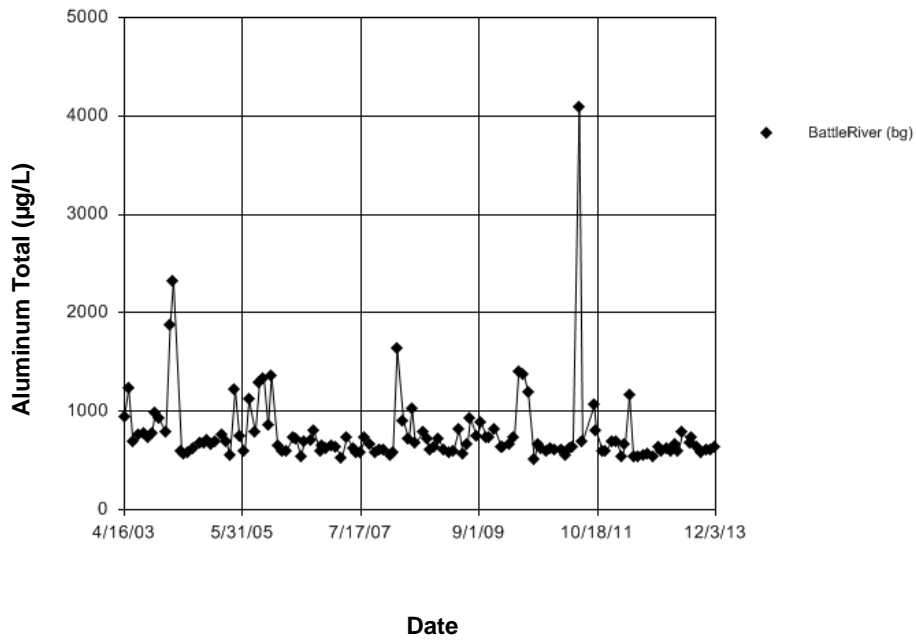


Figure E4 Battle River: Aluminum Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 4.282
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 3 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 4.282
 Adjusted Kruskal-Wallis statistic (H') = 4.282

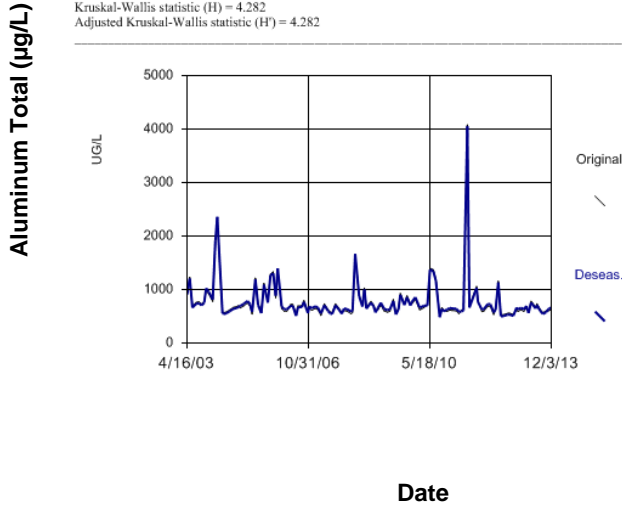


Figure E5 Battle River: Aluminum Total

Seasonal Kendall

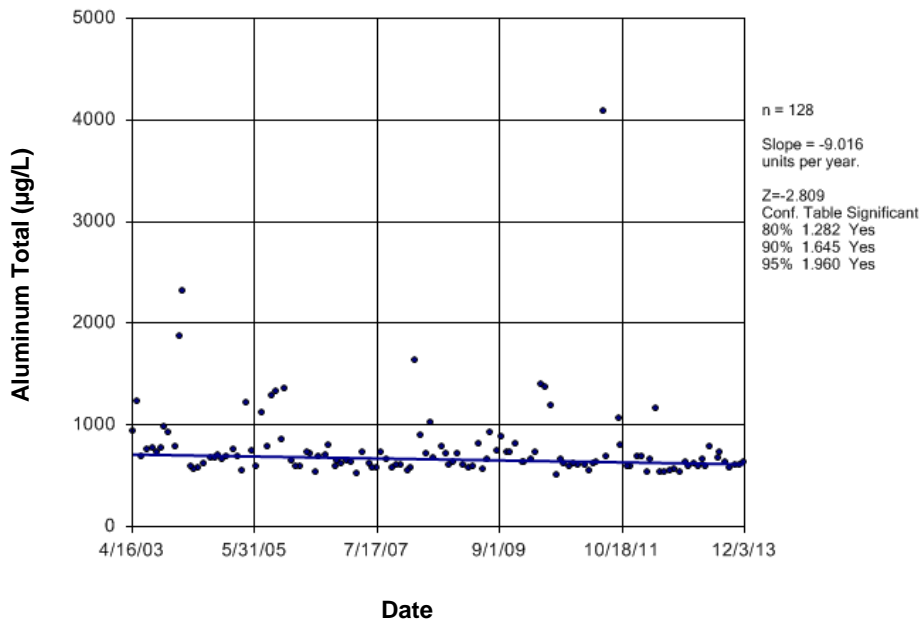


Figure E6 Battle River: Aluminum Total

Time Series

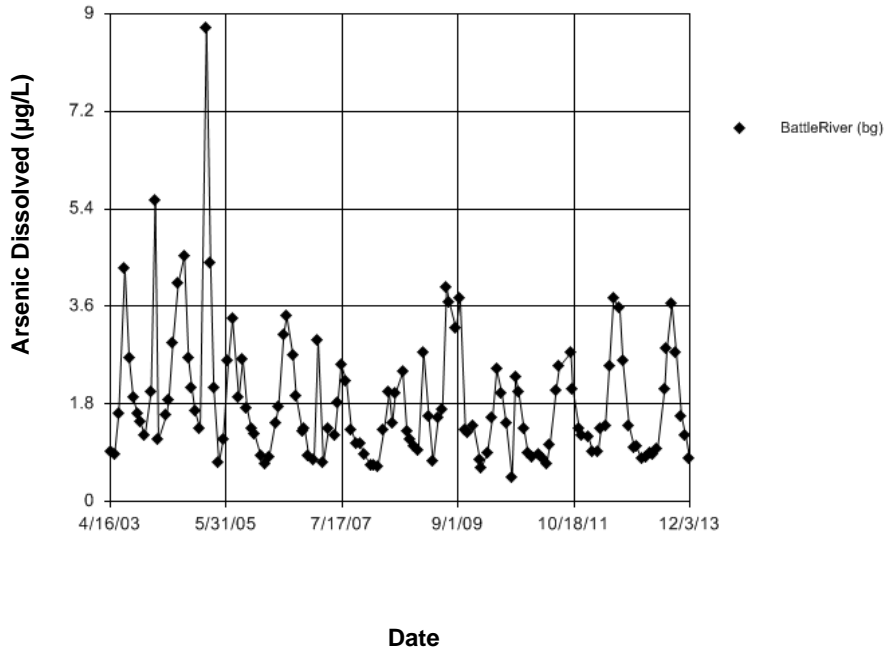


Figure E7 Battle River: Arsenic Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 31.21
 Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
 There were 3 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 31.21
 Adjusted Kruskal-Wallis statistic (H') = 31.21

Arsenic Dissolved (µg/L)

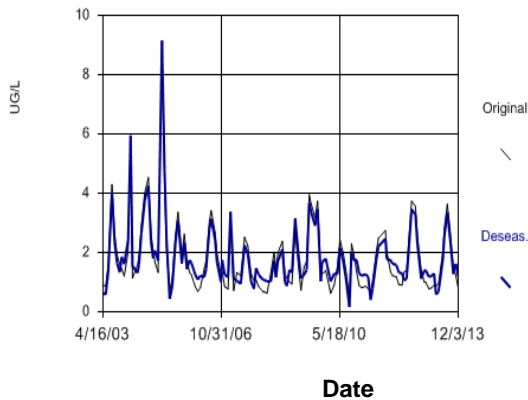


Figure E8 Battle River: Arsenic Dissolved

Seasonal Kendall

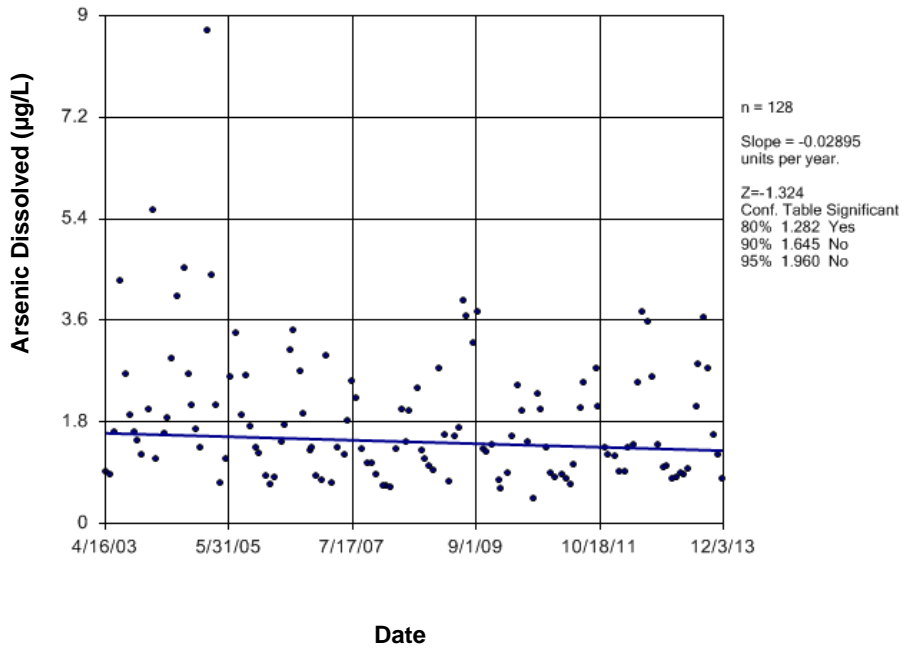


Figure E9 Battle River: Arsenic Dissolved

Time Series

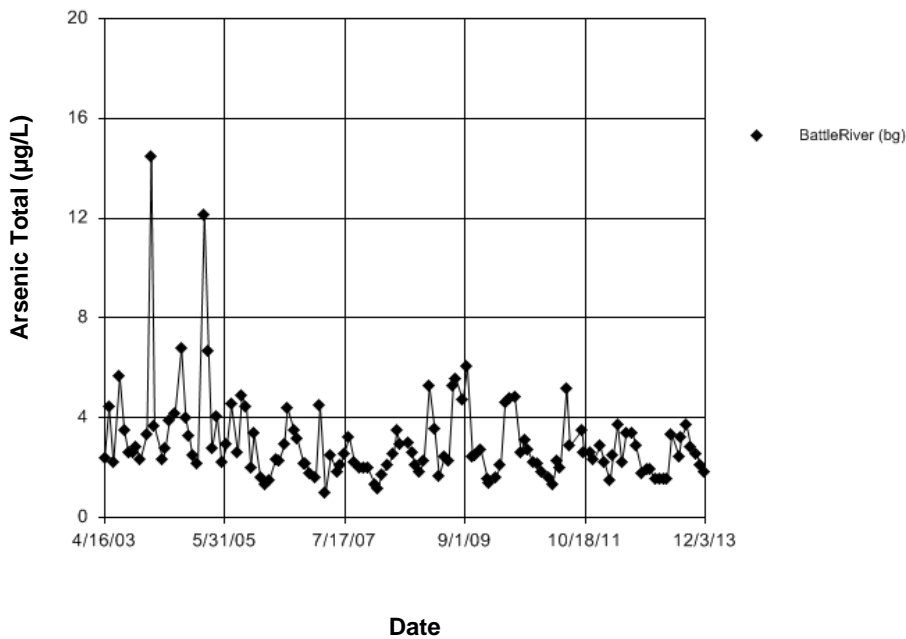


Figure E10 Battle River: Arsenic Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
 Calculated Kruskal-Wallis statistic = 25.53
 Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
 There were 4 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 25.53
 Adjusted Kruskal-Wallis statistic (H') = 25.53

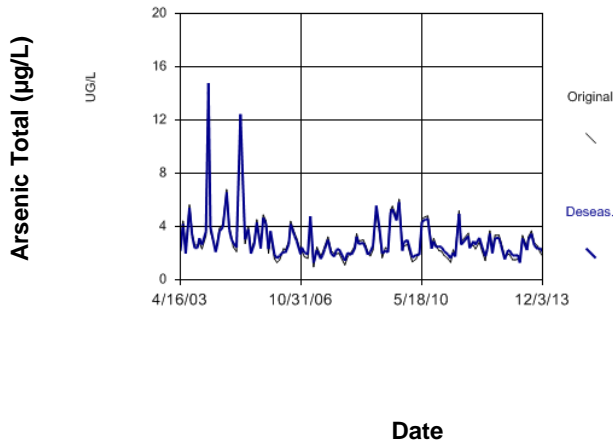


Figure E11 Battle River: Arsenic Total

Seasonal Kendall

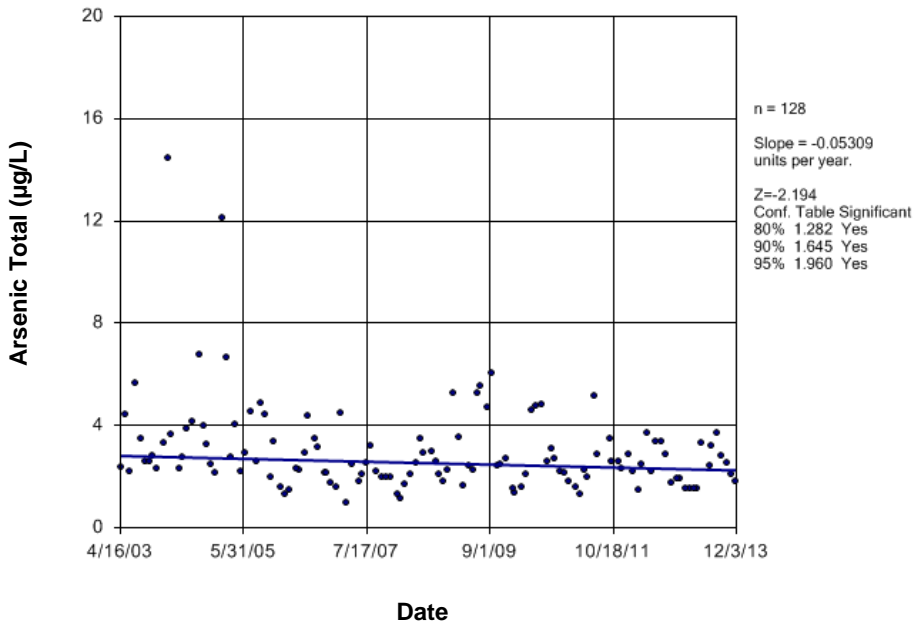


Figure E12 Battle River: Arsenic Total

Time Series

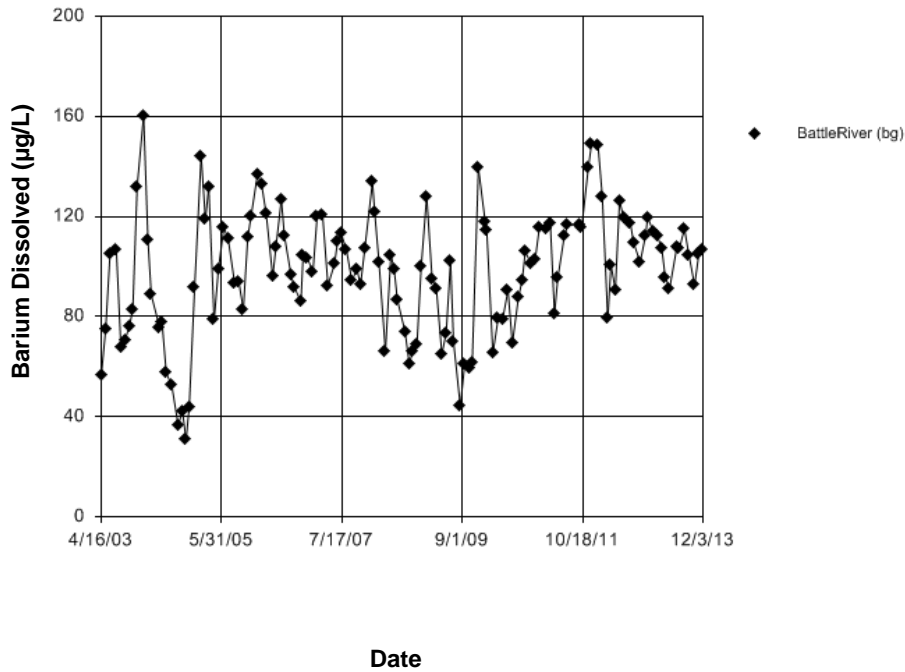


Figure E13 Battle River: Barium Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 25.95
 Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
 There were 6 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 25.95
 Adjusted Kruskal-Wallis statistic (H') = 25.95

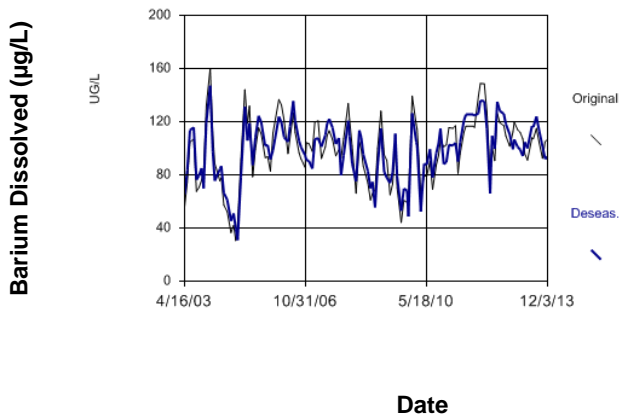


Figure E14 Battle River: Barium Dissolved

Seasonal Kendall

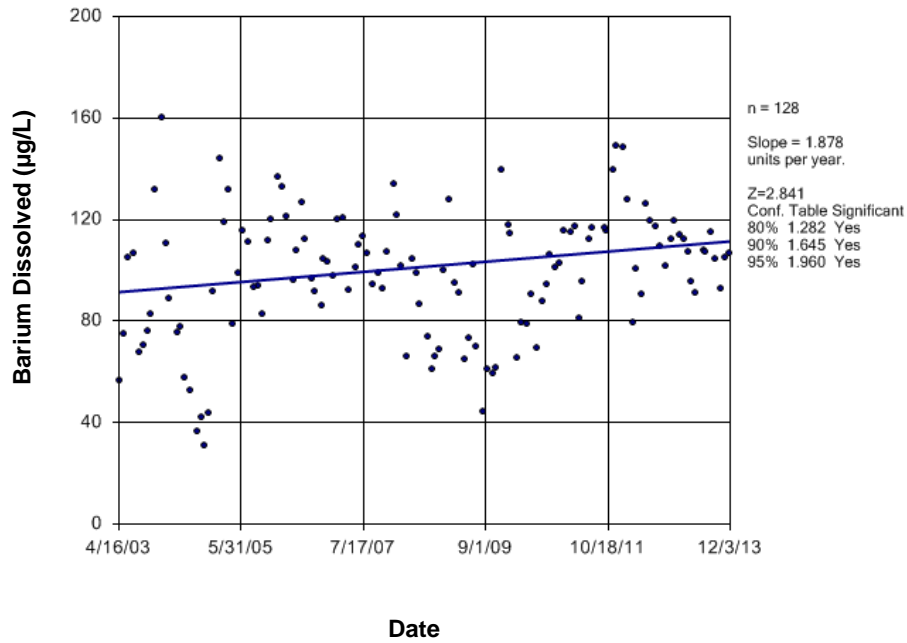


Figure E15 Battle River: Barium Dissolved

Time Series

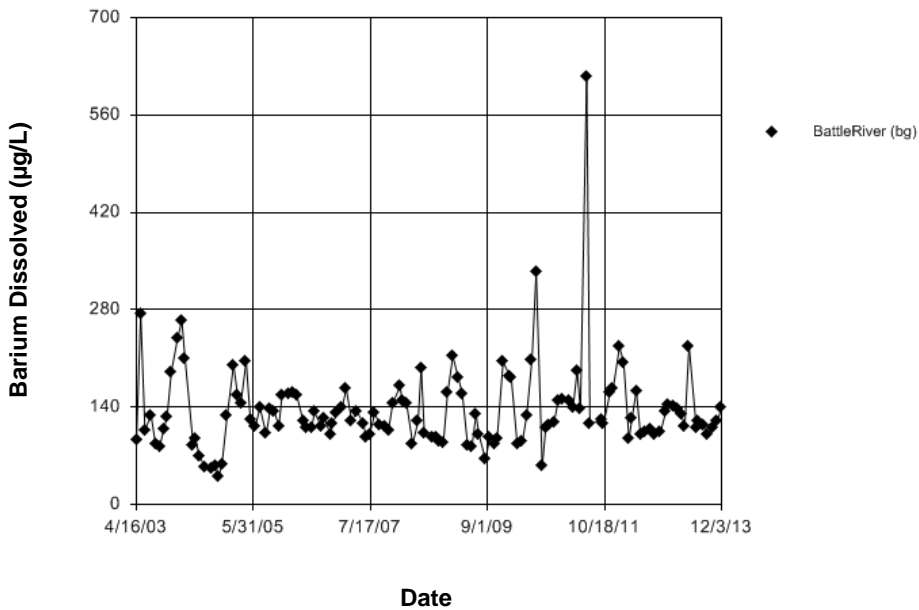
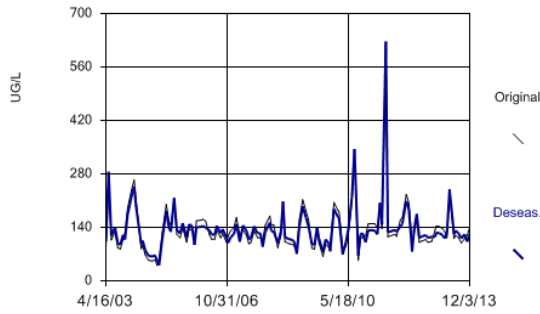


Figure E16 Battle River: Barium Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 29.29
 Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
 There were 8 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 29.29
 Adjusted Kruskal-Wallis statistic (H') = 29.29

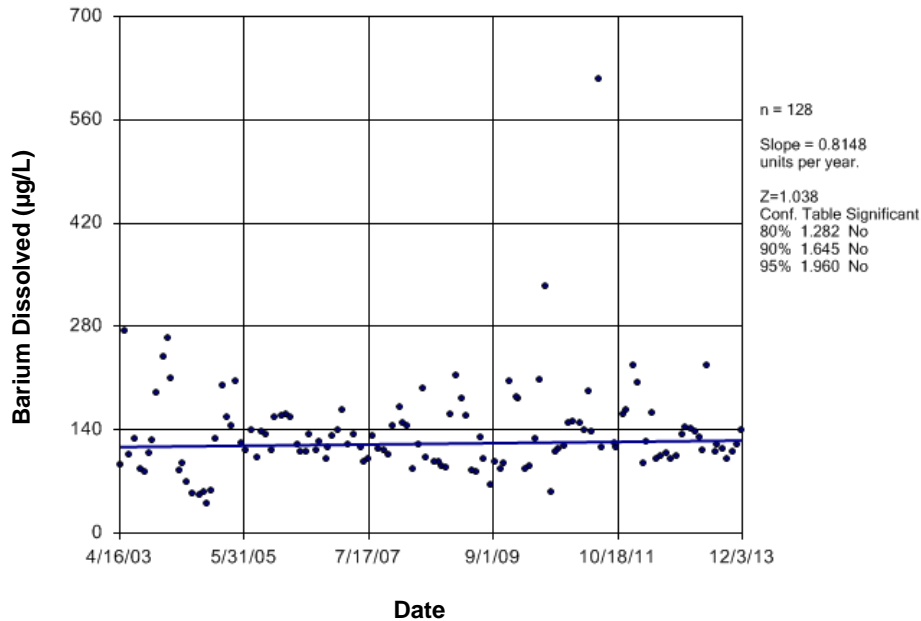
Barium Dissolved (µg/L)



Date

Figure E17 Battle River: Barium Total

Seasonal Kendall



Date

Figure E18 Battle River: Barium Total

Time Series

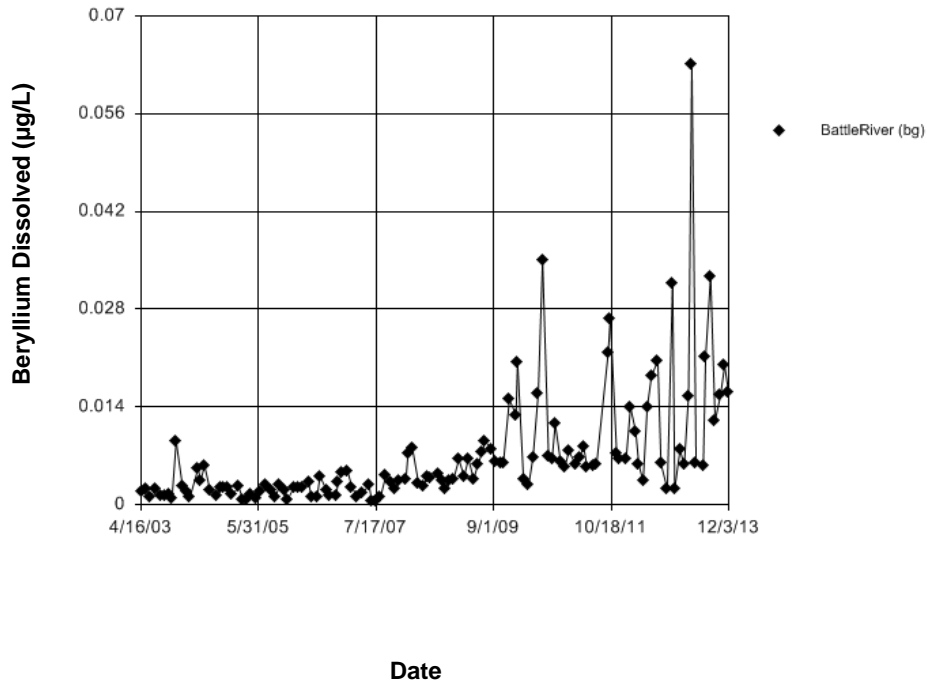


Figure E19 Battle River: Beryllium Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season.
 Calculated Kruskal-Wallis statistic = 0.784
 Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
 There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 0.784
 Adjusted Kruskal-Wallis statistic (H') = 0.784

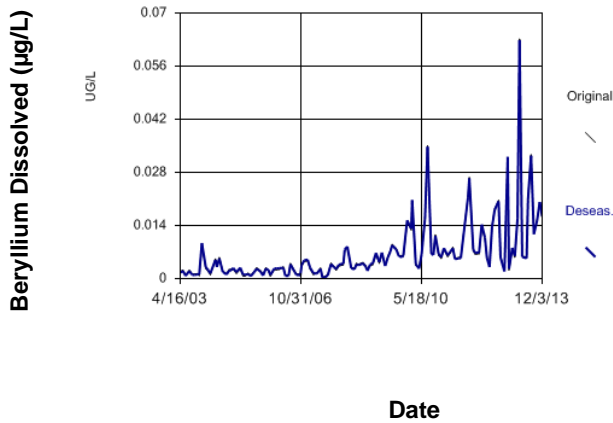


Figure E20 Battle River: Beryllium Dissolved

Sen's Slope Estimator

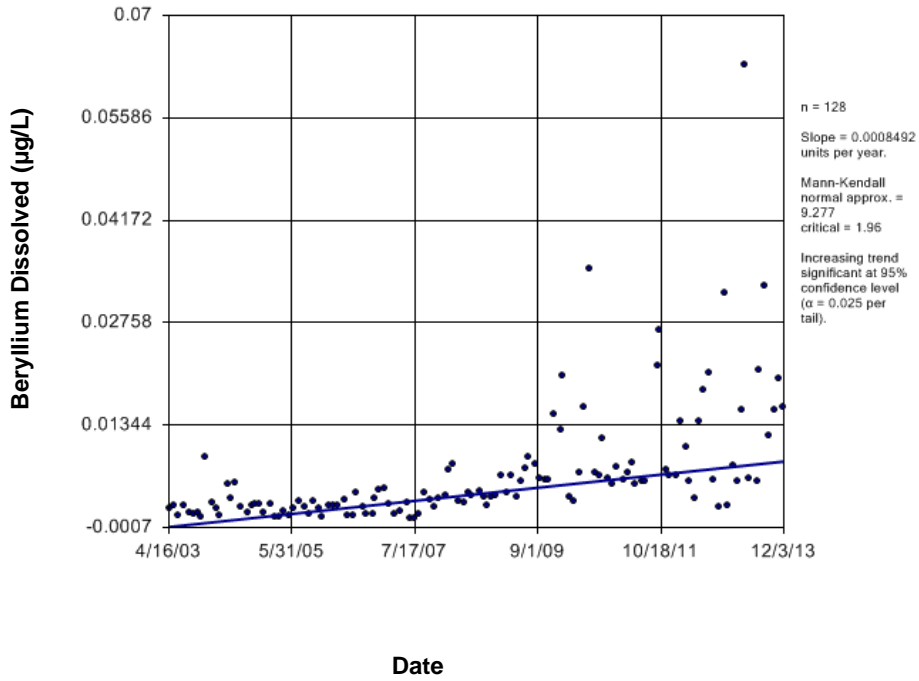


Figure E21 Battle River: Beryllium Dissolved

Time Series

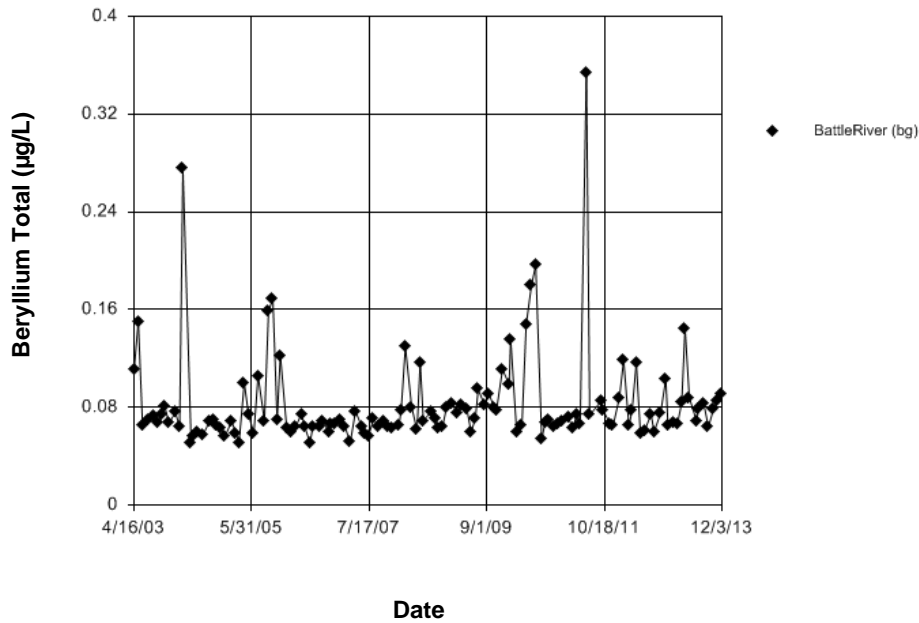


Figure E22 Battle River: Beryllium Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.3059
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 0.3059
 Adjusted Kruskal-Wallis statistic (H') = 0.3059

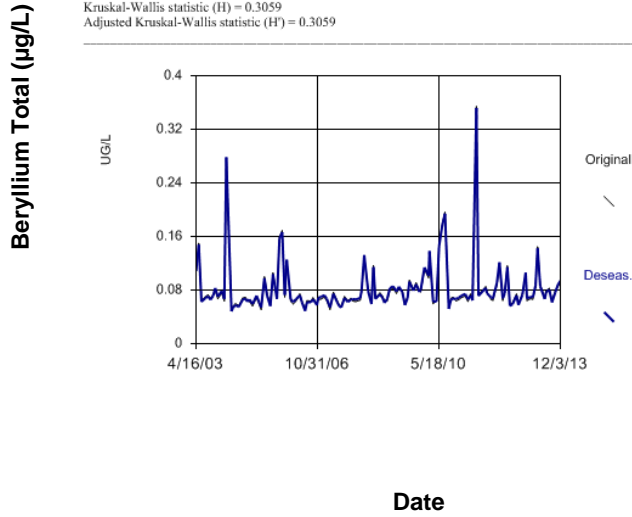


Figure E23 Battle River: Beryllium Total

Sen's Slope Estimator

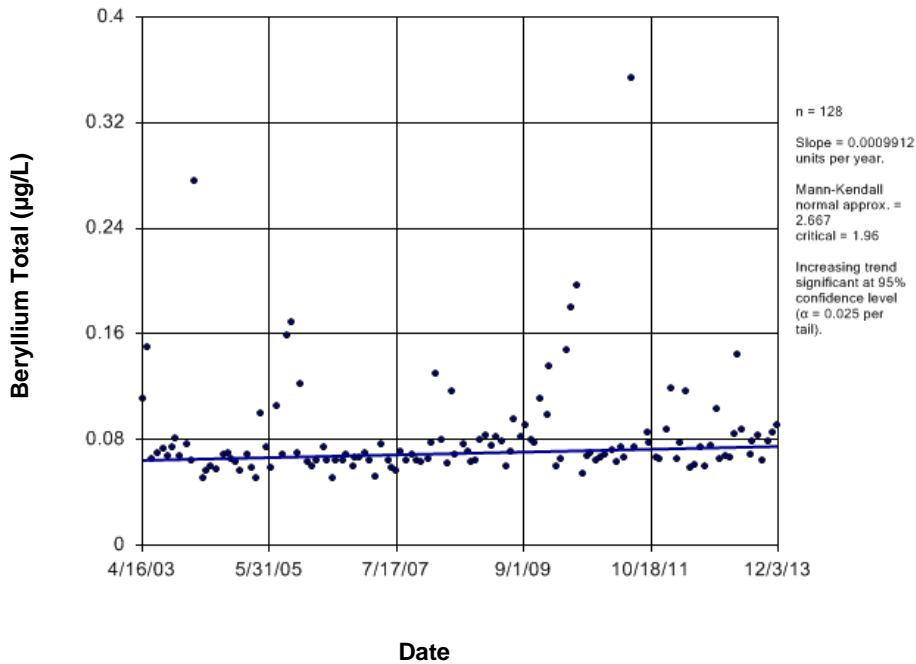


Figure E24 Battle River: Beryllium Total

Time Series

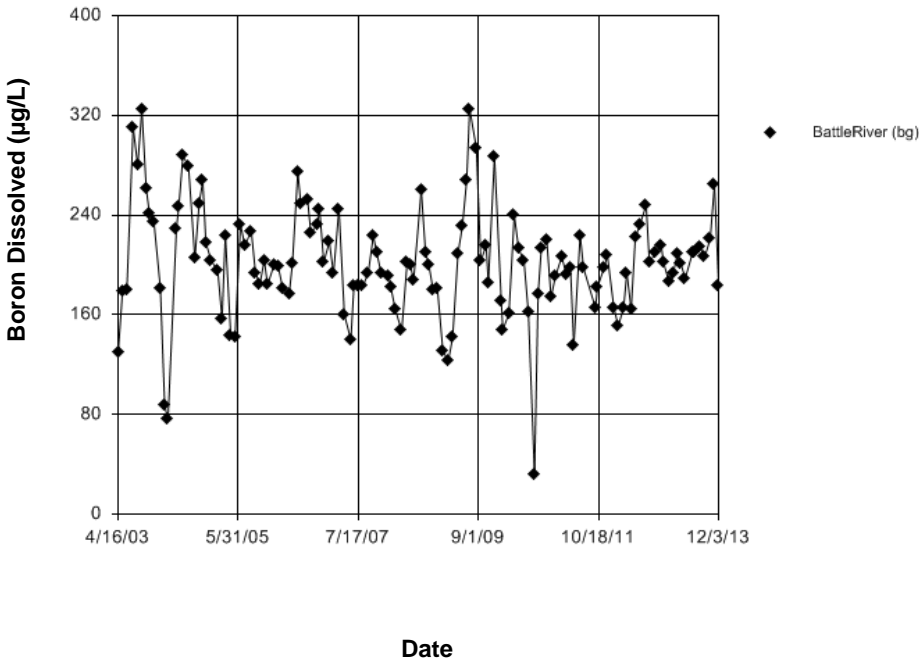


Figure E25 Battle River: Boron Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 8.516
 Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
 There were 7 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 8.516
 Adjusted Kruskal-Wallis statistic (H') = 8.516

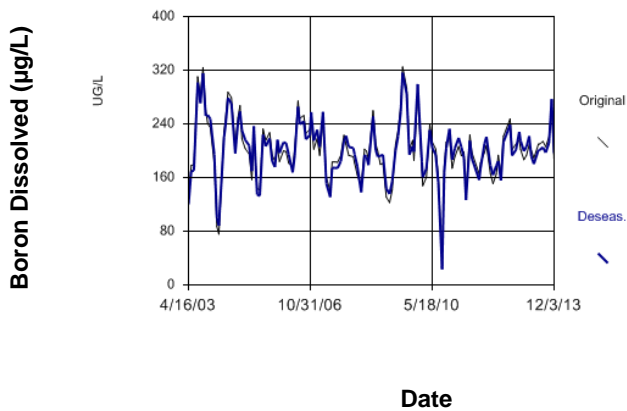


Figure E26 Battle River: Boron Dissolved

Seasonal Kendall

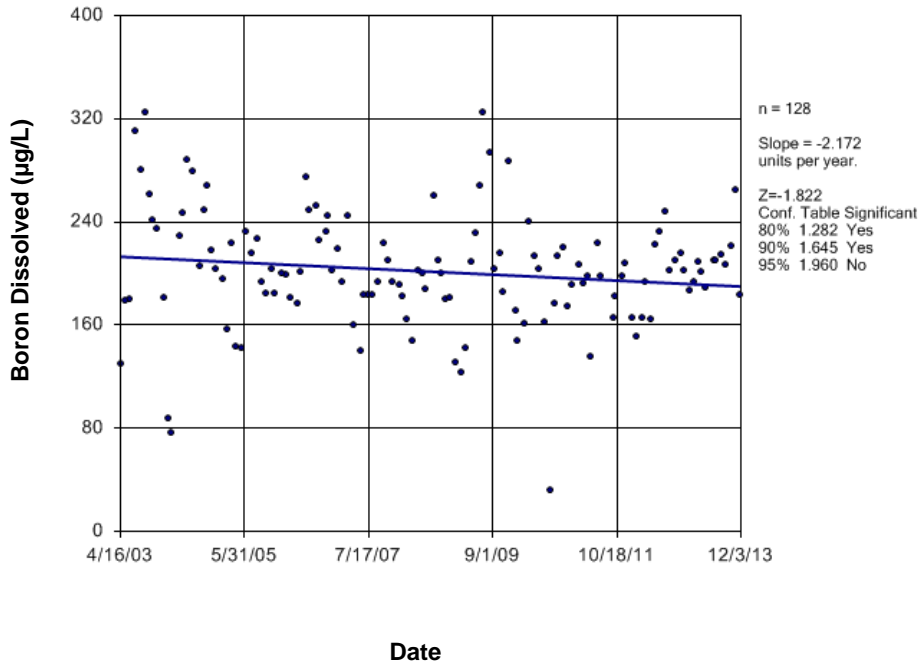


Figure E27 Battle River: Boron Dissolved

Time Series

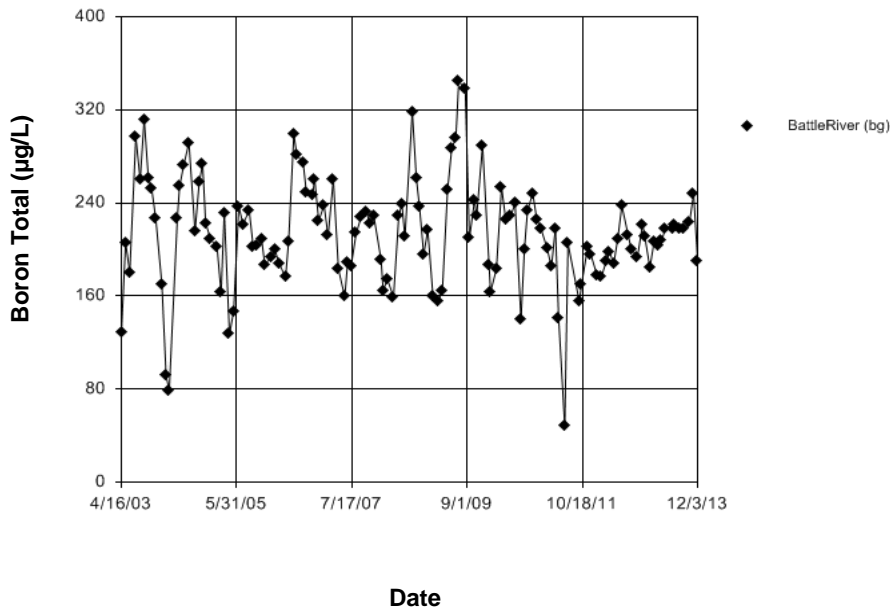


Figure E28 Battle River: Boron Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 9.239
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 6 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 9.239
 Adjusted Kruskal-Wallis statistic (H') = 9.239

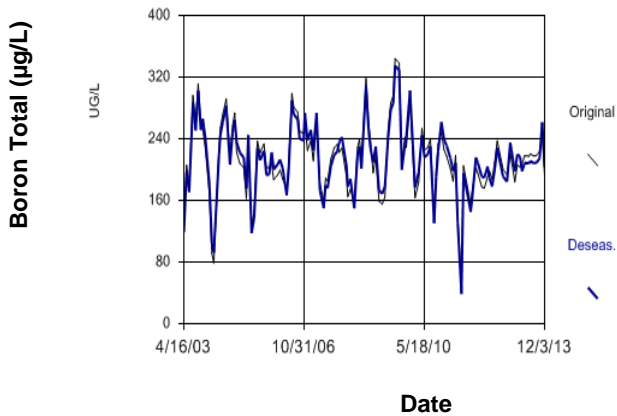


Figure E29 Battle River: Boron Total

Seasonal Kendall

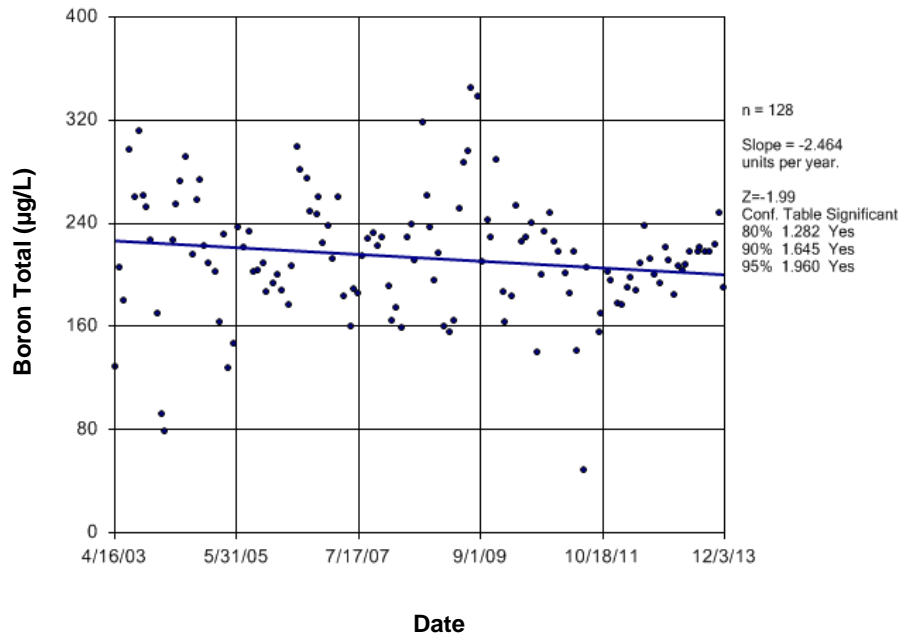


Figure E30 Battle River: Boron Total

Time Series

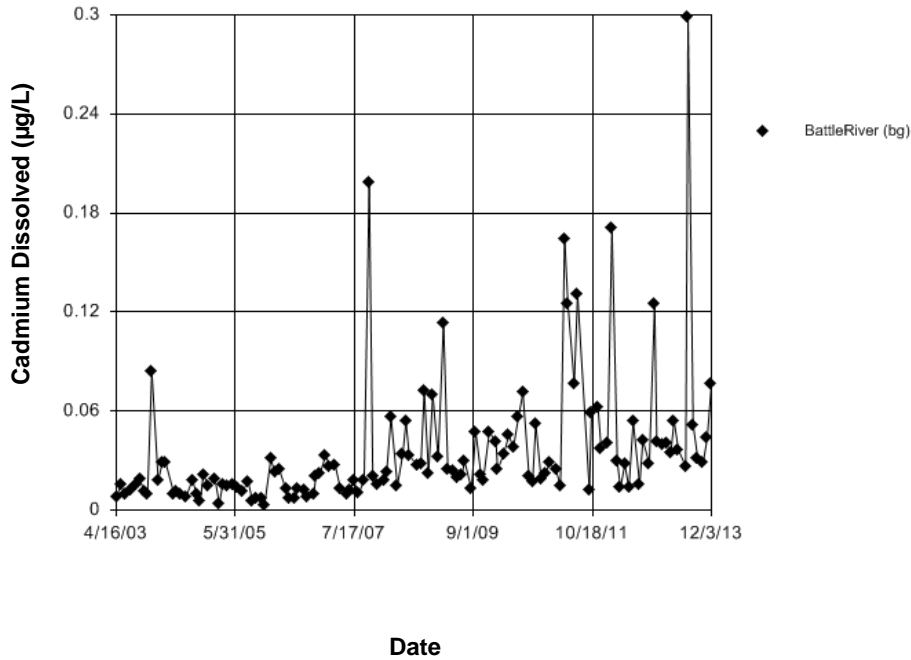


Figure E31 Battle River: Cadmium Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 5.814
Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

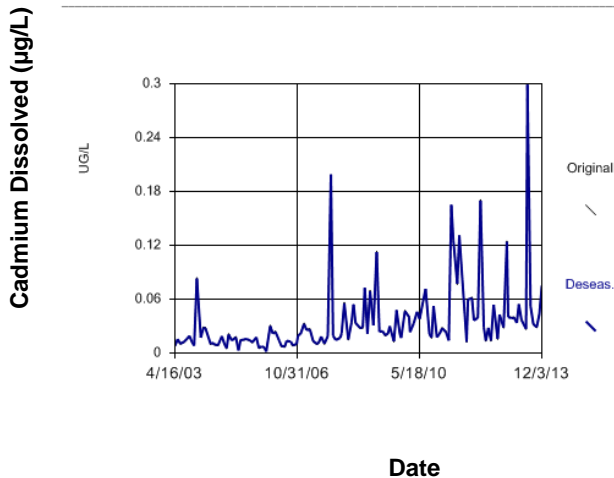


Figure E32 Battle River: Cadmium Dissolved

Seasonal Kendall

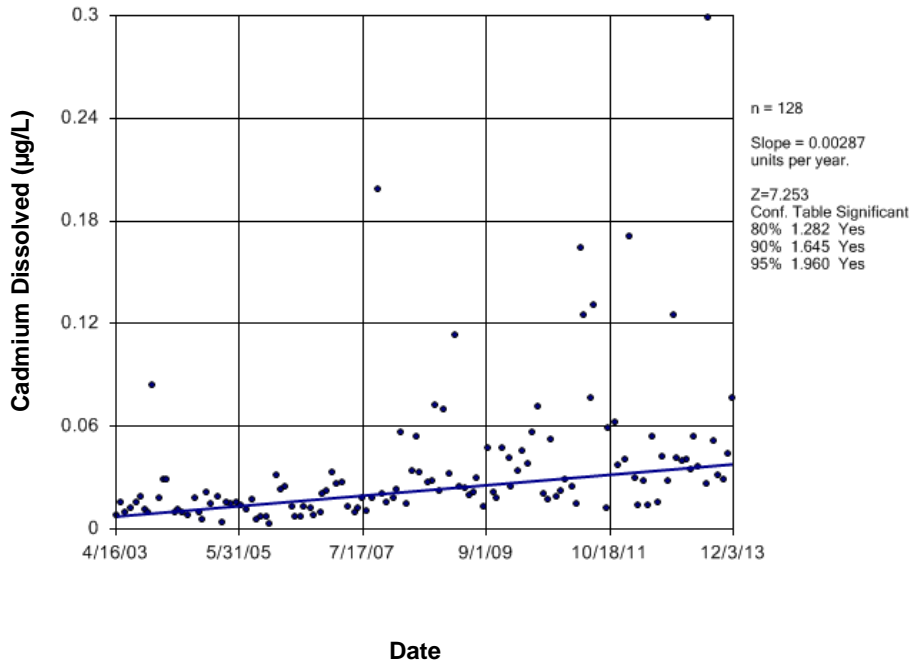


Figure E33 Battle River: Cadmium Dissolved

Time Series

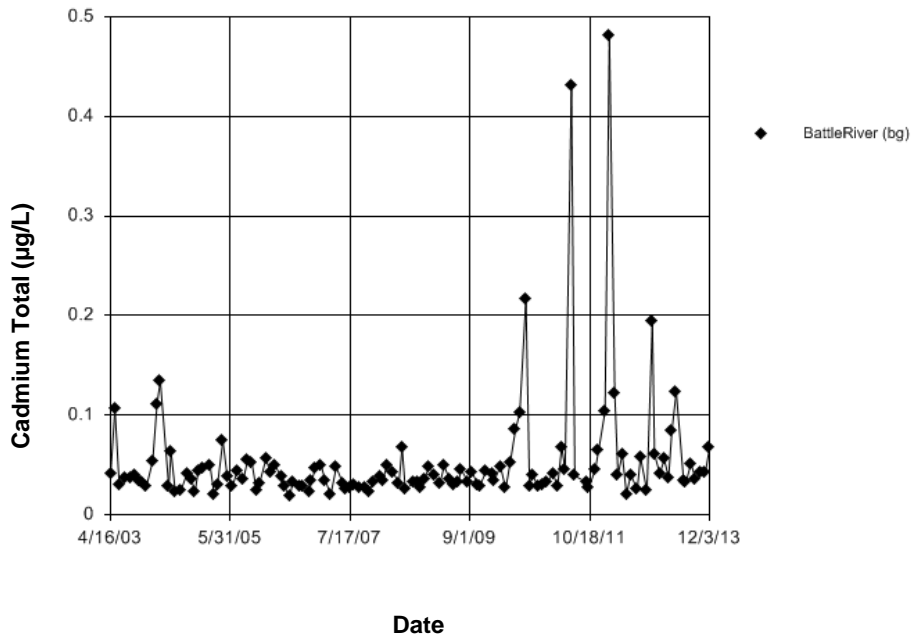


Figure E34 Battle River: Cadmium Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 3.861
 Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
 There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

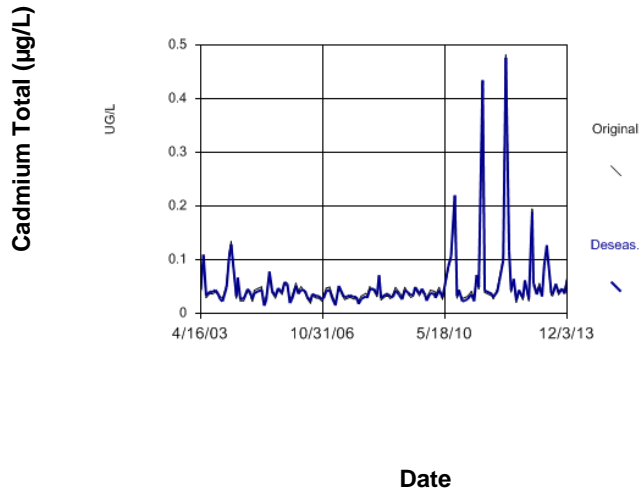


Figure E35 Battle River: Cadmium Total

Seasonal Kendall

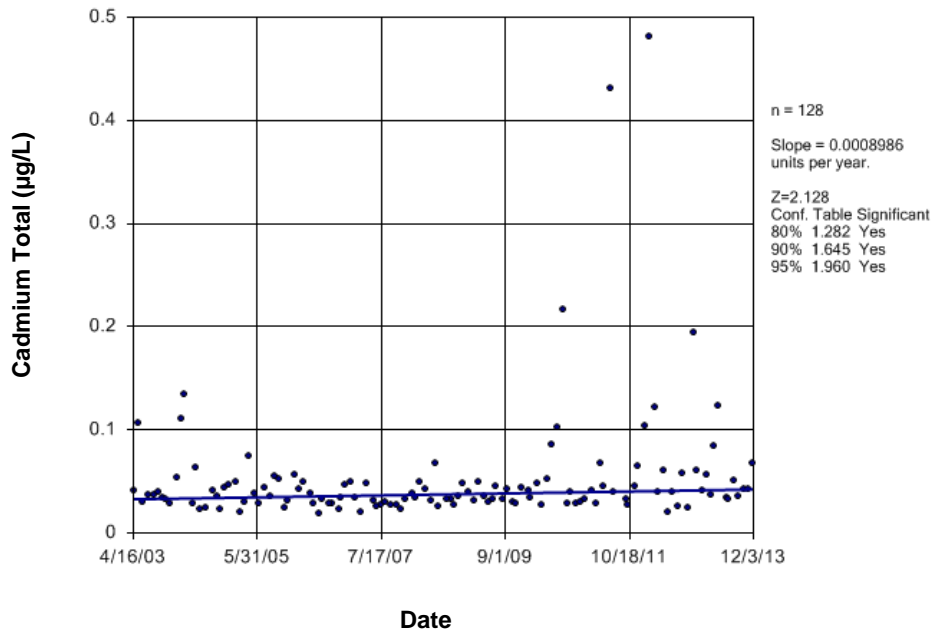


Figure E36 Battle River: Cadmium Total

Time Series

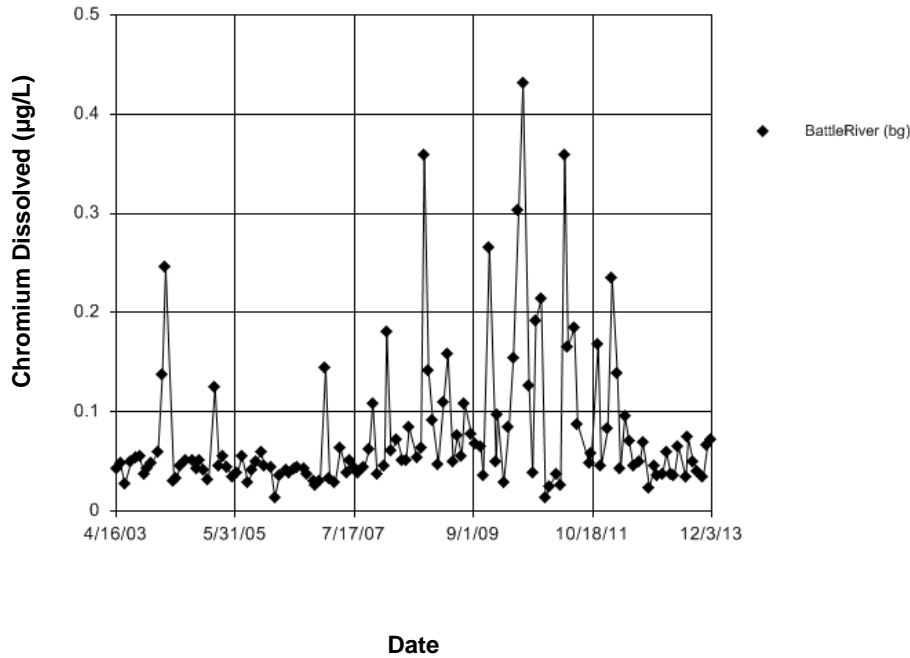


Figure E37 Battle River: Chromium Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.02883
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 3 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H) was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 0.02883
 Adjusted Kruskal-Wallis statistic (H) = 0.02883

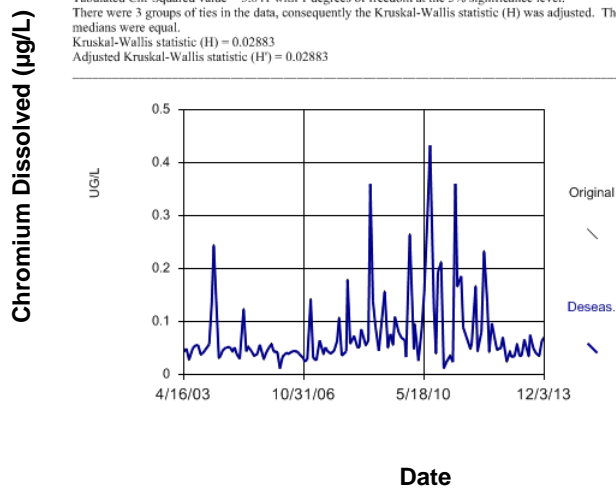


Figure E38 Battle River: Chromium Dissolved

Sen's Slope Estimator

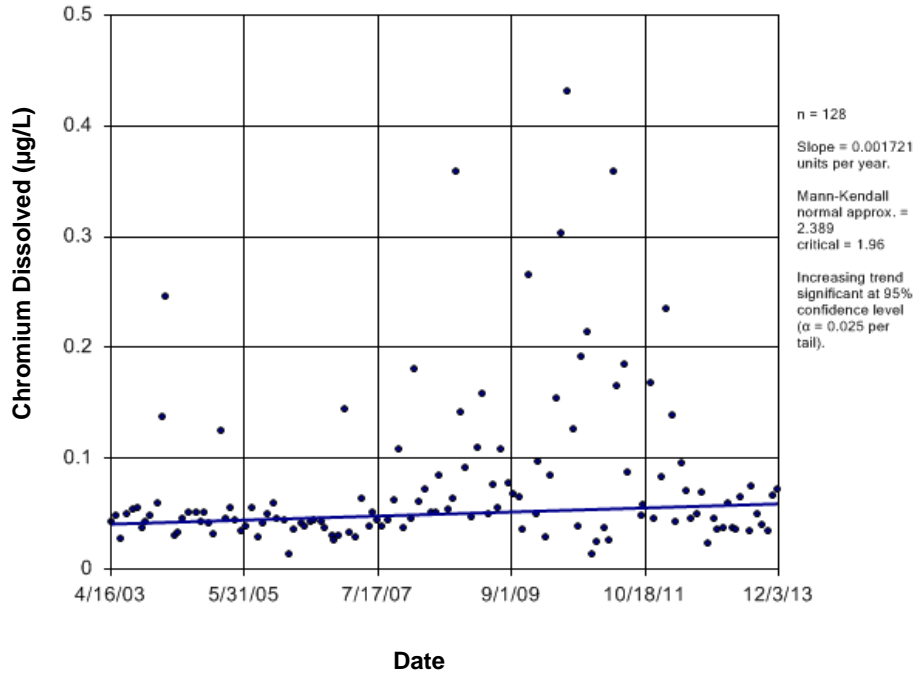


Figure E39 Battle River: Chromium Dissolved

Time Series

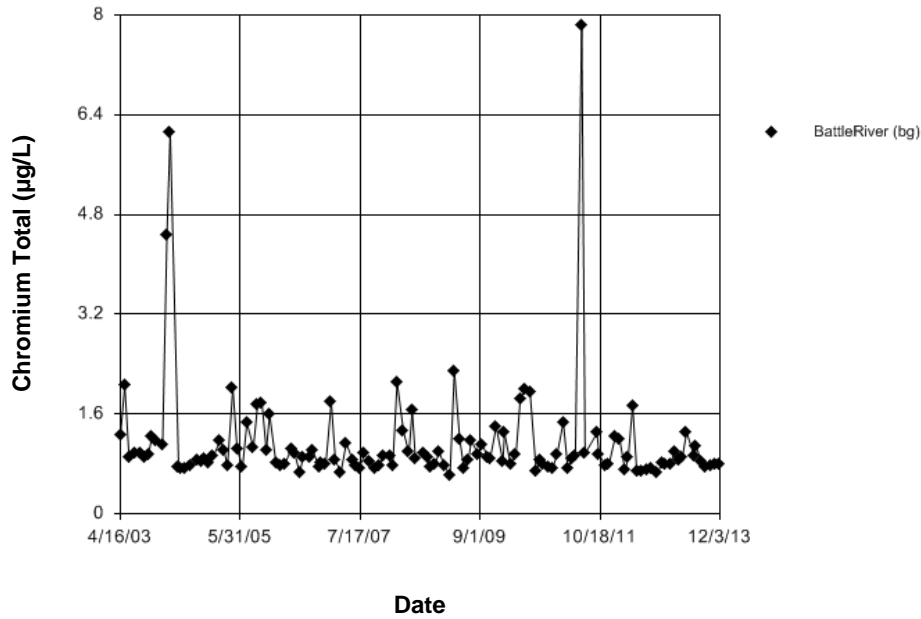


Figure E40 Battle River: Chromium Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.2102
Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
There were 4 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 0.2102
Adjusted Kruskal-Wallis statistic (H') = 0.2102

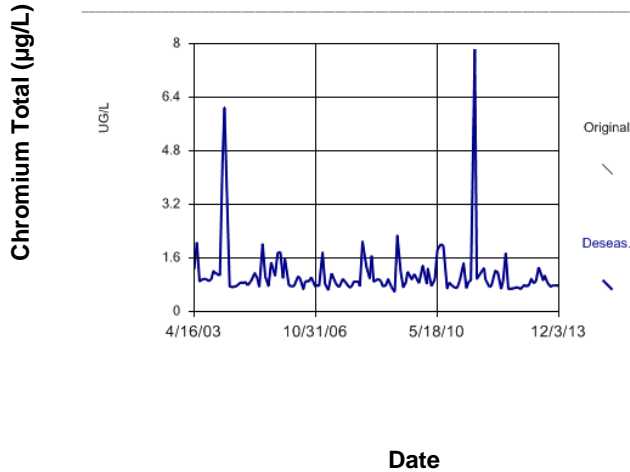


Figure E41 Battle River: Chromium Total

Sen's Slope Estimator

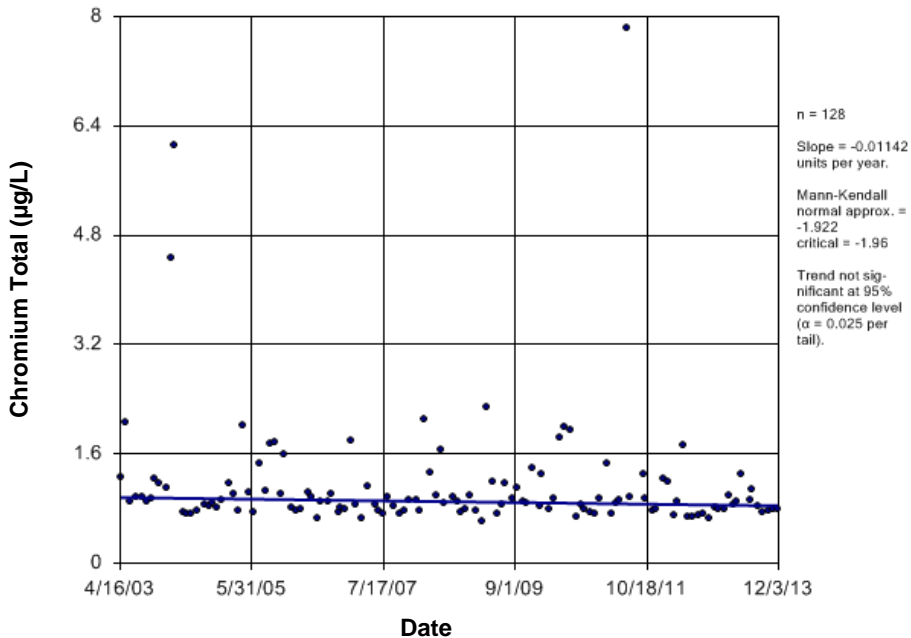


Figure E42 Battle River: Chromium Total

Time Series

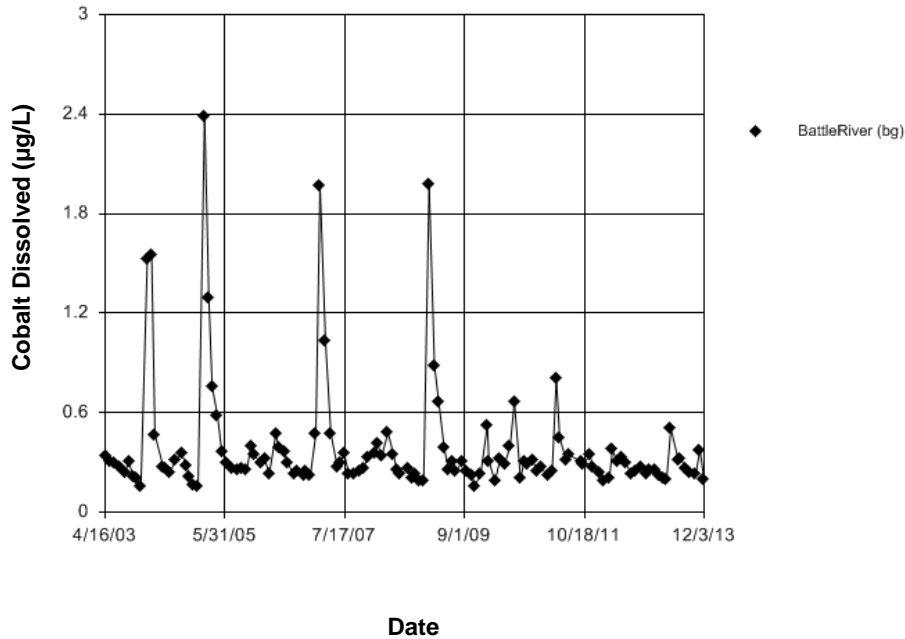


Figure E43 Battle River: Cobalt Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.07382
Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
There were 3 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 0.07382
Adjusted Kruskal-Wallis statistic (H') = 0.07382

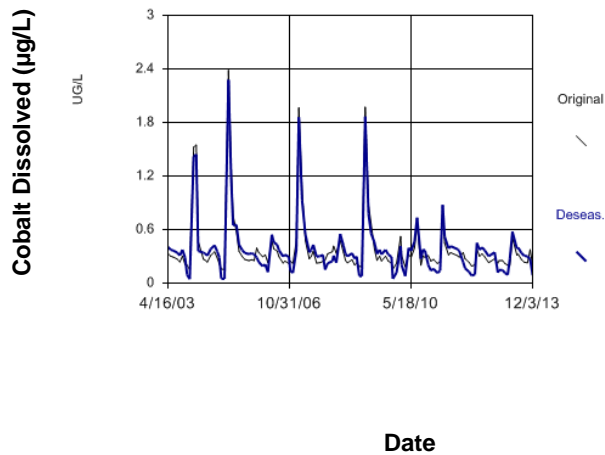


Figure E44 Battle River: Cobalt Dissolved

Sen's Slope Estimator

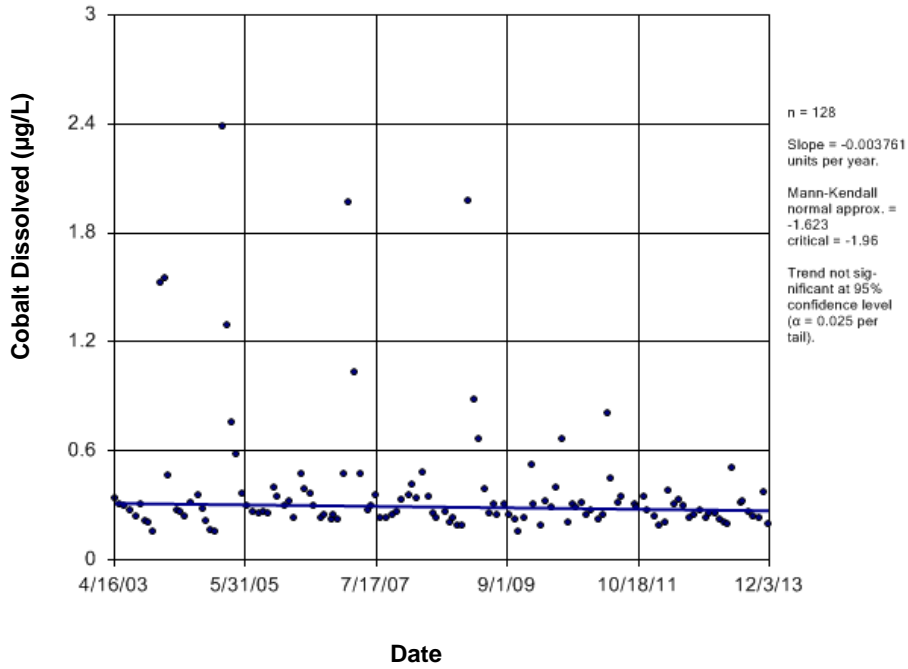


Figure E45 Battle River: Cobalt Dissolved

Time Series

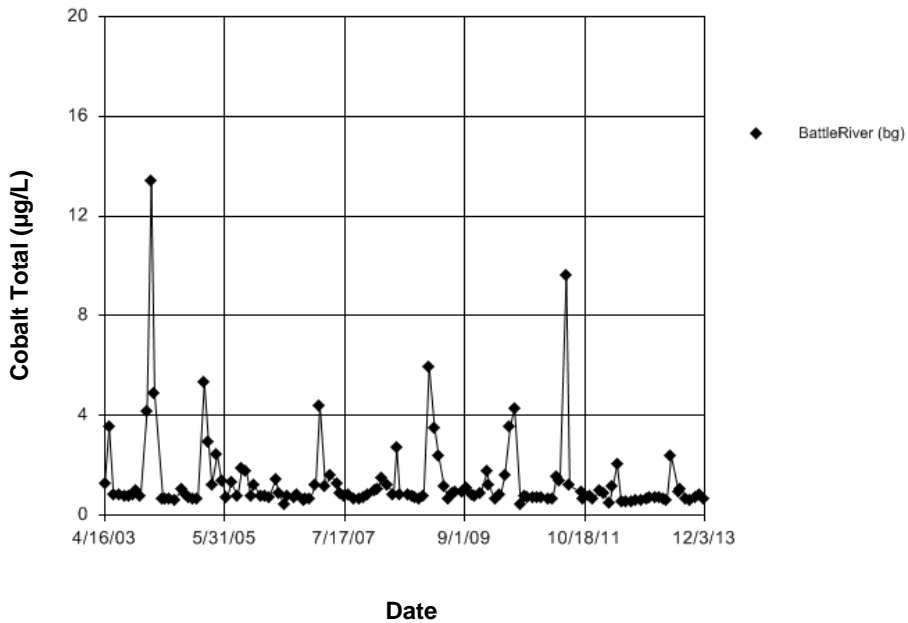


Figure E46 Battle River: Cobalt Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.0198
 Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
 There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

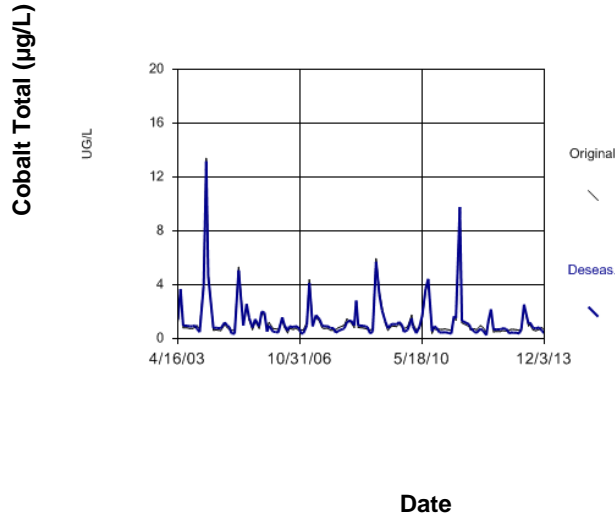


Figure E47 Battle River: Cobalt Total

Sen's Slope Estimator

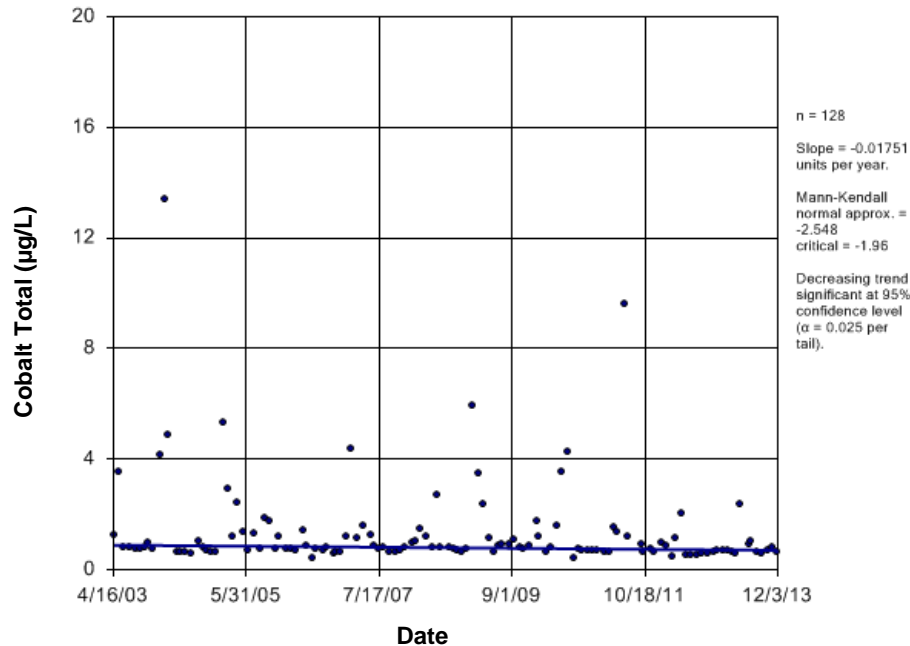


Figure E48 Battle River: Cobalt Total

Time Series

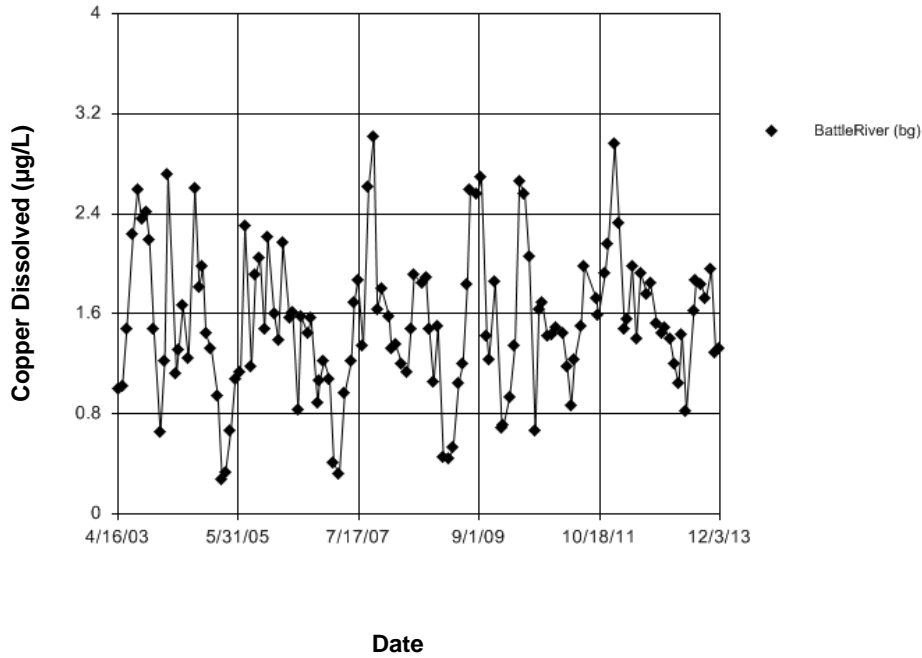


Figure E49 Battle River: Copper Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 9.823
 Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
 There were 4 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 9.823
 Adjusted Kruskal-Wallis statistic (H') = 9.823

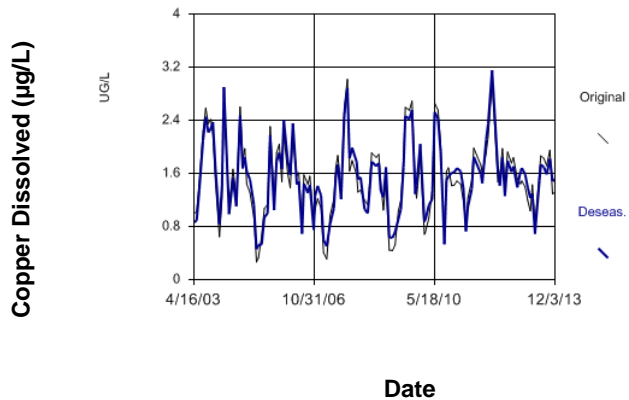


Figure E50 Battle River: Copper Dissolved

Seasonal Kendall

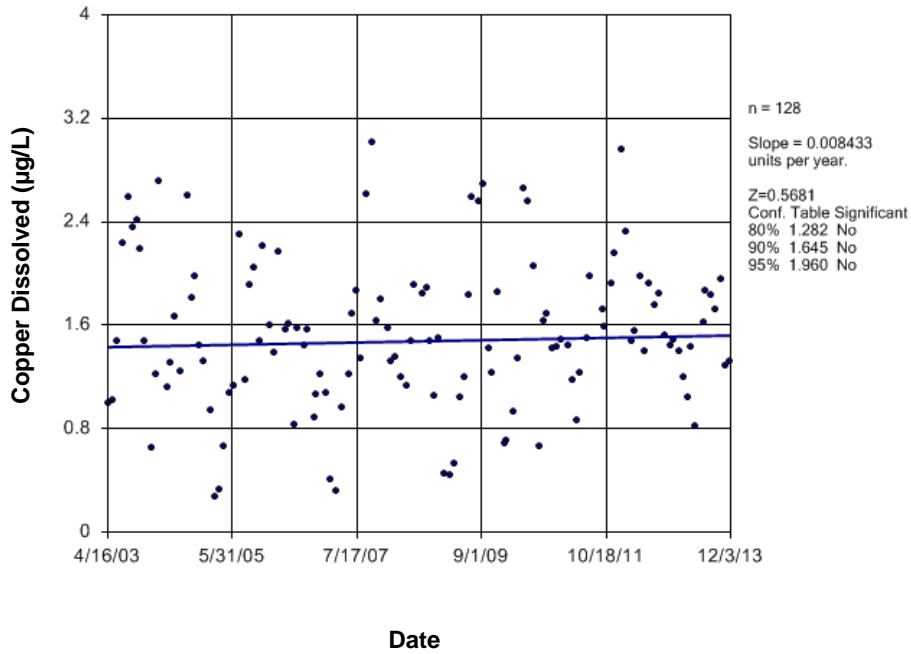


Figure E51 Battle River: Copper Dissolved

Time Series

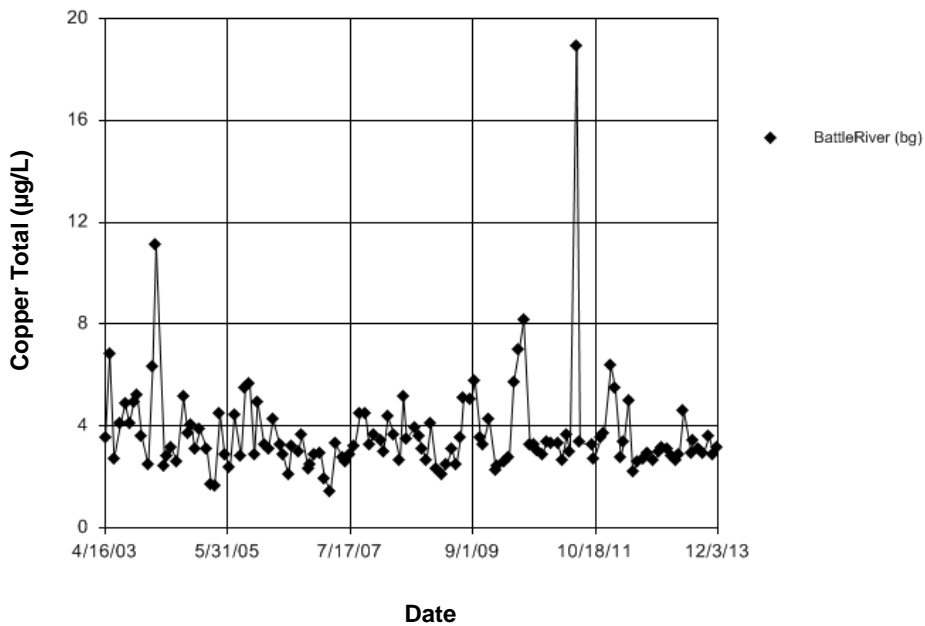


Figure E52 Battle River: Copper Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 3.608
 Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
 There were 3 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H) was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 3.608
 Adjusted Kruskal-Wallis statistic (H) = 3.608

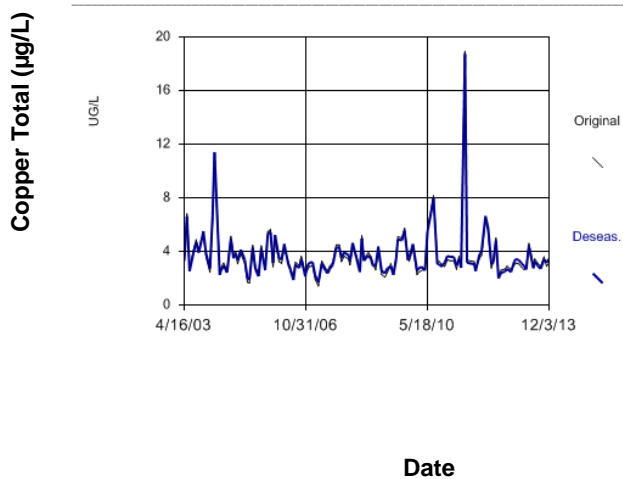


Figure E53 Battle River: Copper Total

Sen's Slope Estimator

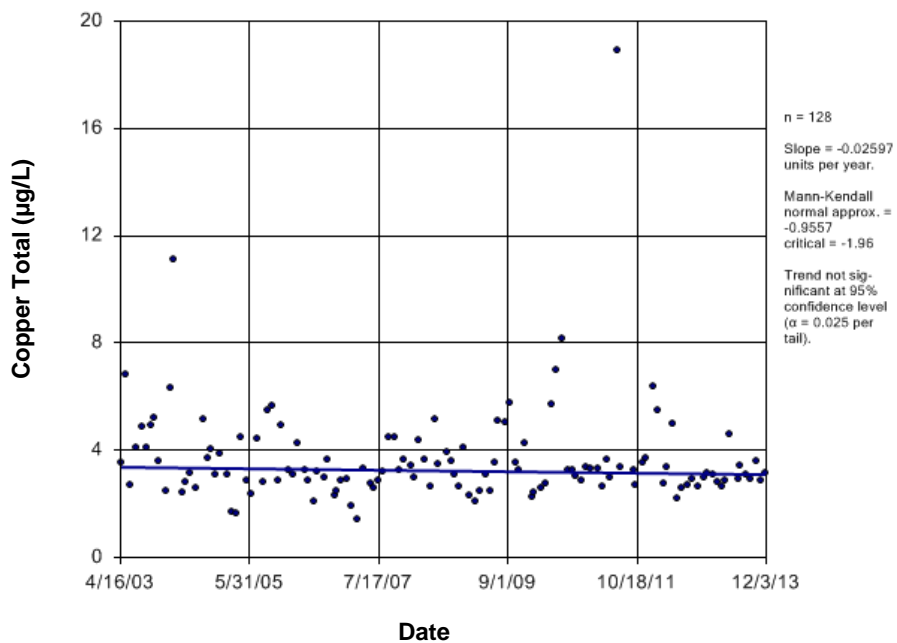


Figure E54 Battle River: Copper Total

Time Series

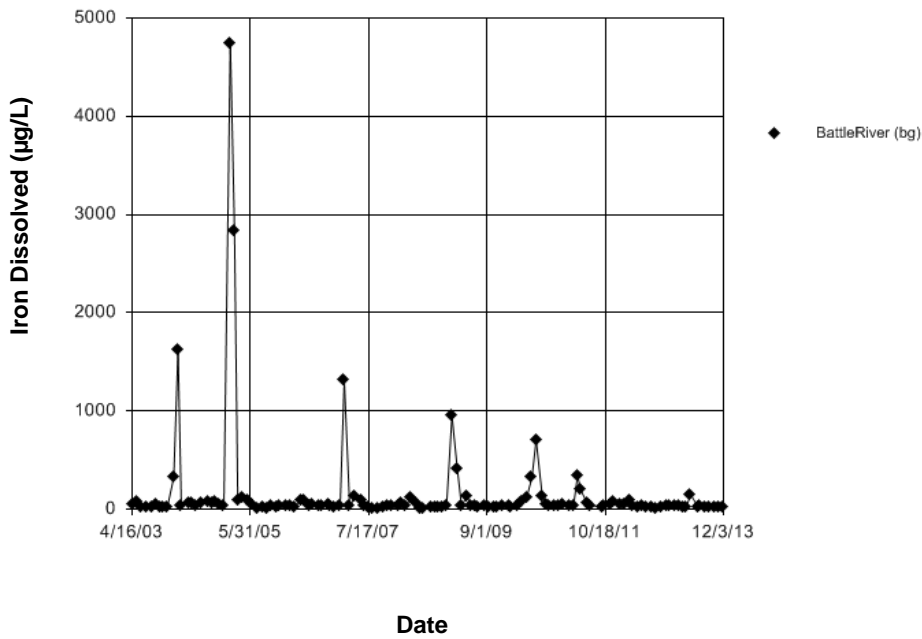


Figure E55 Battle River: Iron Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 1.068
 Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
 There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 1.068
 Adjusted Kruskal-Wallis statistic (H') = 1.068

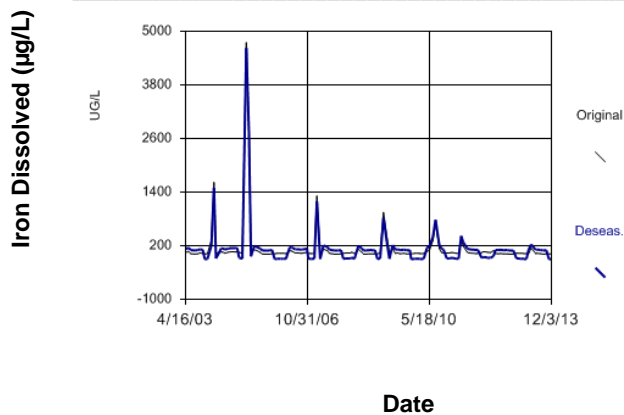


Figure E56 Battle River: Iron Dissolved

Sen's Slope Estimator

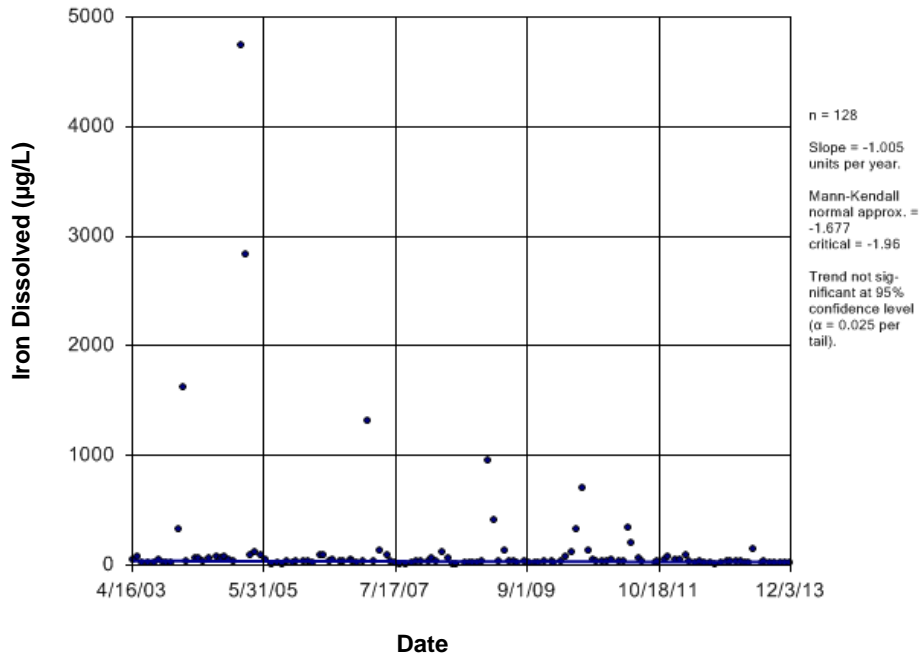


Figure E57 Battle River: Iron Dissolved

Time Series

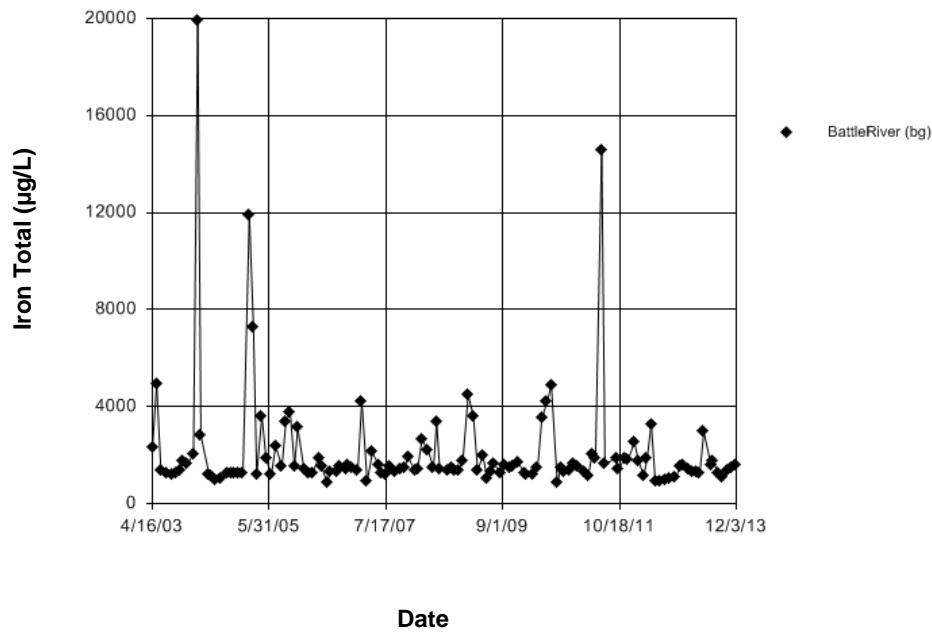


Figure E58 Battle River: Iron Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 1.8
 Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
 There were 6 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 1.8
 Adjusted Kruskal-Wallis statistic (H') = 1.8

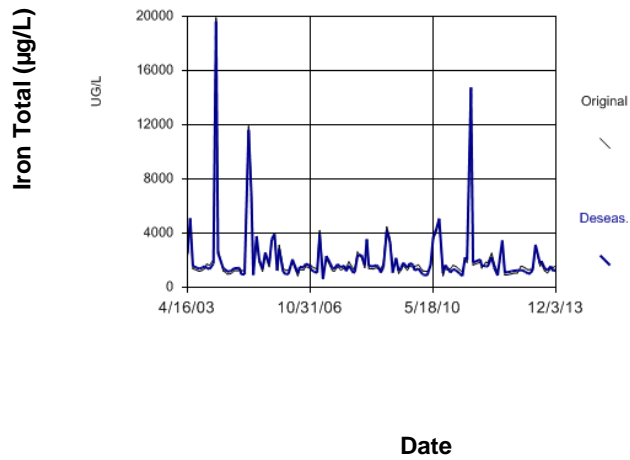


Figure E59 Battle River: Iron Total

Sen's Slope Estimator

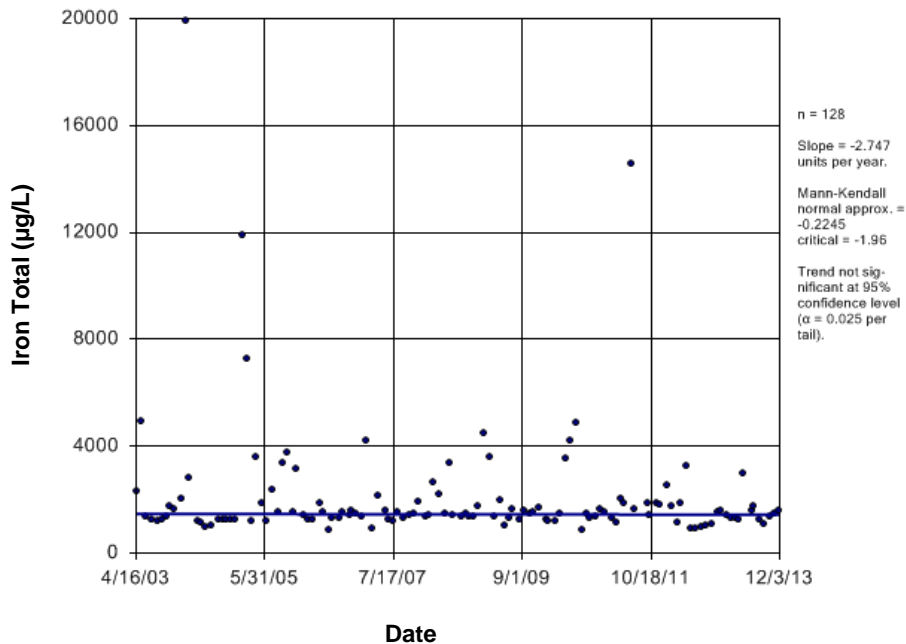


Figure E60 Battle River: Iron Total

Time Series

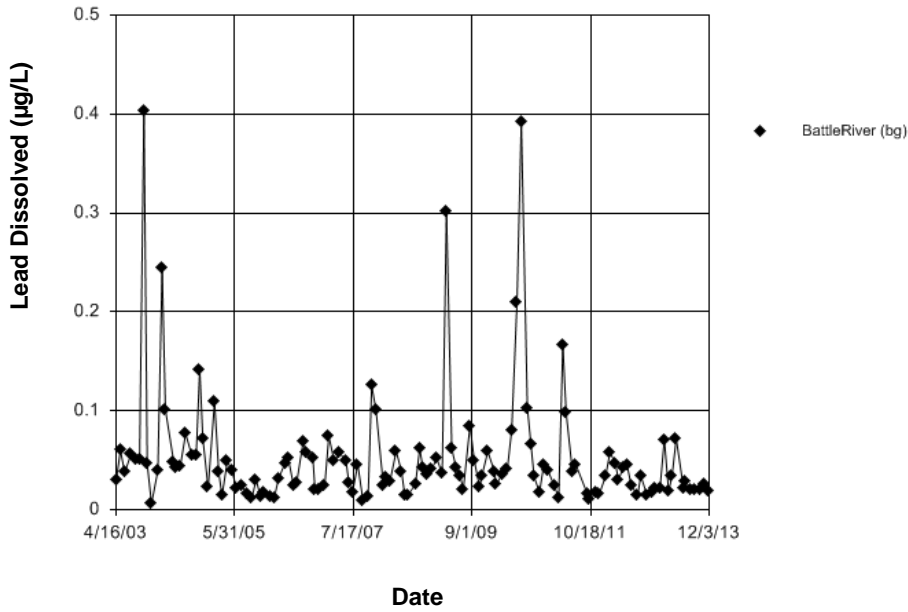


Figure E61 Battle River: Lead Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 2.479. Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level. There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal. Kruskal-Wallis statistic (H) = 2.479. Adjusted Kruskal-Wallis statistic (H') = 2.479

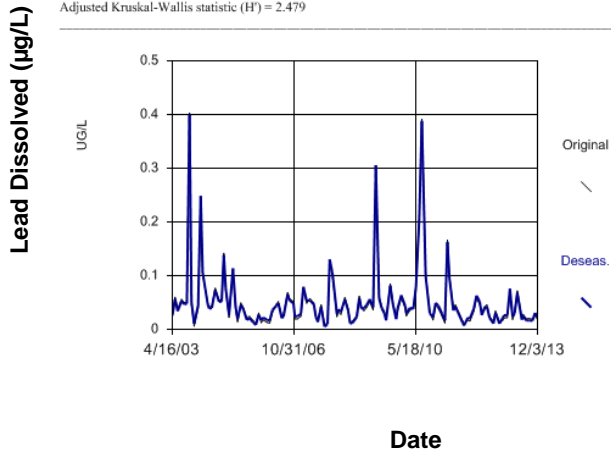


Figure E62 Battle River: Lead Dissolved

Sen's Slope Estimator

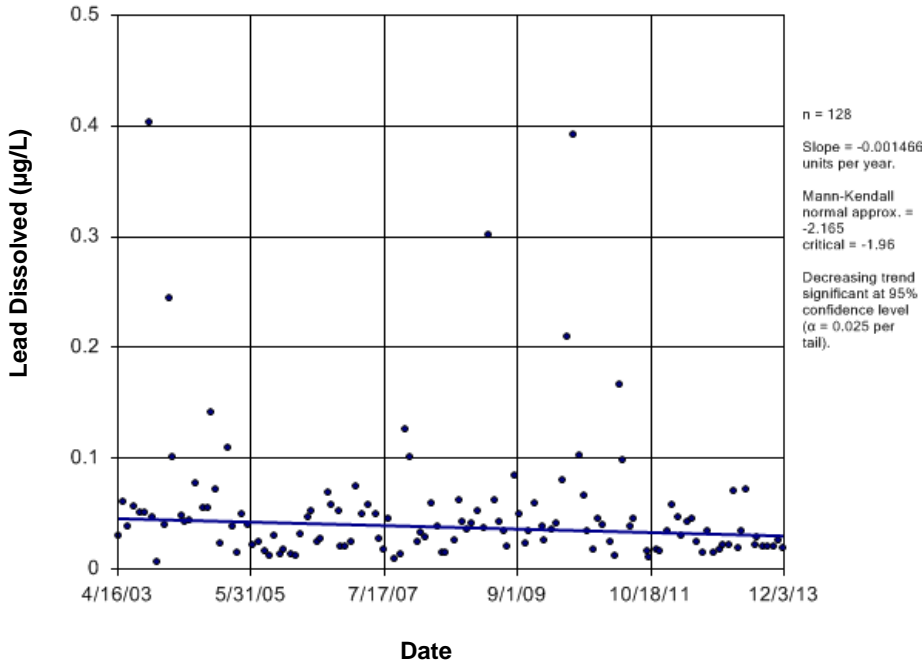


Figure E63 Battle River: Lead Dissolved

Time Series

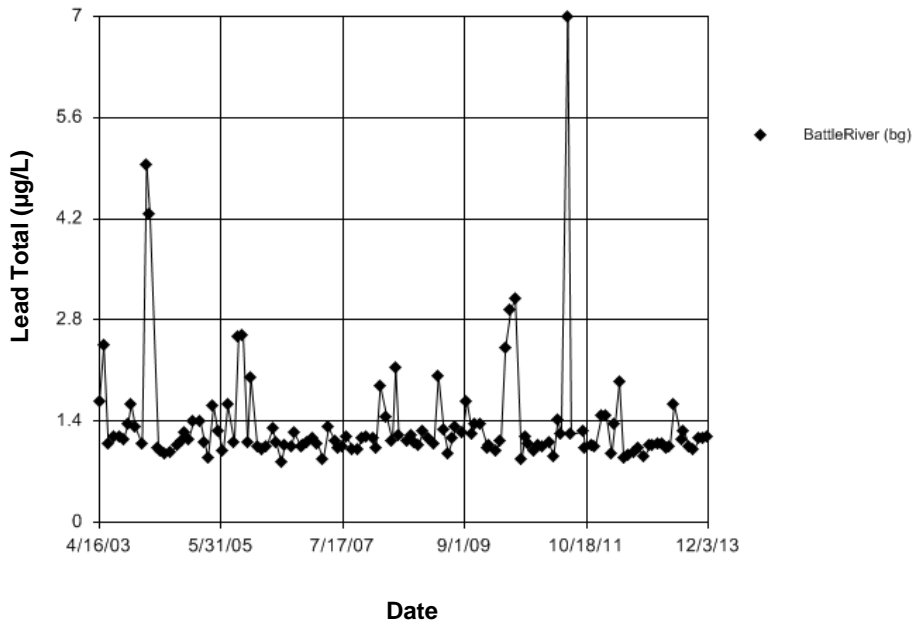


Figure E64 Battle River: Lead Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.7627
 Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
 There were 9 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 0.7626
 Adjusted Kruskal-Wallis statistic (H') = 0.7627

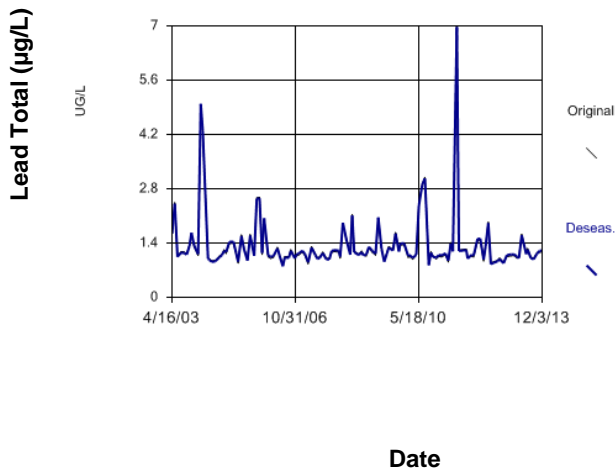


Figure E65 Battle River: Lead Total

Sen's Slope Estimator

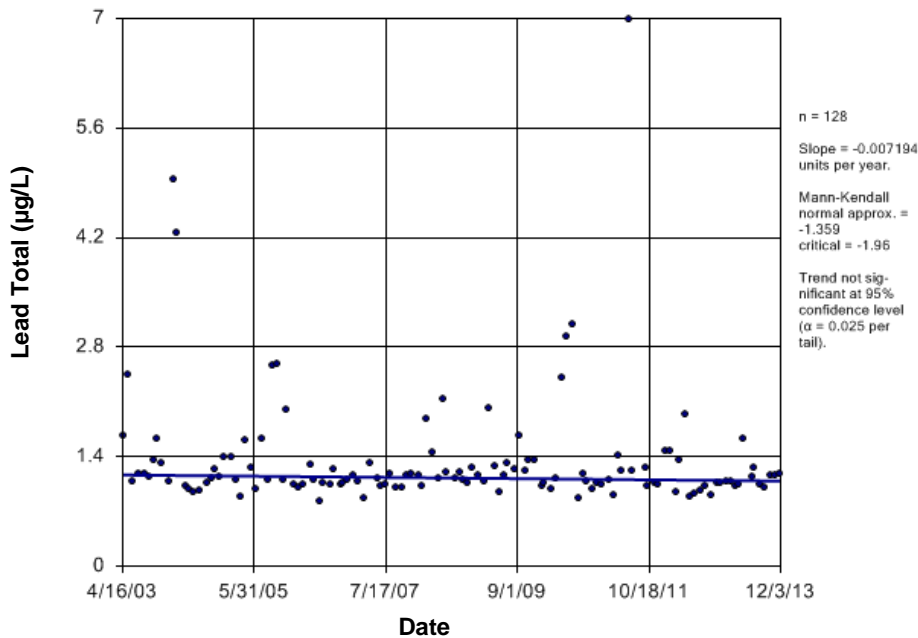


Figure E66 Battle River: Lead Total

Time Series

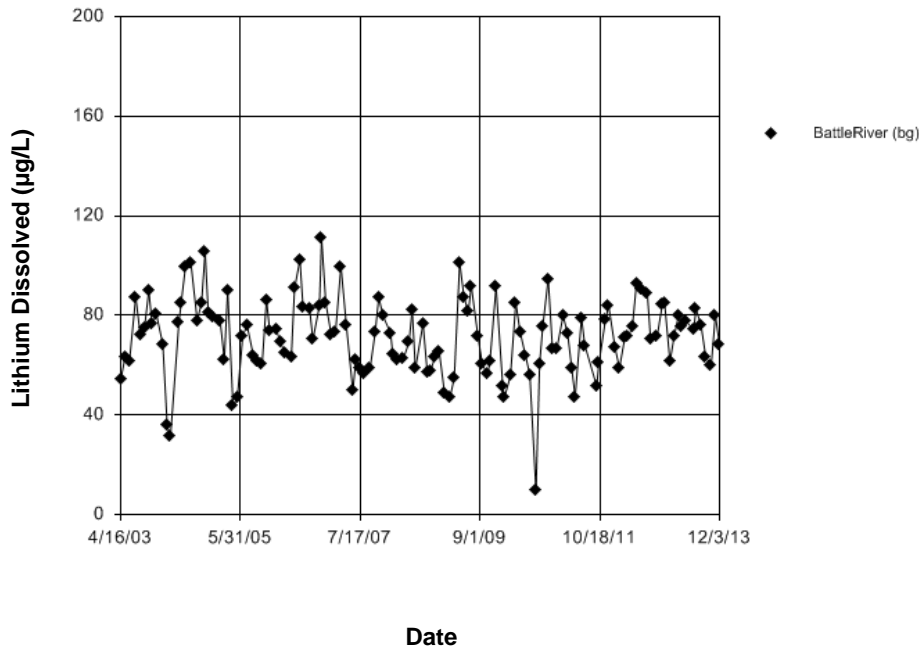


Figure E67 Battle River: Lithium Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.01192
 Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
 There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 0.01192
 Adjusted Kruskal-Wallis statistic (H') = 0.01192

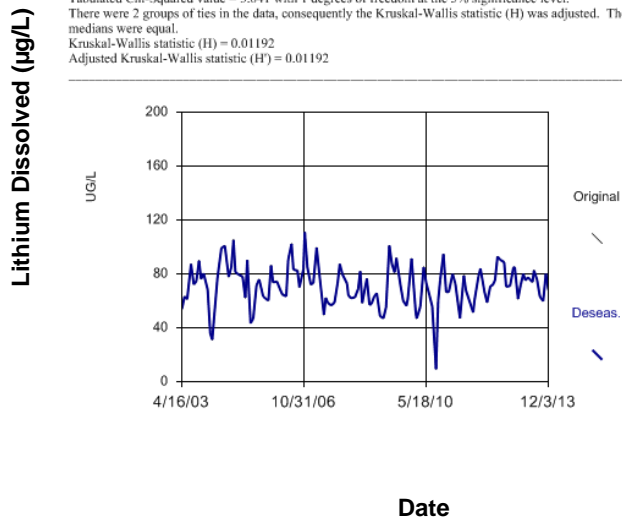


Figure E68 Battle River: Lithium Dissolved

Sen's Slope Estimator

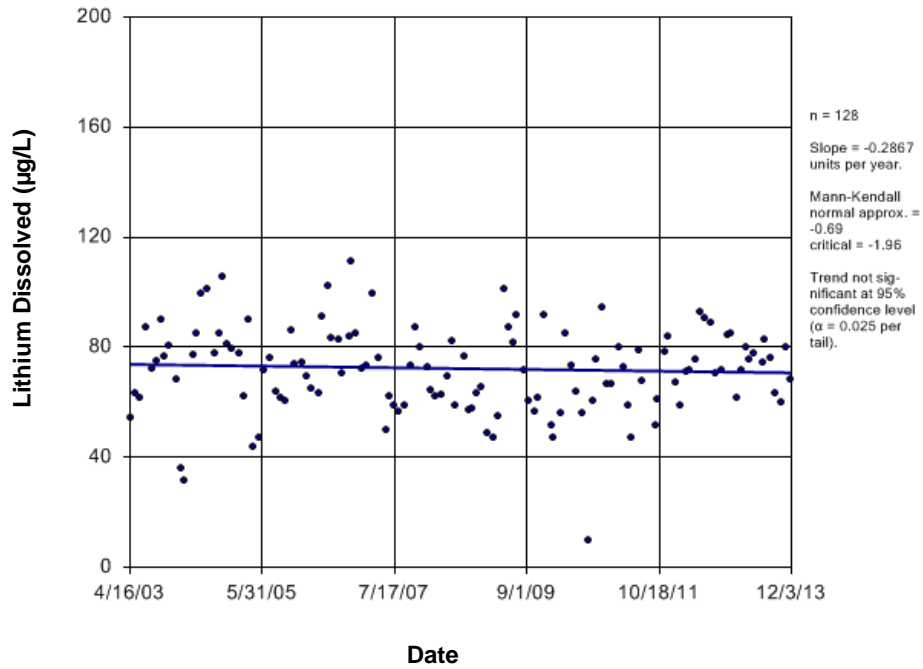


Figure E69 Battle River: Lithium Dissolved

Time Series

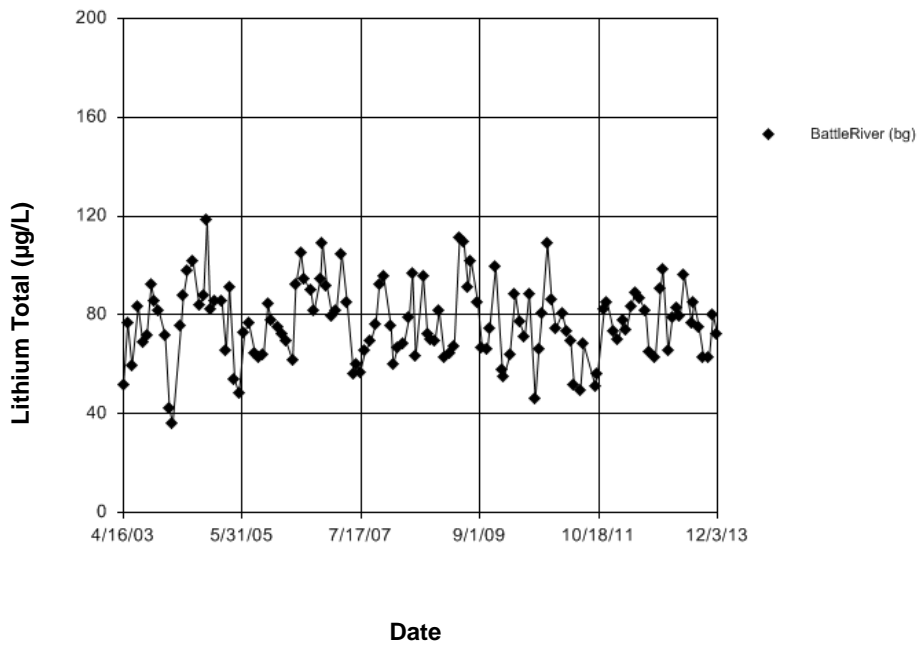
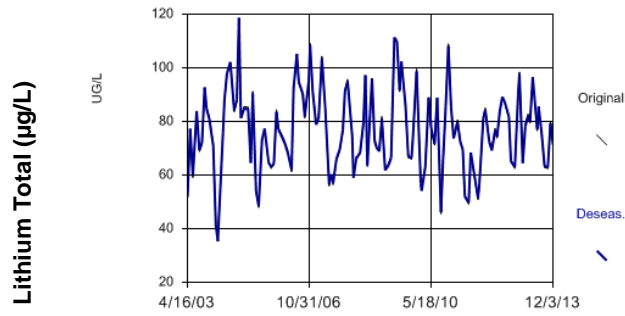


Figure E70 Battle River: Lithium Total

Seasonality

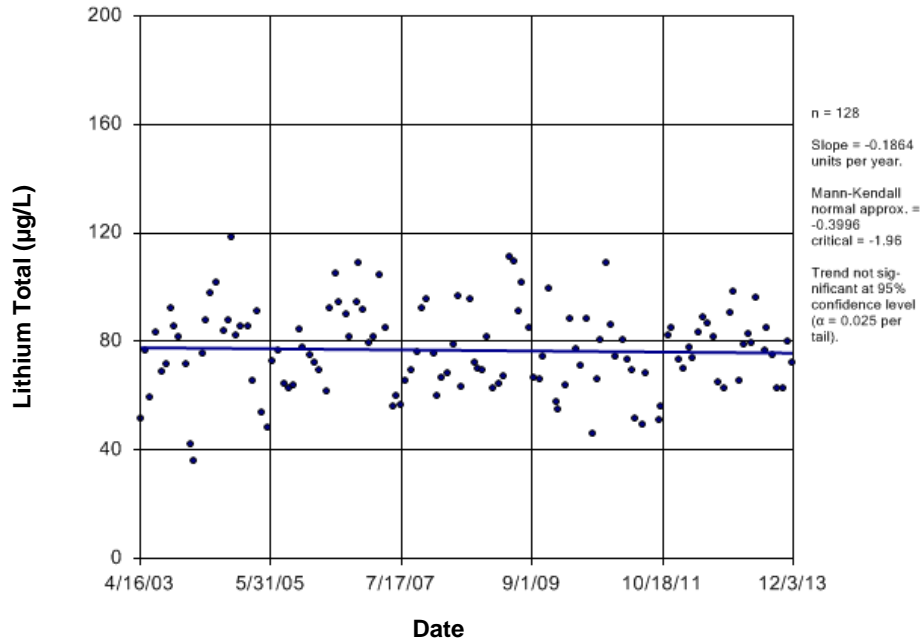
For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.4983
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 3 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 0.4983
 Adjusted Kruskal-Wallis statistic (H') = 0.4983



Date

Figure E71 Battle River: Lithium Total

Sen's Slope Estimator



Date

Figure E72 Battle River: Lithium Total

Time Series

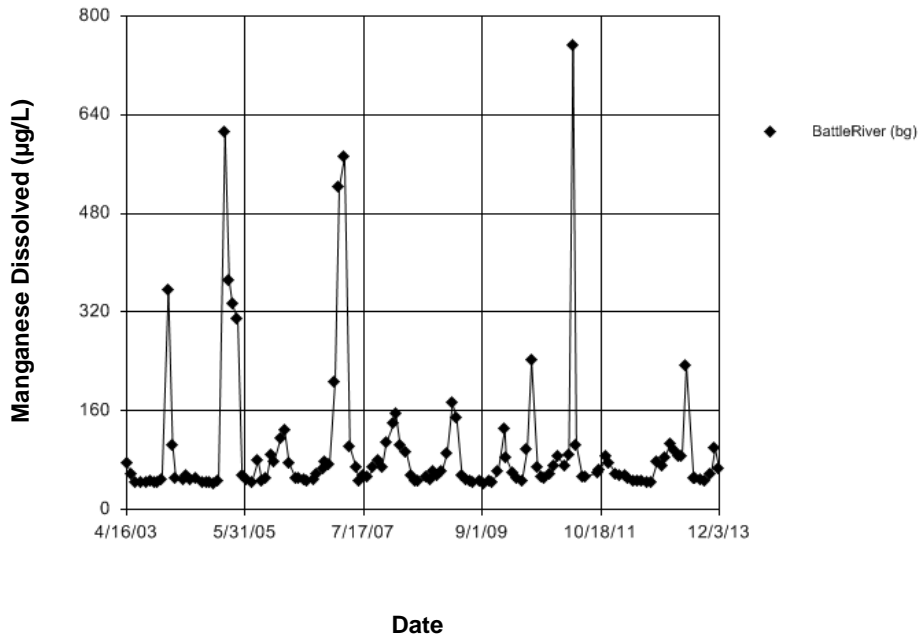


Figure E73 Battle River: Manganese Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 33.19
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 33.19
 Adjusted Kruskal-Wallis statistic (H') = 33.19

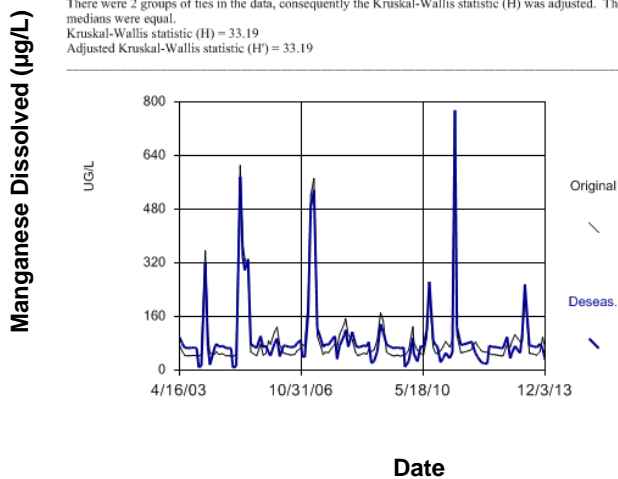


Figure E74 Battle River: Manganese Dissolved

Seasonal Kendall

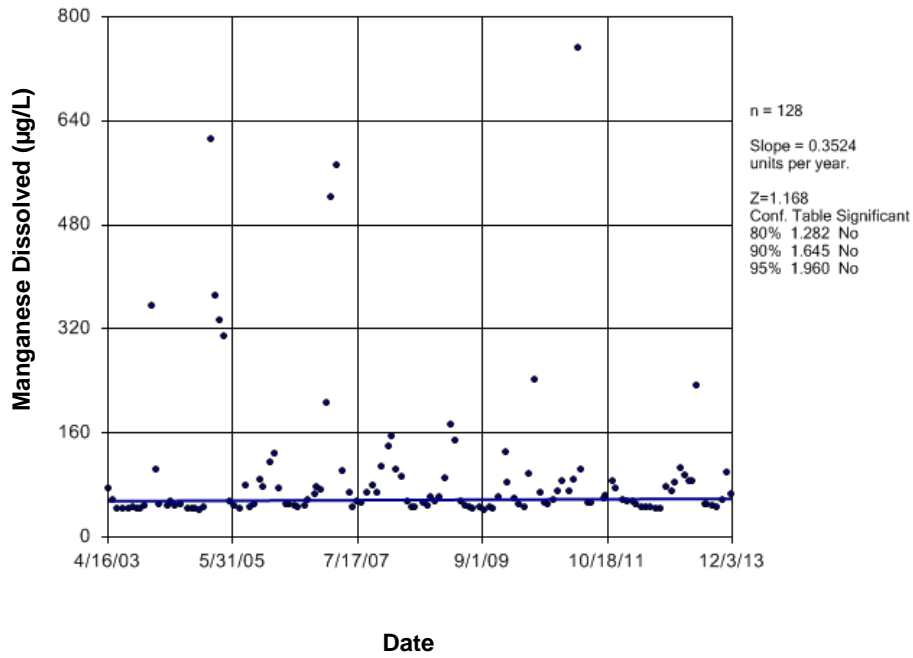


Figure E75 Battle River: Manganese Dissolved

Time Series

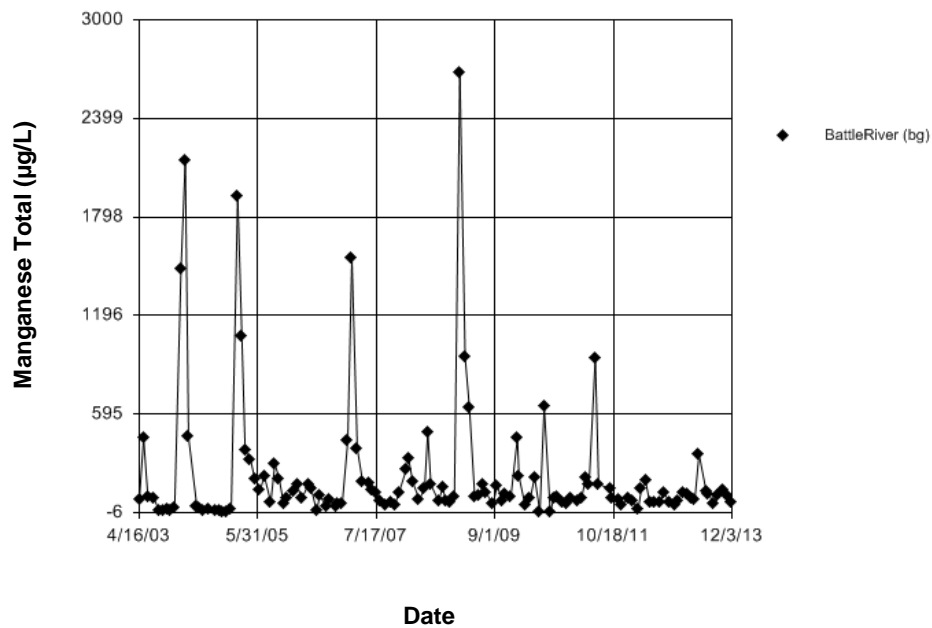


Figure E76 Battle River: Manganese Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.9135. Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level. There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

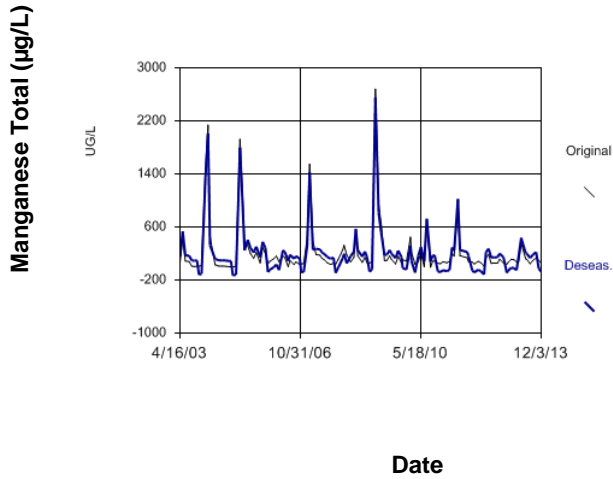


Figure E77 Battle River: Manganese Total

Sen's Slope Estimator

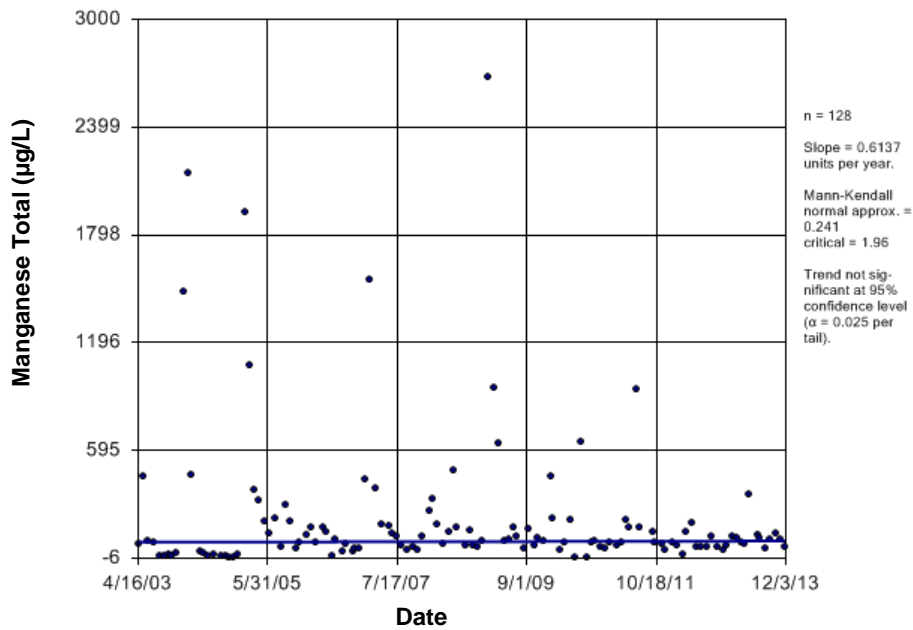


Figure E78 Battle River: Manganese Total

Time Series

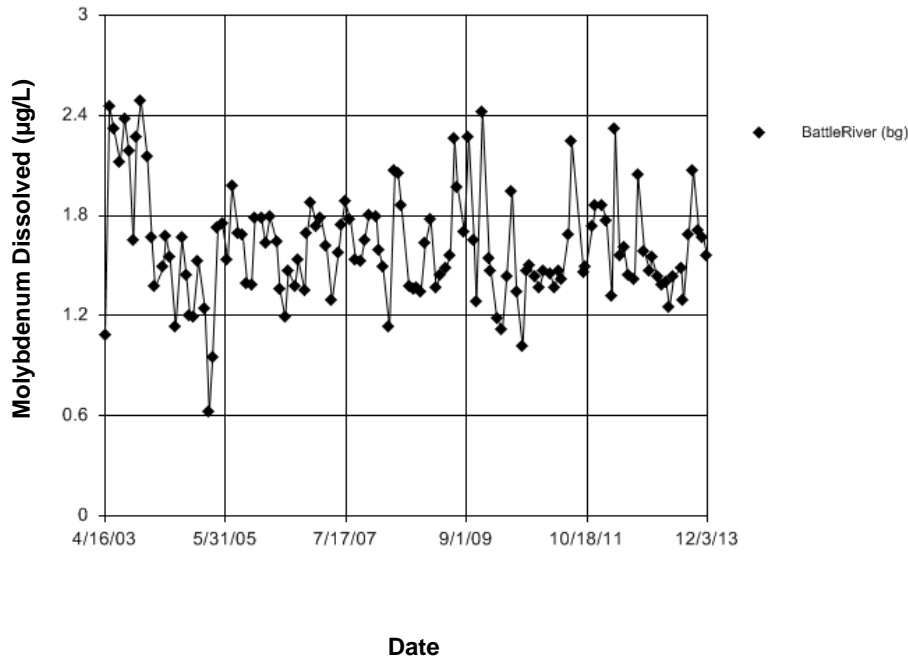


Figure E79 Battle River: Molybdenum Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates **NO SEASONALITY** at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.117
 Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
 There were 6 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 0.117
 Adjusted Kruskal-Wallis statistic (H') = 0.117

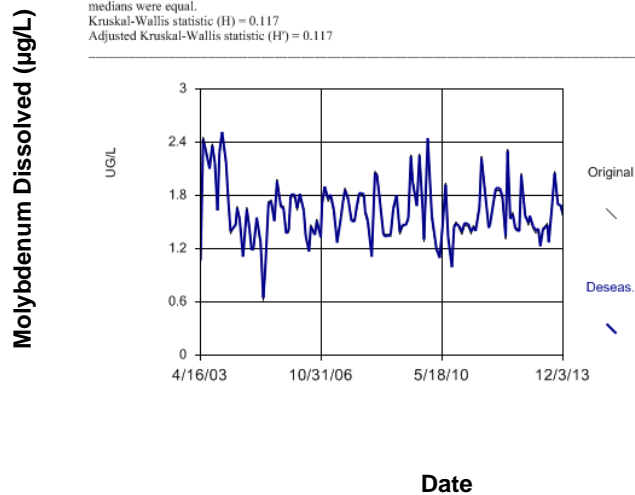


Figure E80 Battle River: Molybdenum Dissolved

Sen's Slope Estimator

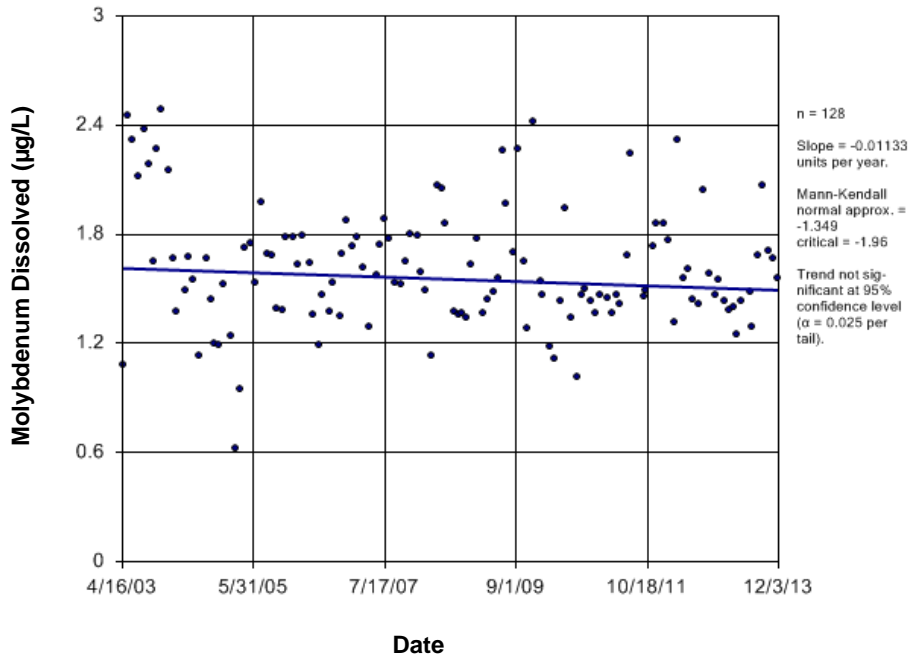


Figure E81 Battle River: Molybdenum Dissolved

Time Series

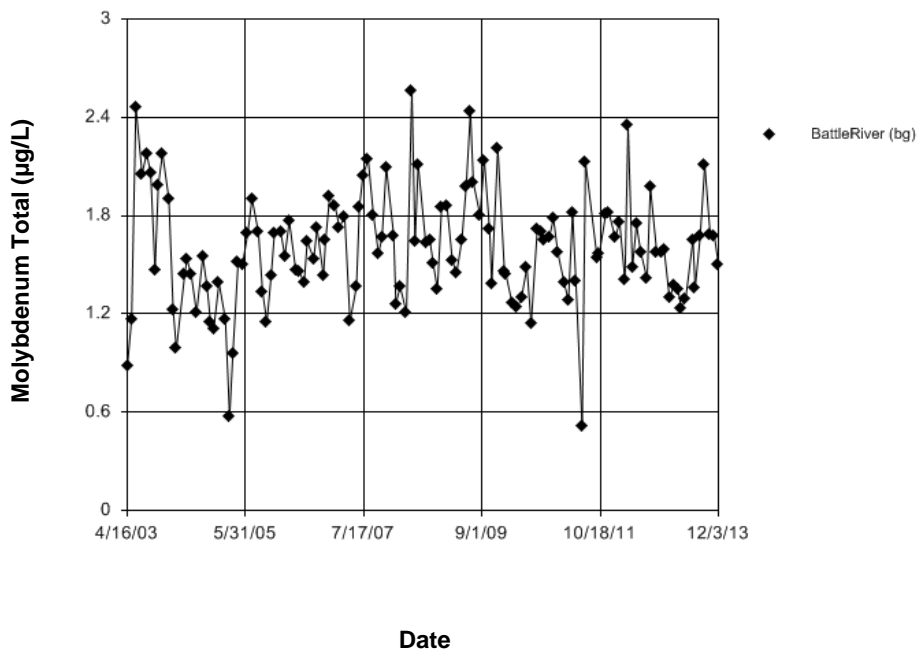


Figure E82 Battle River: Molybdenum Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.5692
 Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
 There were 11 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 0.5692
 Adjusted Kruskal-Wallis statistic (H') = 0.5692

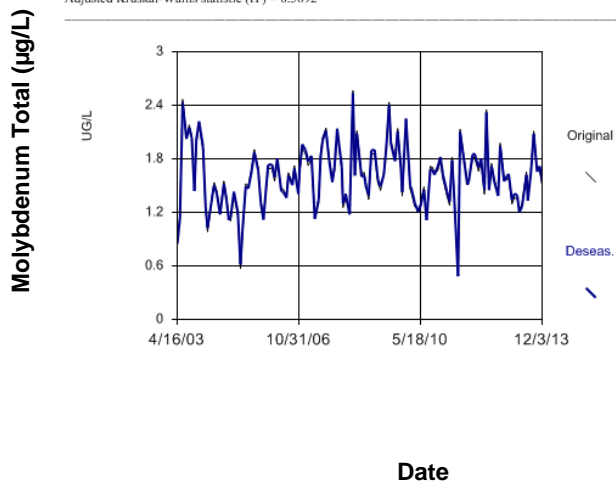


Figure E83 Battle River: Molybdenum Total

Sen's Slope Estimator

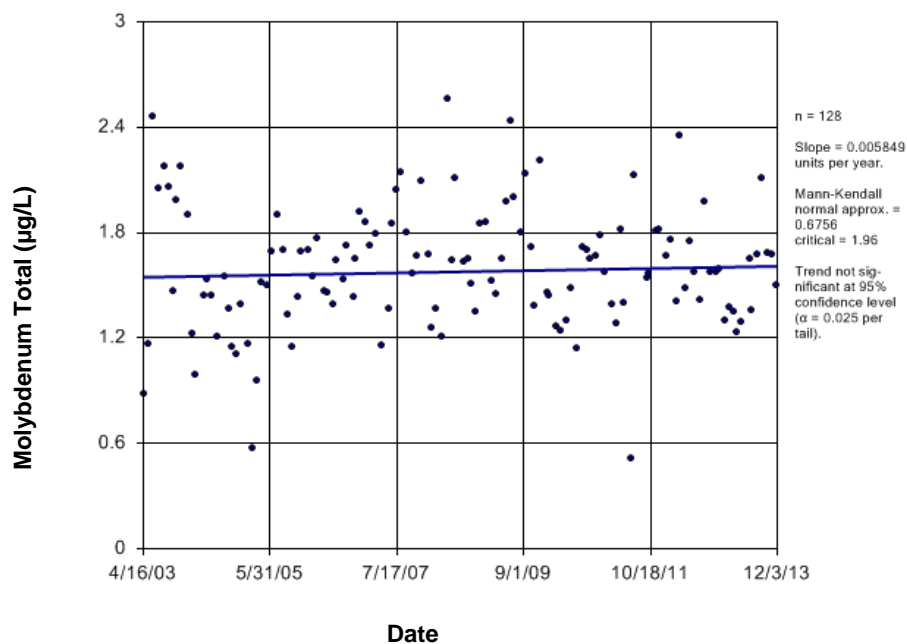


Figure E84 Battle River: Molybdenum Total

Time Series

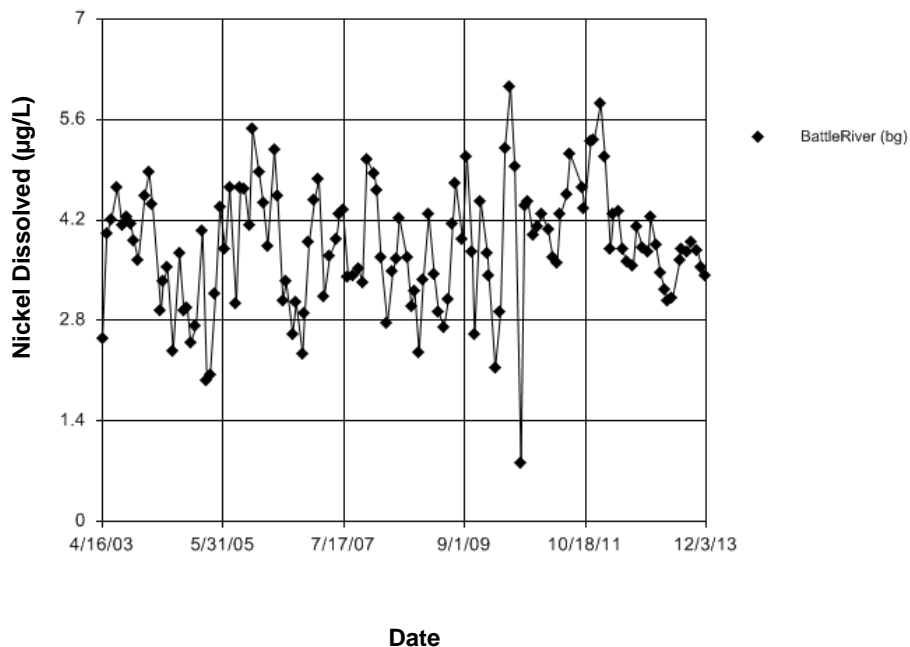


Figure E85 Battle River: Nickel Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.3333
 Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
 There were 3 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H) was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 0.3333
 Adjusted Kruskal-Wallis statistic (H) = 0.3333

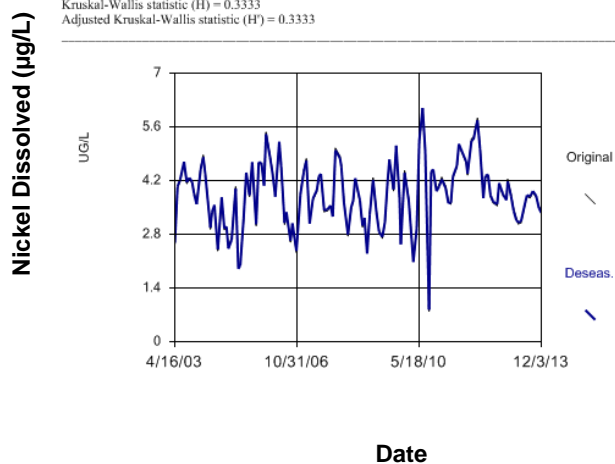


Figure E86 Battle River: Nickel Dissolved

Sen's Slope Estimator

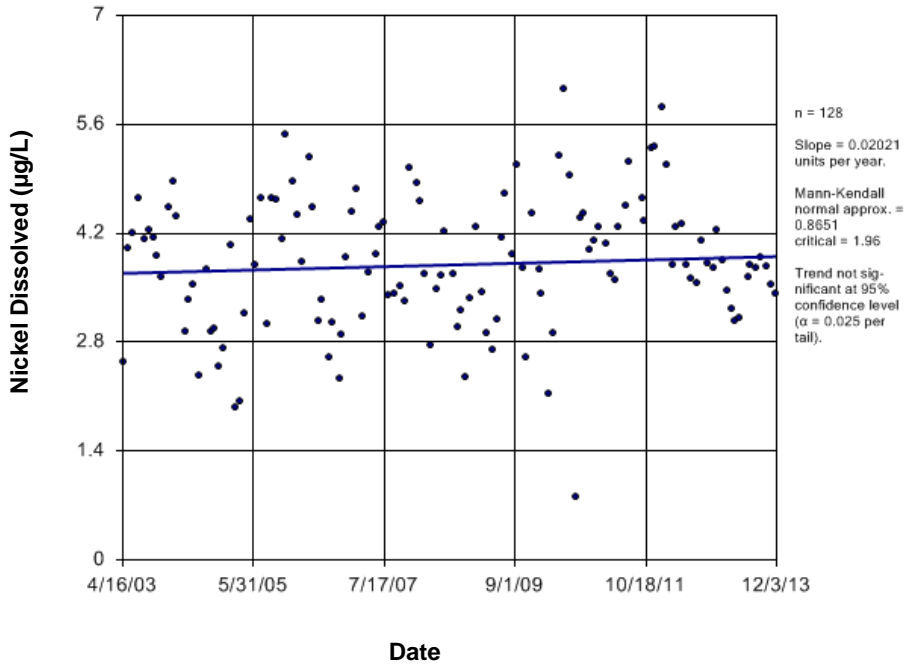


Figure E87 Battle River: Nickel Dissolved

Time Series

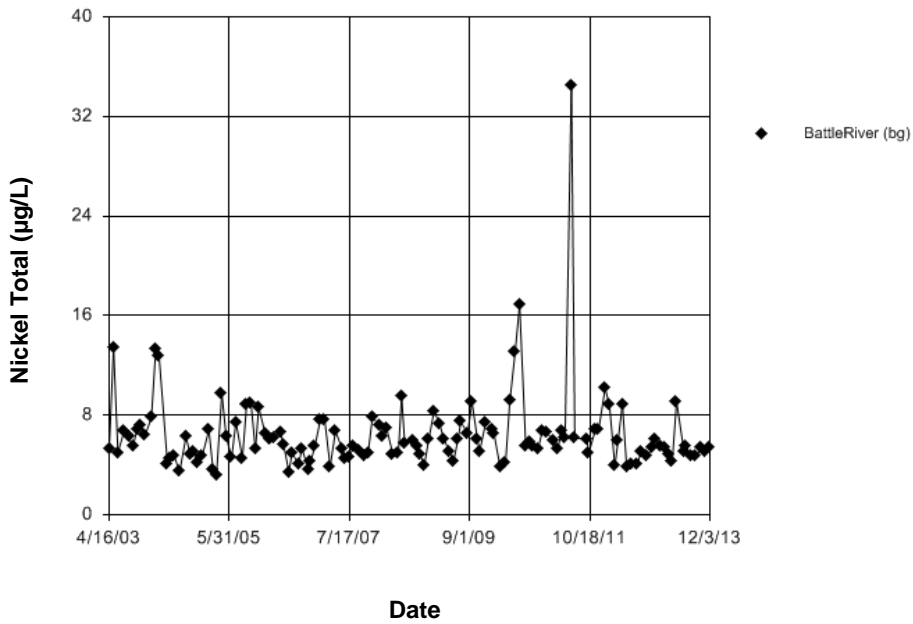


Figure E88 Battle River: Nickel Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 2.61
Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

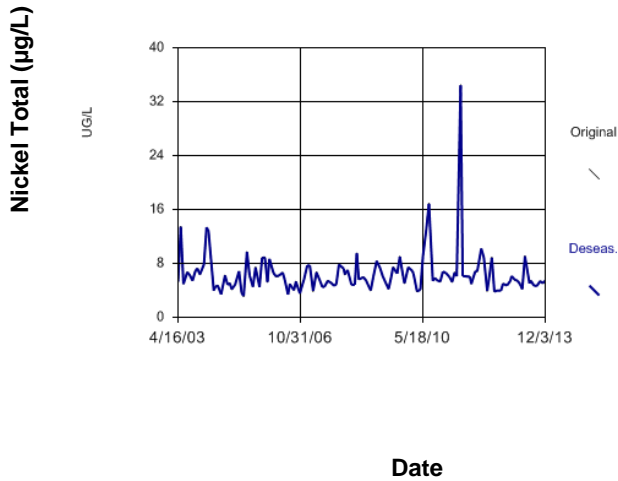


Figure E89 Battle River: Nickel Total

Sen's Slope Estimator

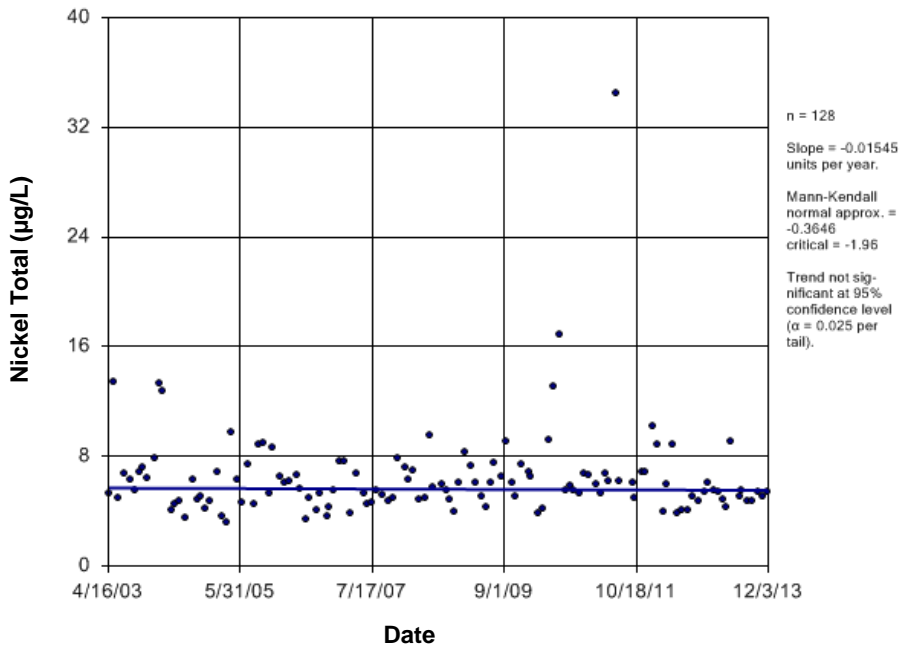


Figure E90 Battle River: Nickel Total

Time Series

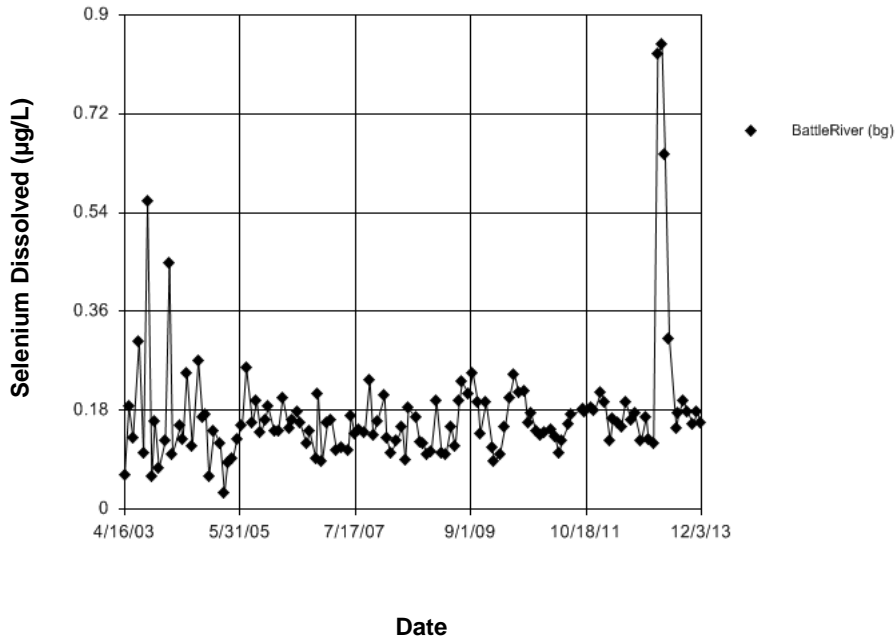


Figure E91 Battle River: Selenium Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 4.895
 Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
 There were 5 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 4.894
 Adjusted Kruskal-Wallis statistic (H') = 4.895

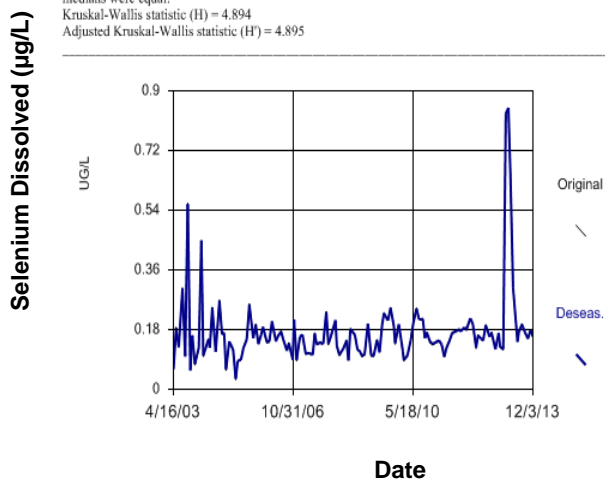


Figure E92 Battle River: Selenium Dissolved

Seasonal Kendall

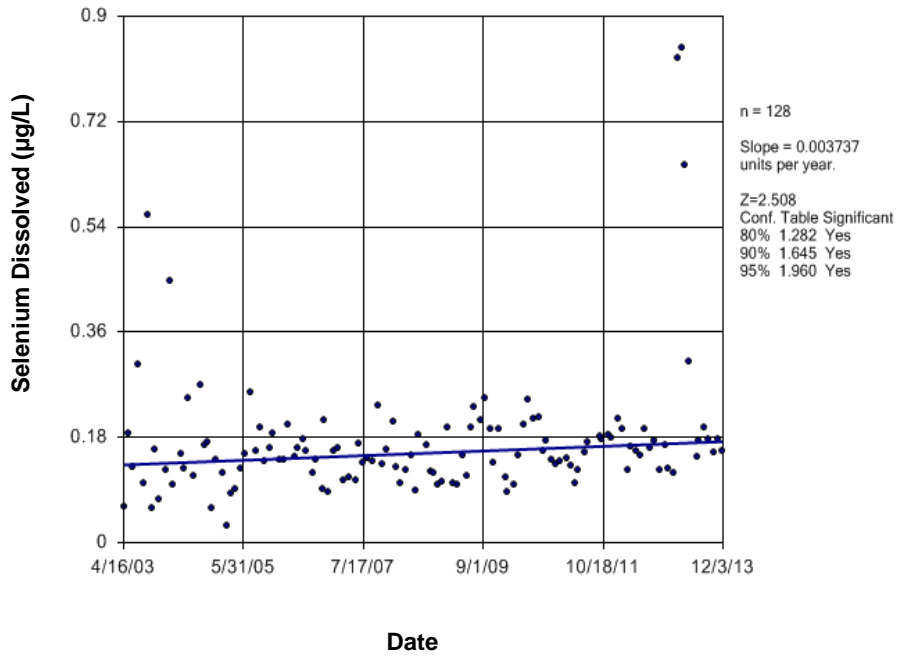


Figure E93 Battle River: Selenium Dissolved

Time Series

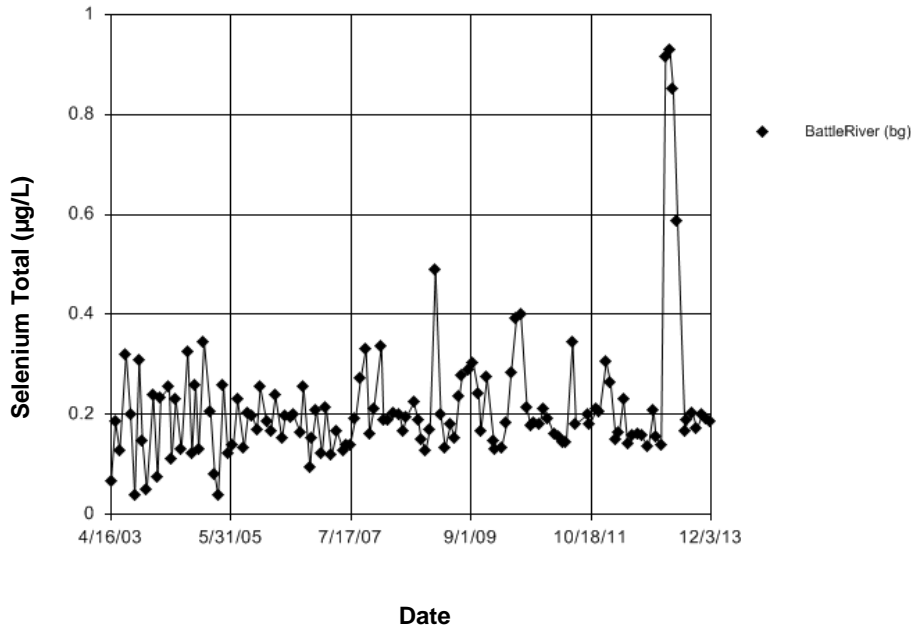


Figure E94 Battle River: Selenium Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.4713
 Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
 There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 0.4713
 Adjusted Kruskal-Wallis statistic (H') = 0.4713

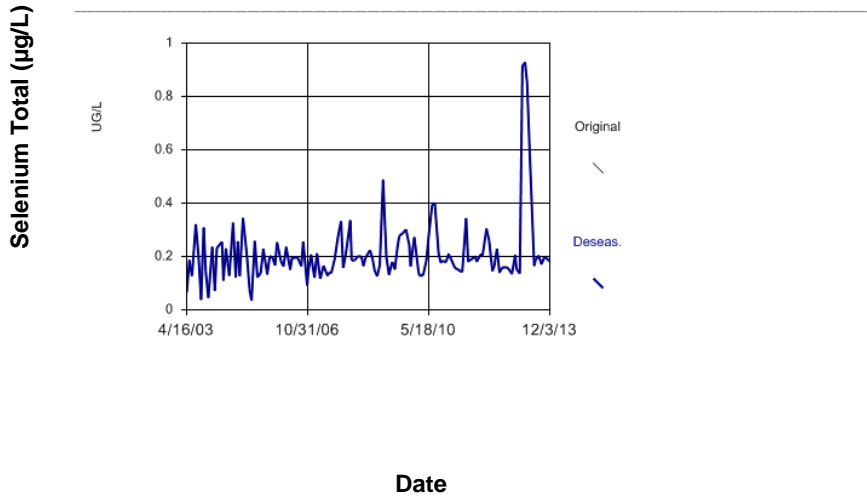


Figure E95 Battle River: Selenium Total

Sen's Slope Estimator

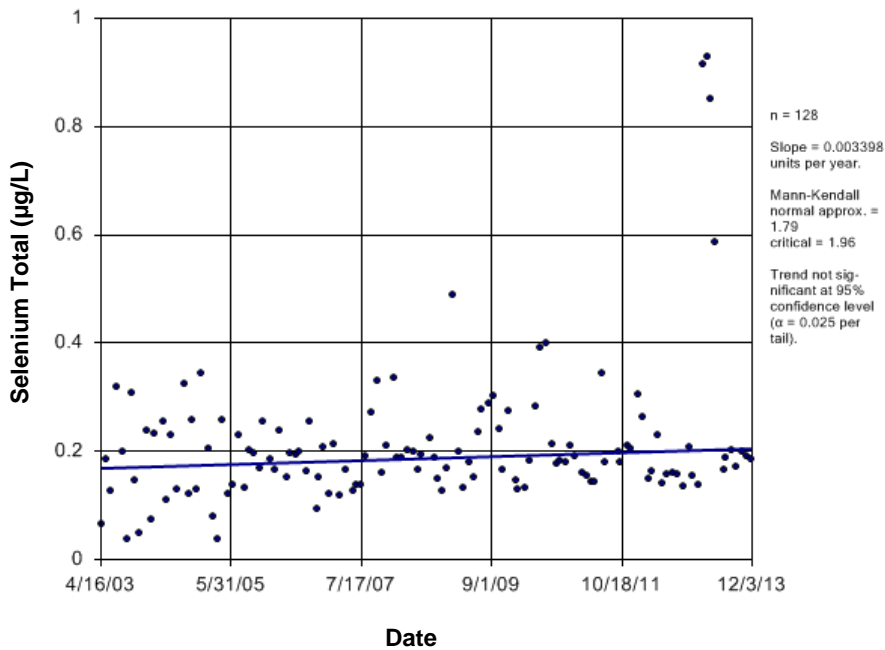


Figure E96 Battle River: Selenium Total

Time Series

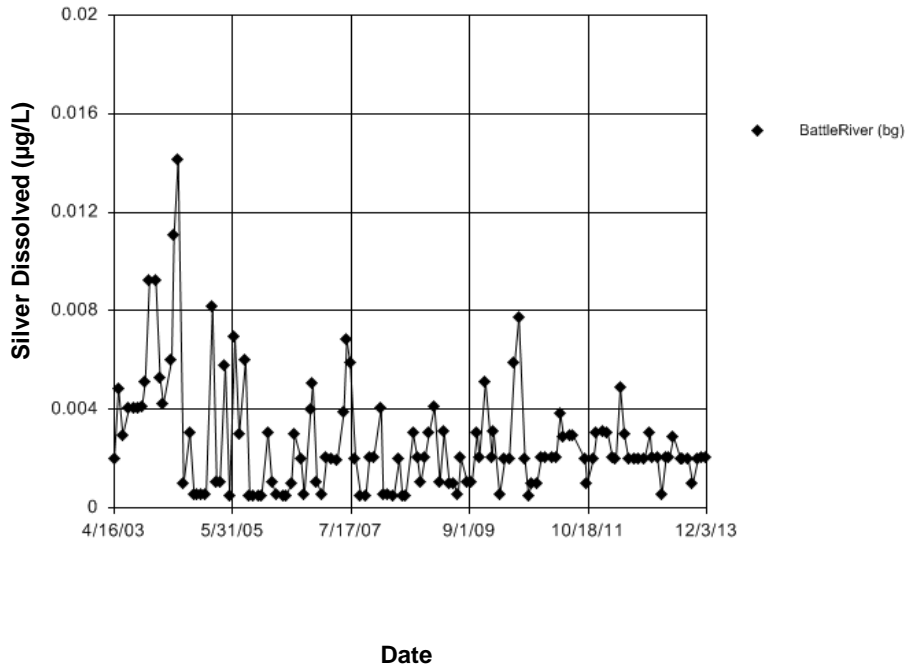


Figure E97 Battle River: Silver Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 1.038
 Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
 There were 13 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 1.038
 Adjusted Kruskal-Wallis statistic (H') = 1.038

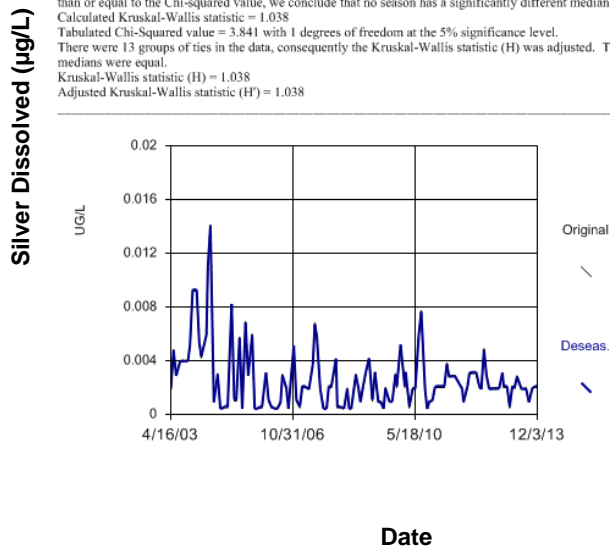


Figure E98 Battle River: Silver Dissolved

Sen's Slope Estimator

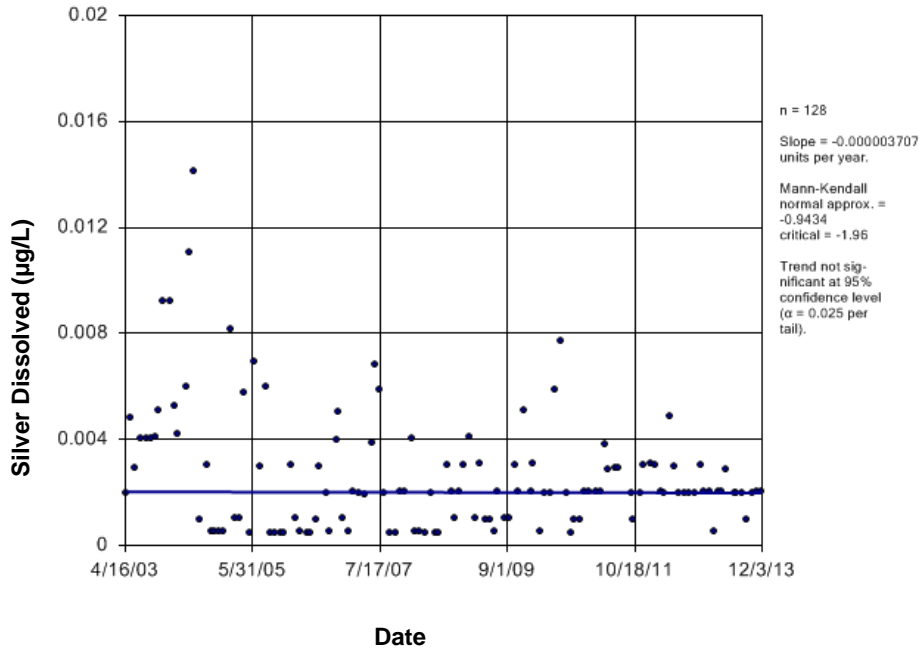


Figure E99 Battle River: Silver Dissolved

Time Series

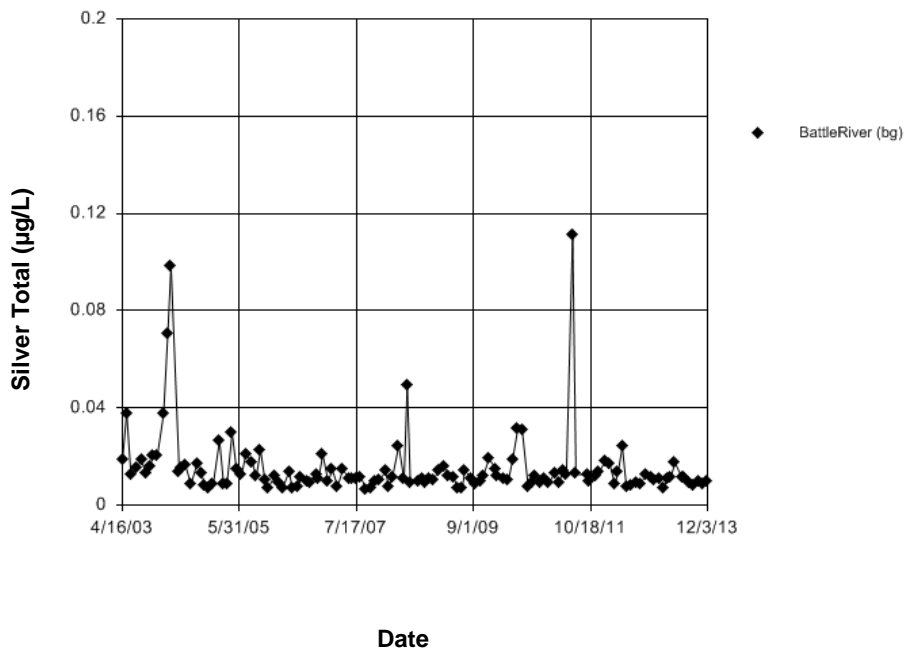


Figure E100 Battle River: Silver Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.6101
Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
There were 6 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 0.6101
Adjusted Kruskal-Wallis statistic (H') = 0.6101

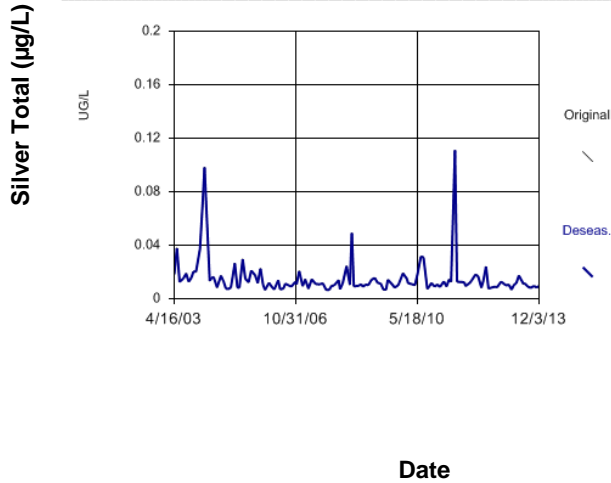


Figure E101 Battle River: Silver Total

Sen's Slope Estimator

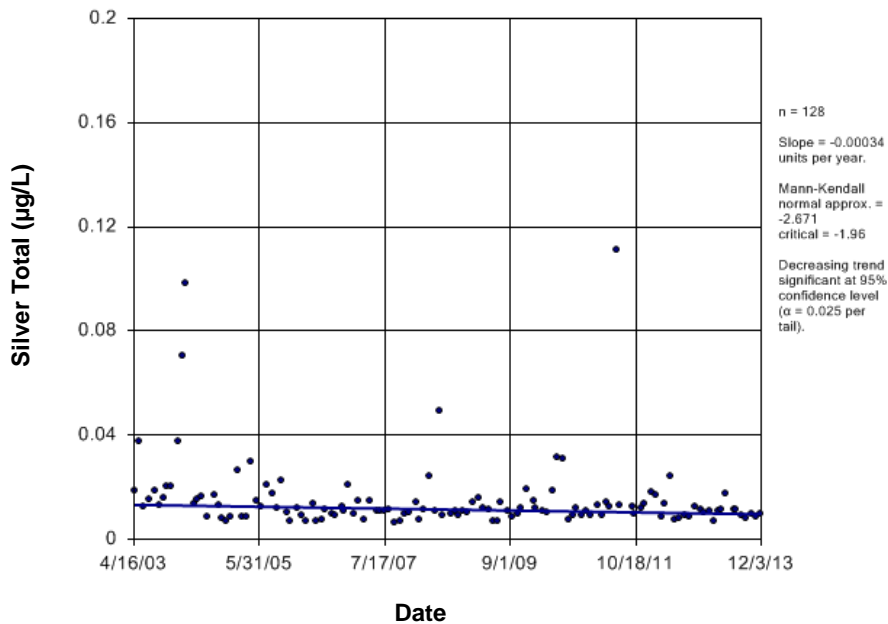


Figure E102 Battle River: Silver Total

Time Series

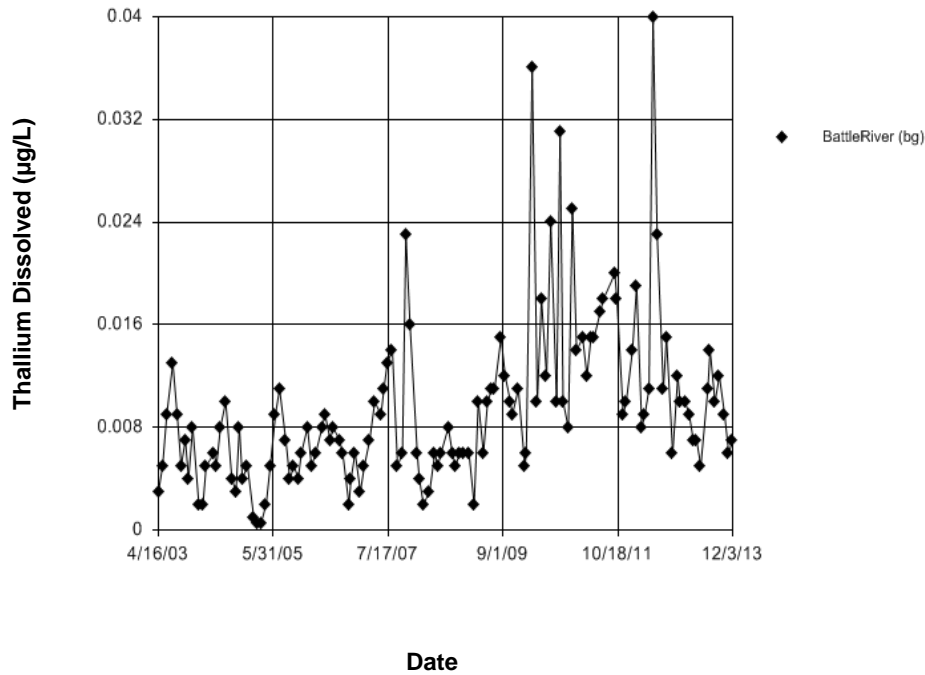


Figure E103 Battle River: Thallium Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.

Calculated Kruskal-Wallis statistic = 5.617

Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.

There were 17 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.

Kruskal-Wallis statistic (H) = 5.583

Adjusted Kruskal-Wallis statistic (H') = 5.617

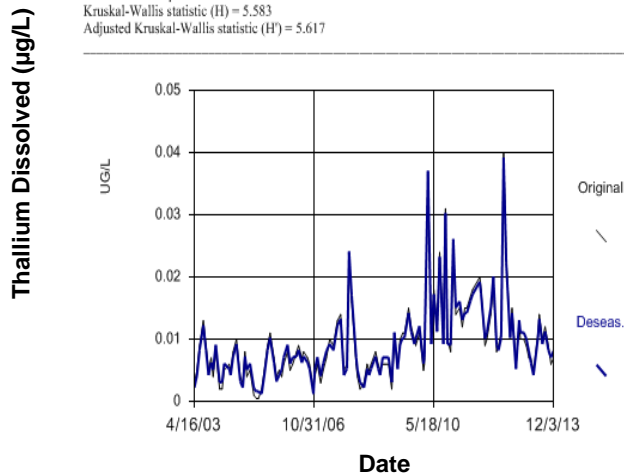


Figure E104 Battle River: Thallium Dissolved

Seasonal Kendall

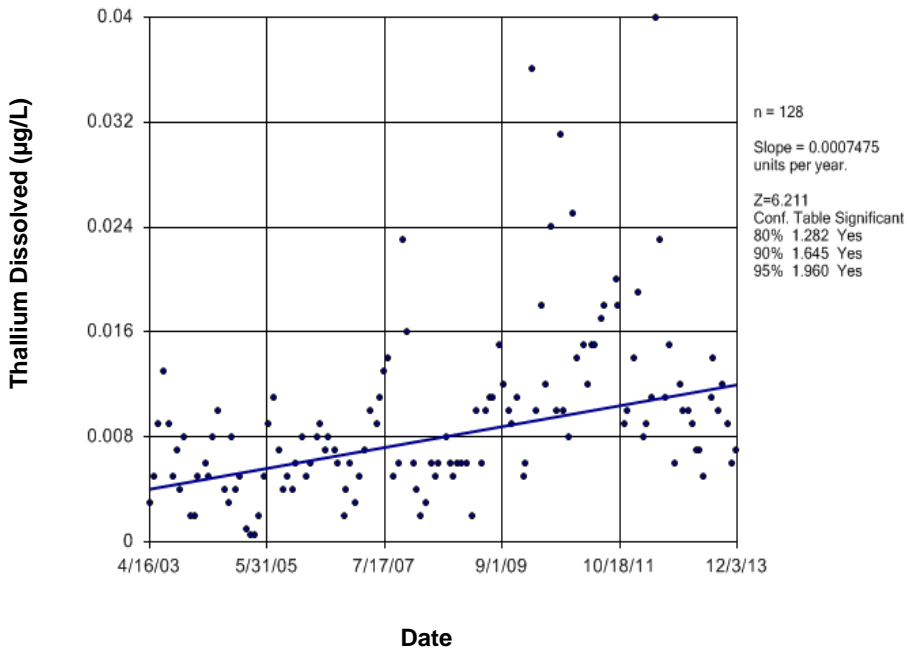


Figure E105 Battle River: Thallium Dissolved

Time Series

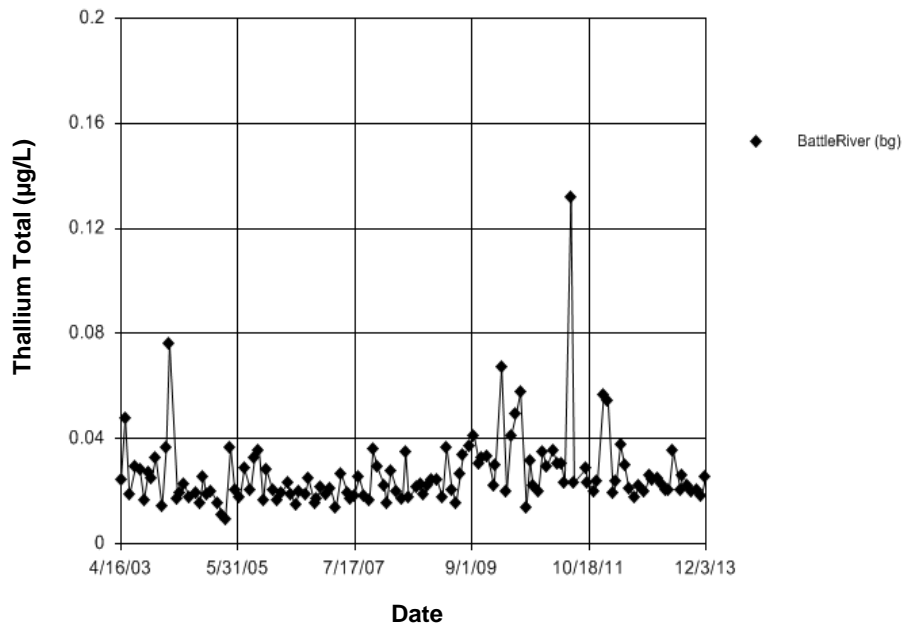


Figure E106 Battle River: Thallium Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.09048
 Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
 There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 0.09048
 Adjusted Kruskal-Wallis statistic (H') = 0.09048

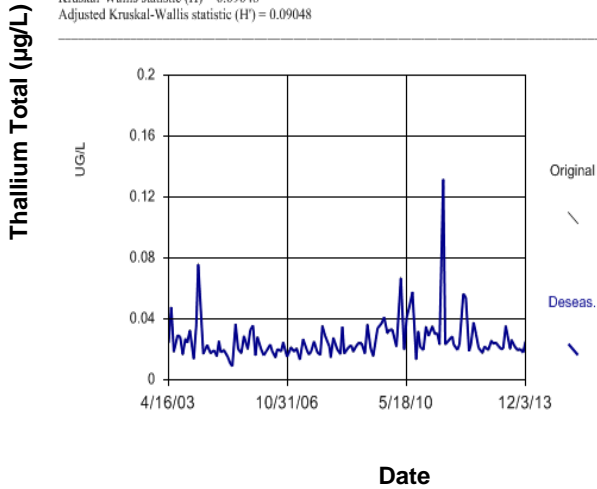


Figure E107 Battle River: Thallium Total

Sen's Slope Estimator

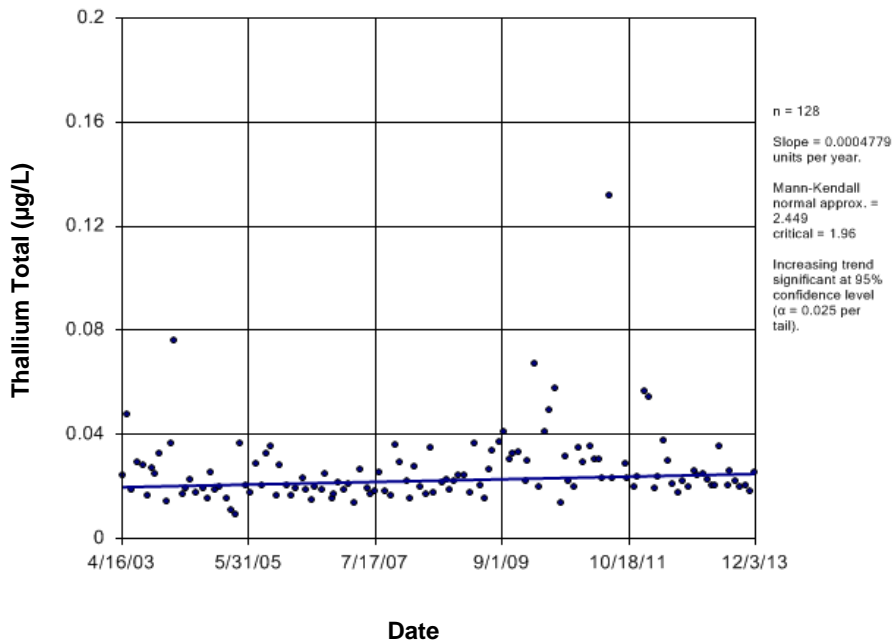


Figure E108 Battle River: Thallium Total

Time Series

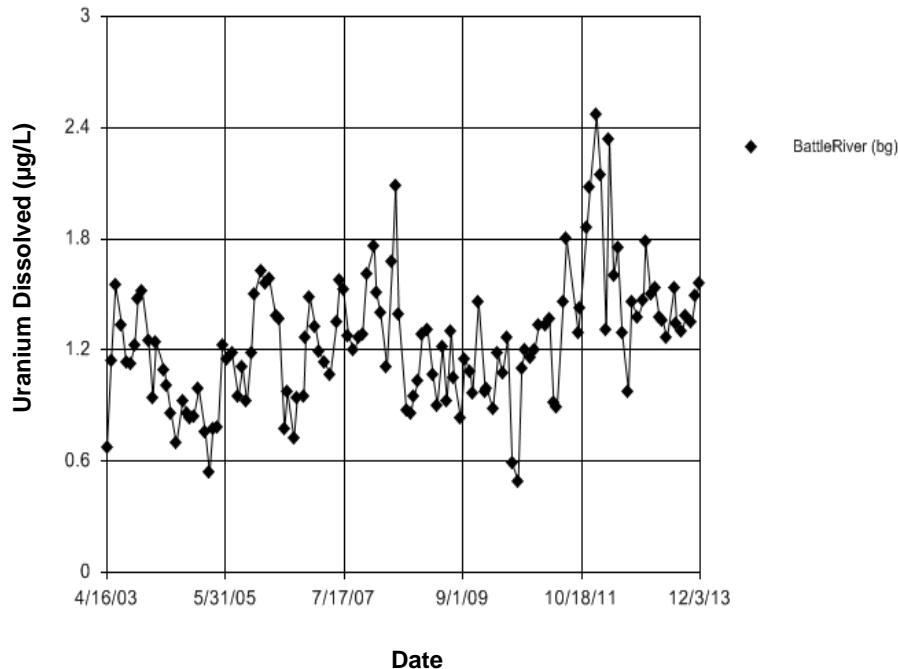


Figure E109 Battle River: Uranium Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 7.395
 Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
 There were 3 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 7.395
 Adjusted Kruskal-Wallis statistic (H') = 7.395

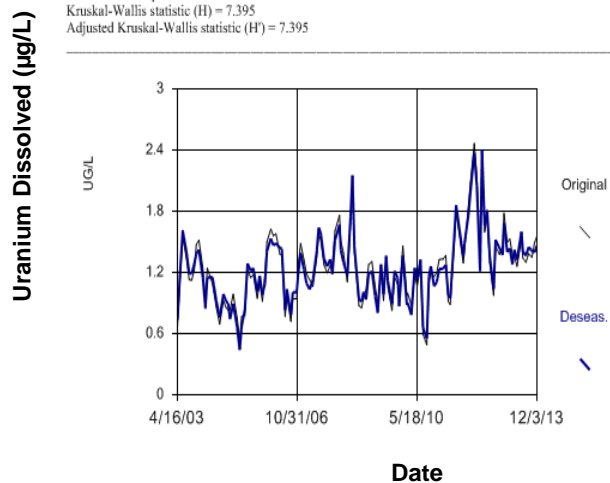


Figure E110 Battle River: Uranium Dissolved

Seasonal Kendall

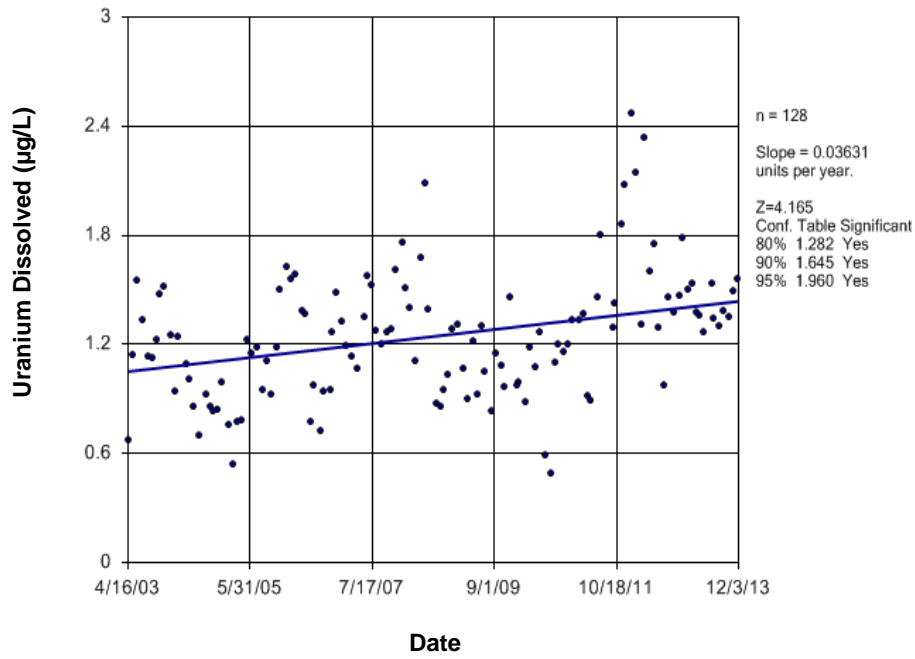


Figure E111 Battle River: Uranium Dissolved

Time Series

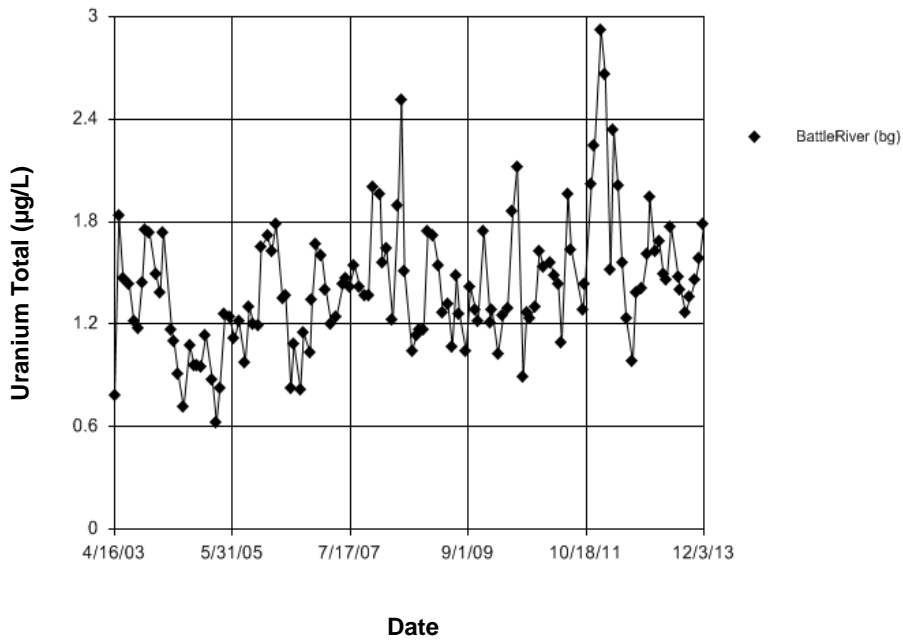


Figure E112 Battle River: Uranium Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 14.41
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 4 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 14.41
 Adjusted Kruskal-Wallis statistic (H') = 14.41

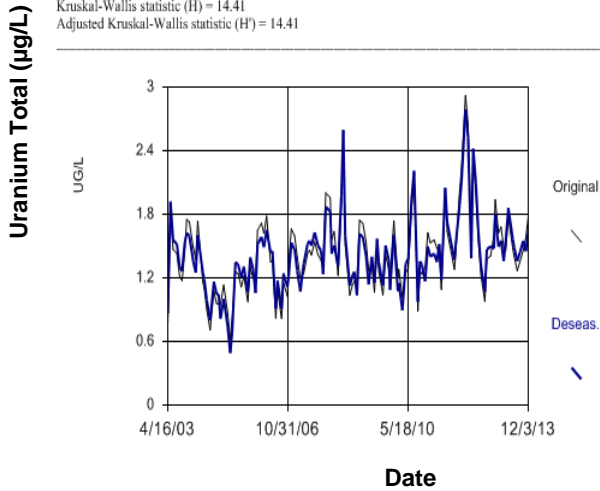


Figure E113 Battle River: Uranium Total

Seasonal Kendall

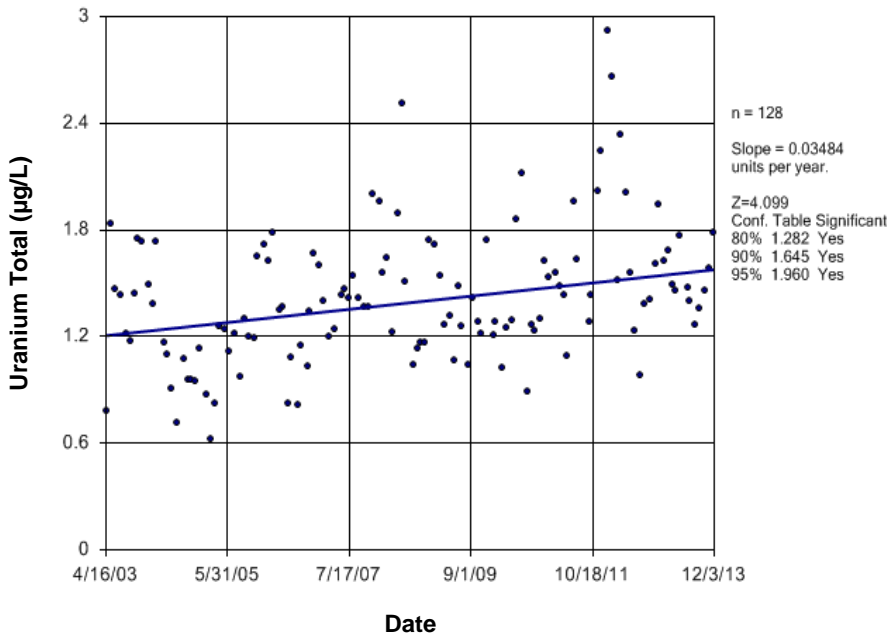


Figure E114 Battle River: Uranium Total

Time Series

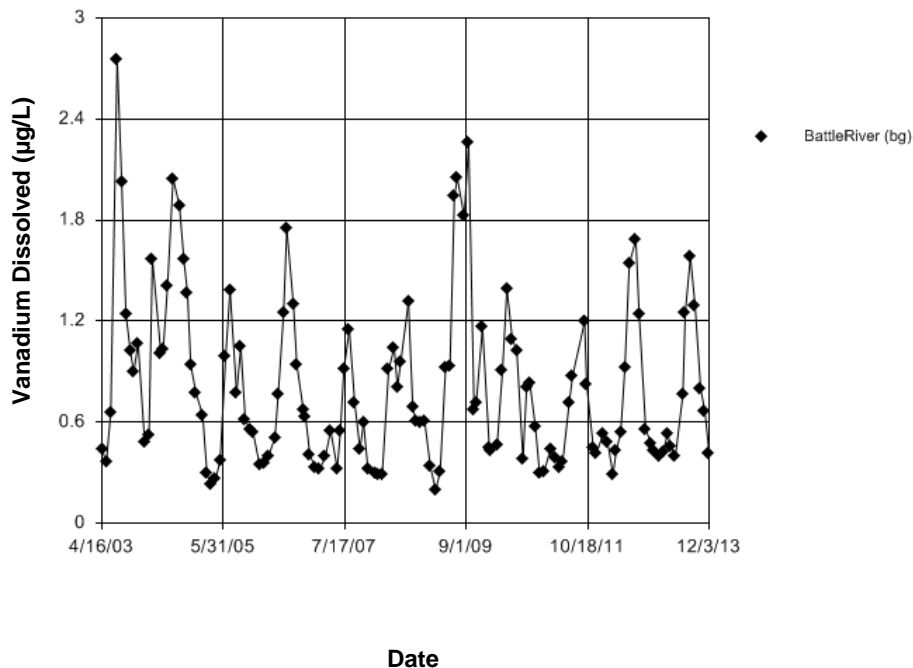


Figure E115 Battle River: Vanadium Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
 Calculated Kruskal-Wallis statistic = 40.39
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 40.39
 Adjusted Kruskal-Wallis statistic (H') = 40.39

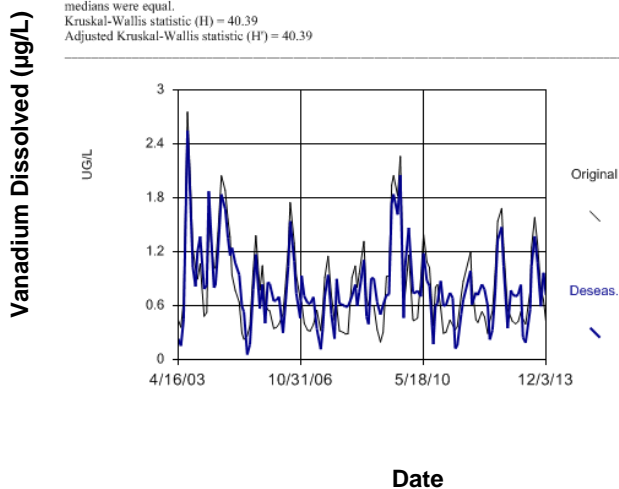


Figure E116 Battle River: Vanadium Dissolved

Seasonal Kendall

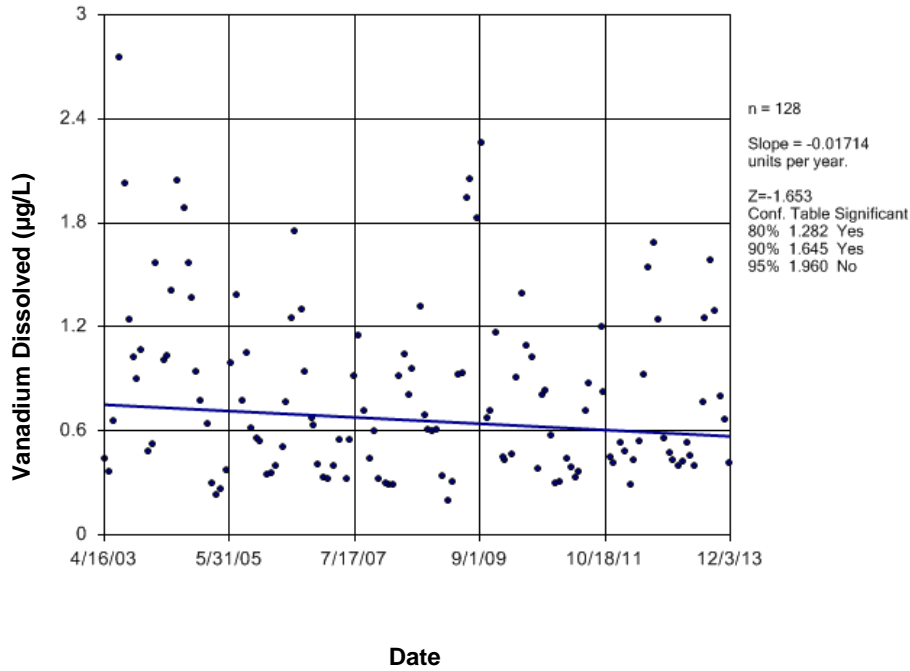


Figure E117 Battle River: Vanadium Dissolved

Time Series

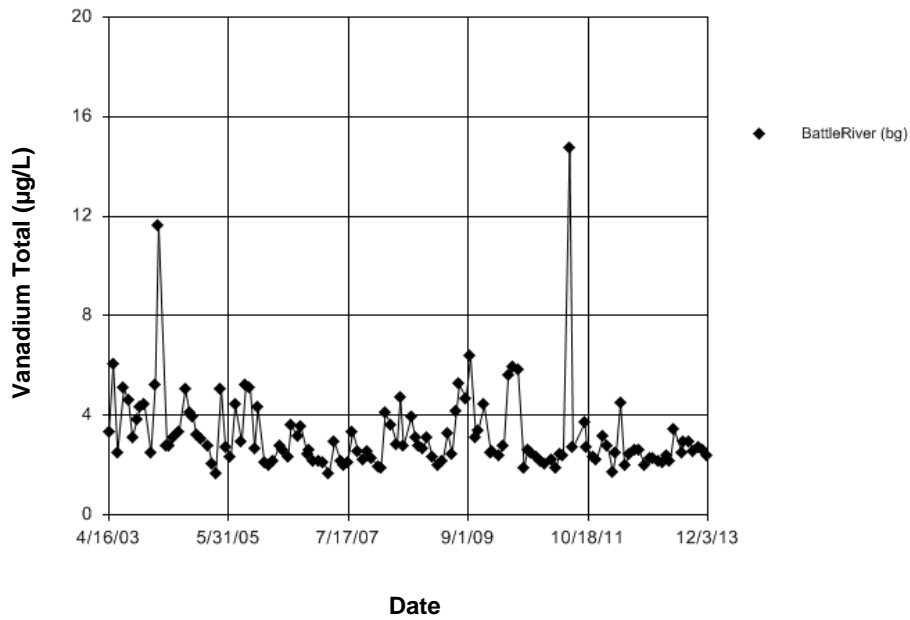


Figure E118 Battle River: Vanadium Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 19.9
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 4 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H) was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 19.9
 Adjusted Kruskal-Wallis statistic (H) = 19.9

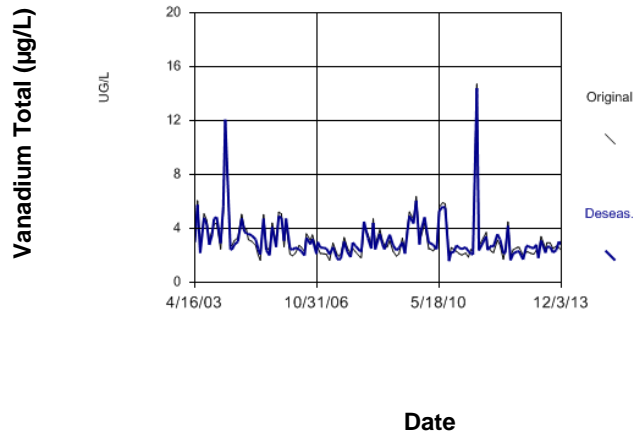


Figure E119 Battle River: Vanadium Total

Seasonal Kendall

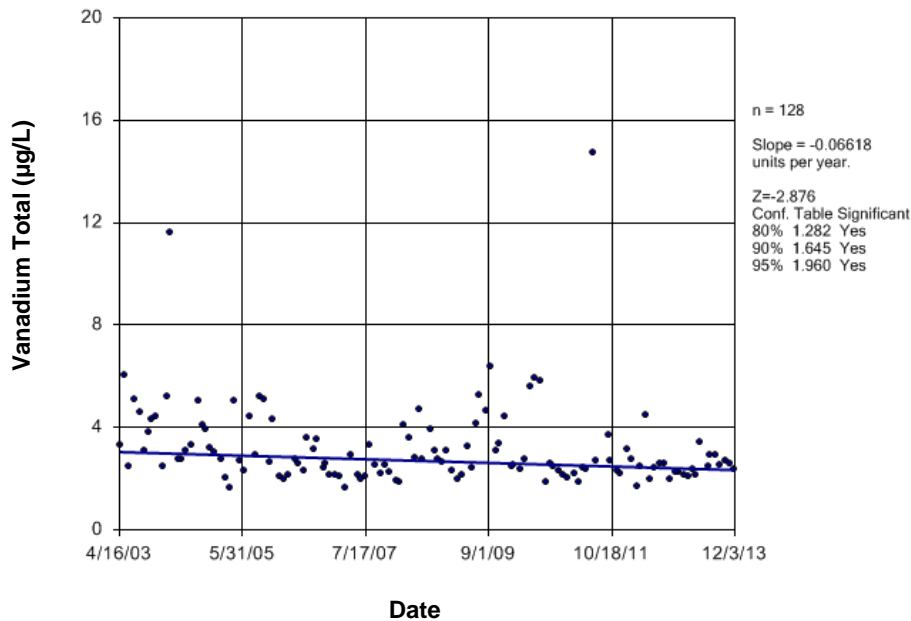


Figure E120 Battle River: Vanadium Total

Time Series

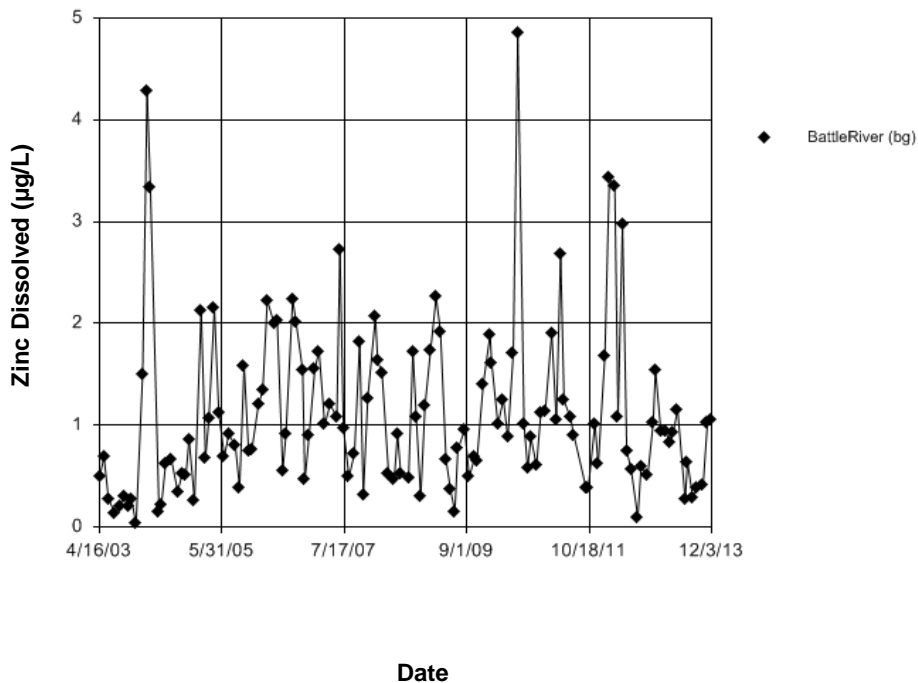


Figure E121 Battle River: Zinc Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 12.27. Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level. There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

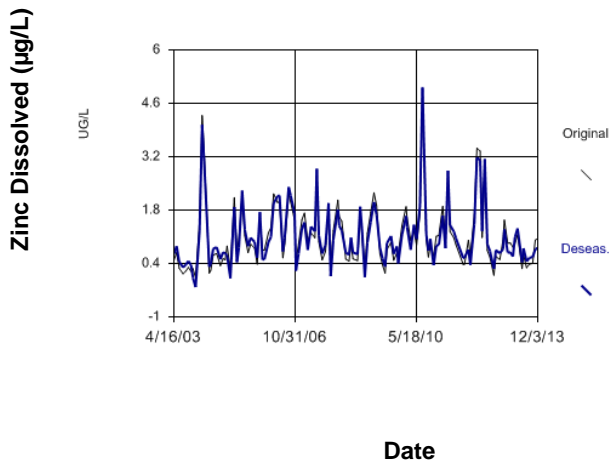


Figure E122 Battle River: Zinc Dissolved

Seasonal Kendall

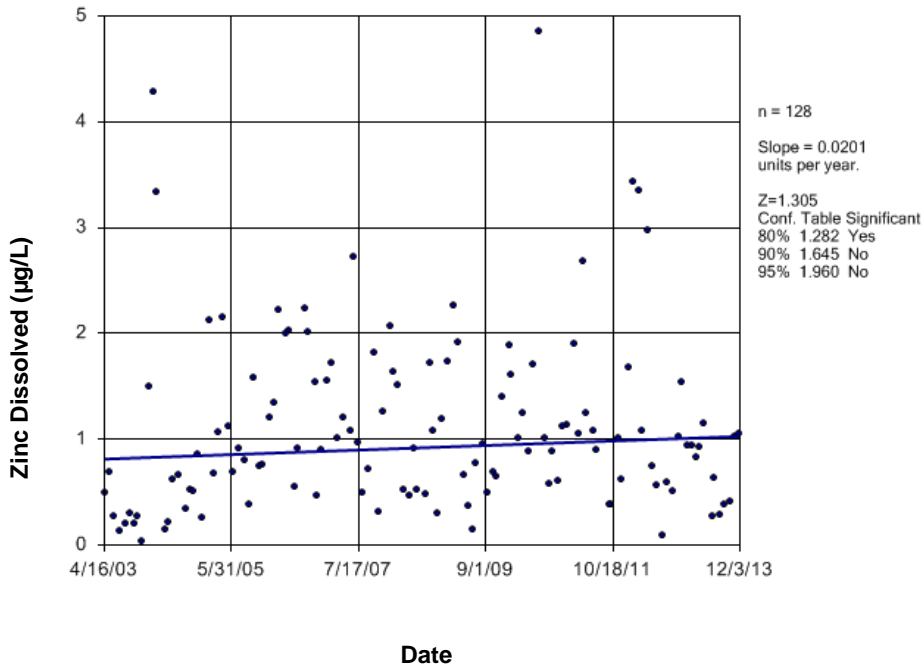


Figure E123 Battle River: Zinc Dissolved

Time Series

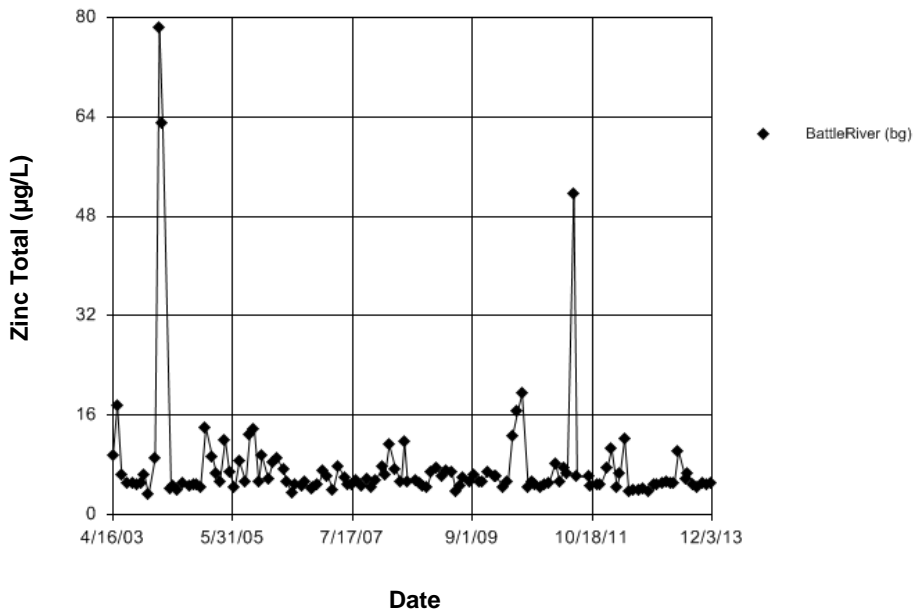


Figure E124 Battle River: Zinc Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 1.333
 Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
 There were 5 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 1.333
 Adjusted Kruskal-Wallis statistic (H') = 1.333

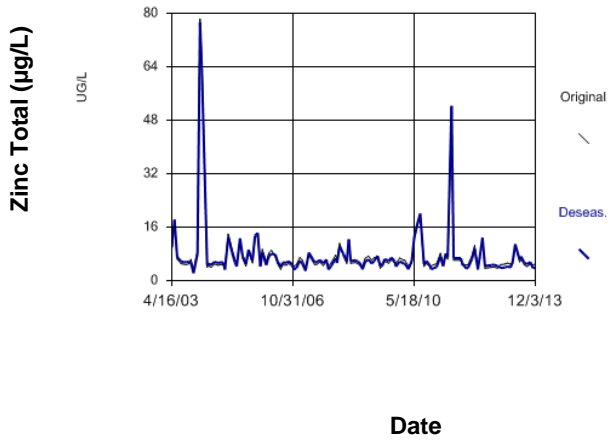


Figure E125 Battle River: Zinc Total

Sen's Slope Estimator

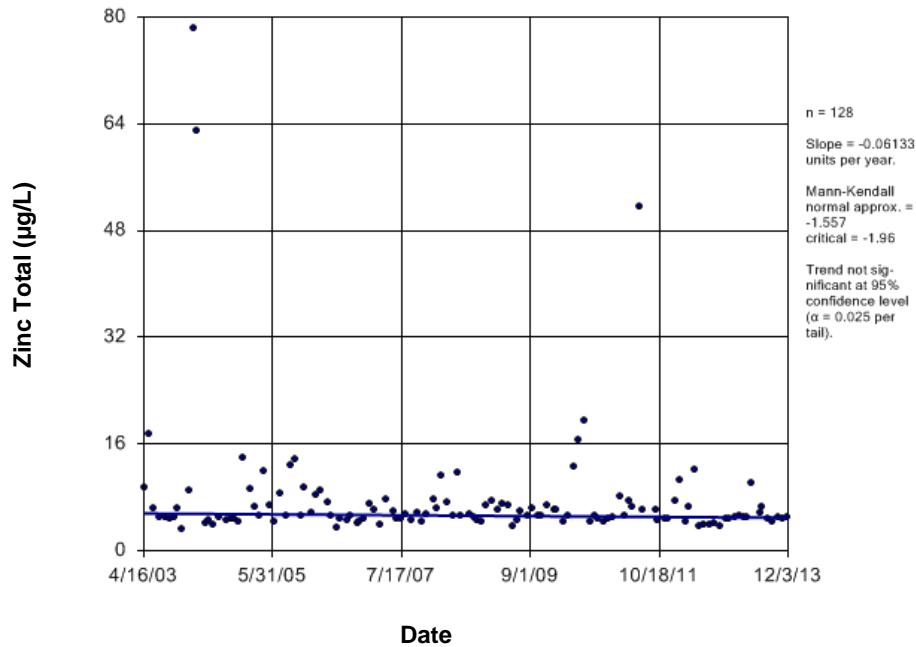


Figure E126 Battle River: Zinc Total

Time Series

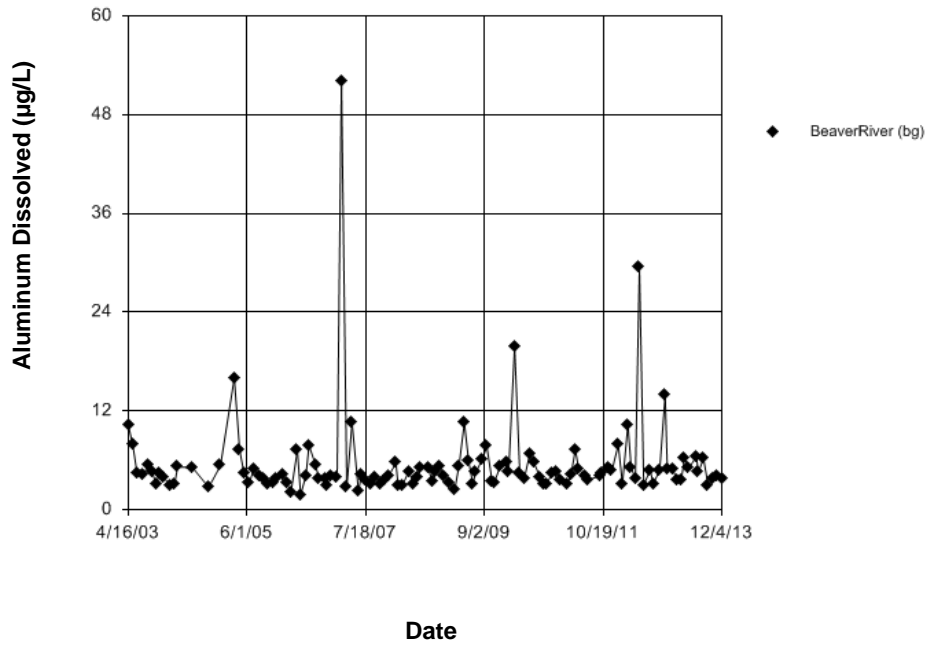


Figure E127 Beaver River: Aluminum Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.7343
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 0.7343
 Adjusted Kruskal-Wallis statistic (H') = 0.7343

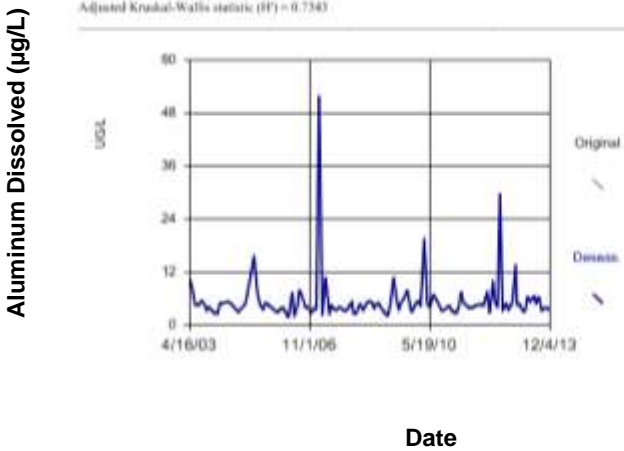


Figure E128 Beaver River: Aluminum Dissolved

Sen's Slope Estimator

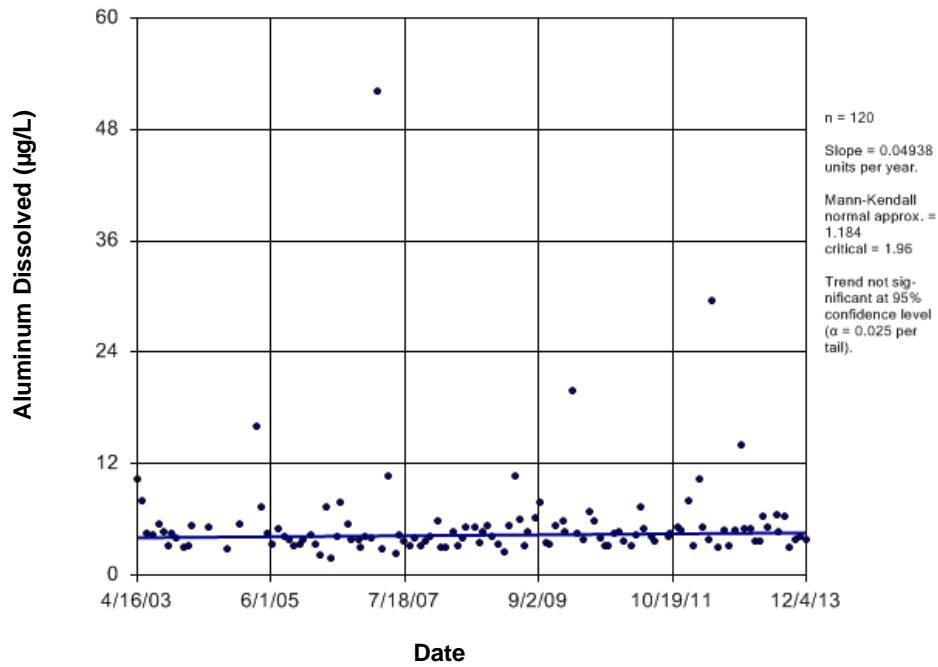


Figure E129 Beaver River: Aluminum Dissolved

Time Series

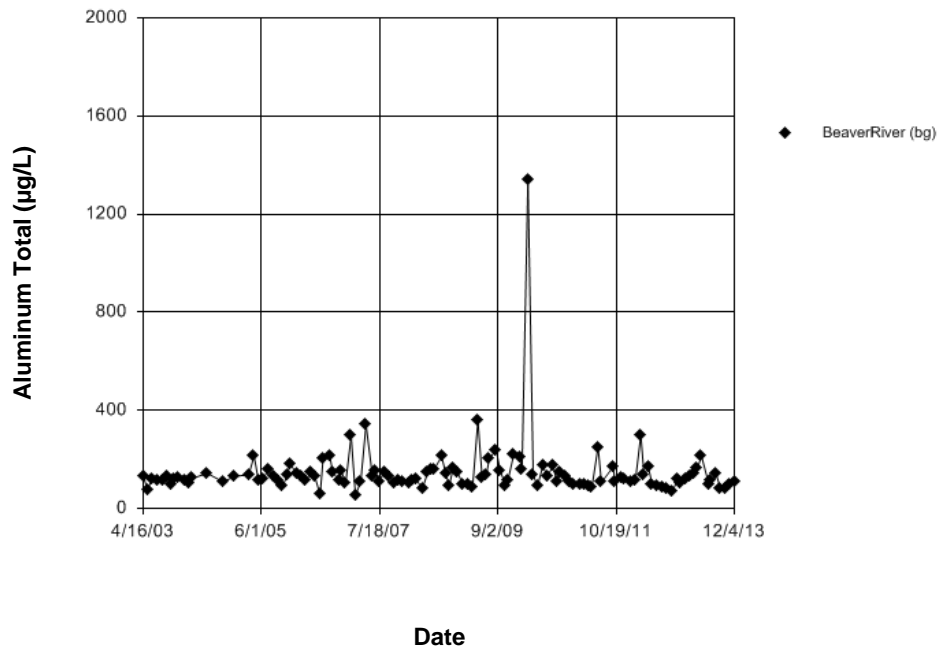


Figure E130 Beaver River: Aluminum Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.3544
Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
There were 3 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 0.3544
Adjusted Kruskal-Wallis statistic (H') = 0.3544

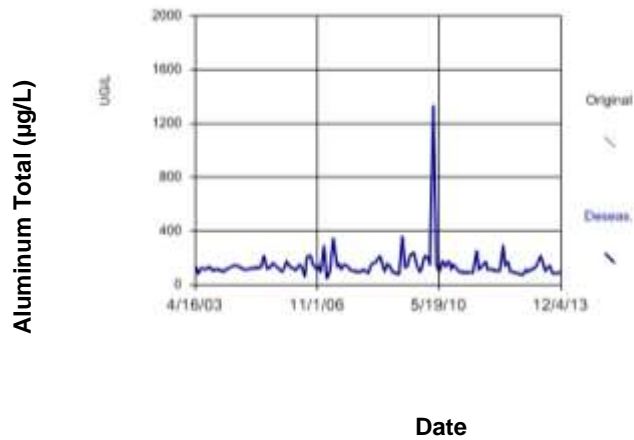


Figure E131 Beaver River: Aluminum Total

Sen's Slope Estimator

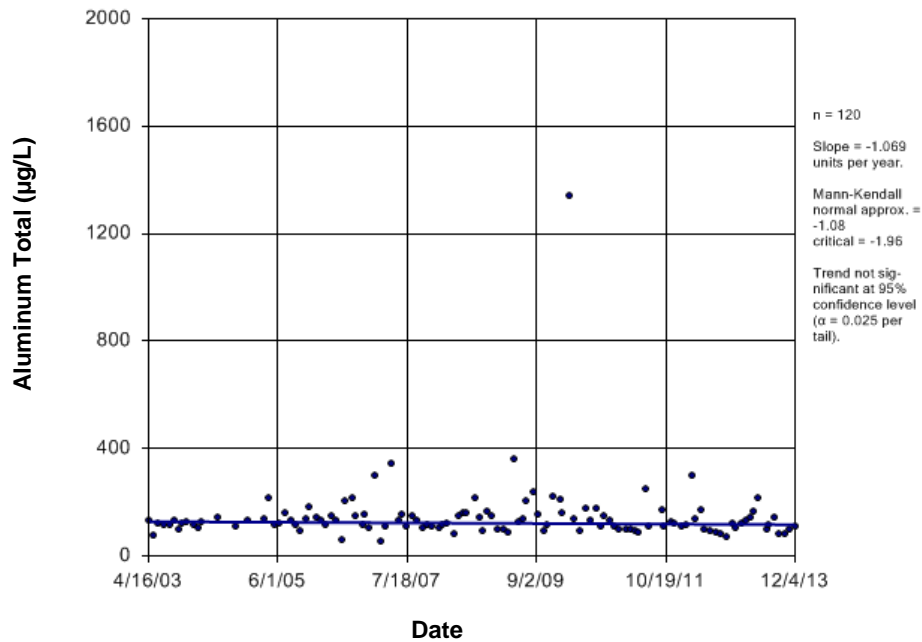


Figure E132 Beaver River: Aluminum Total

Time Series

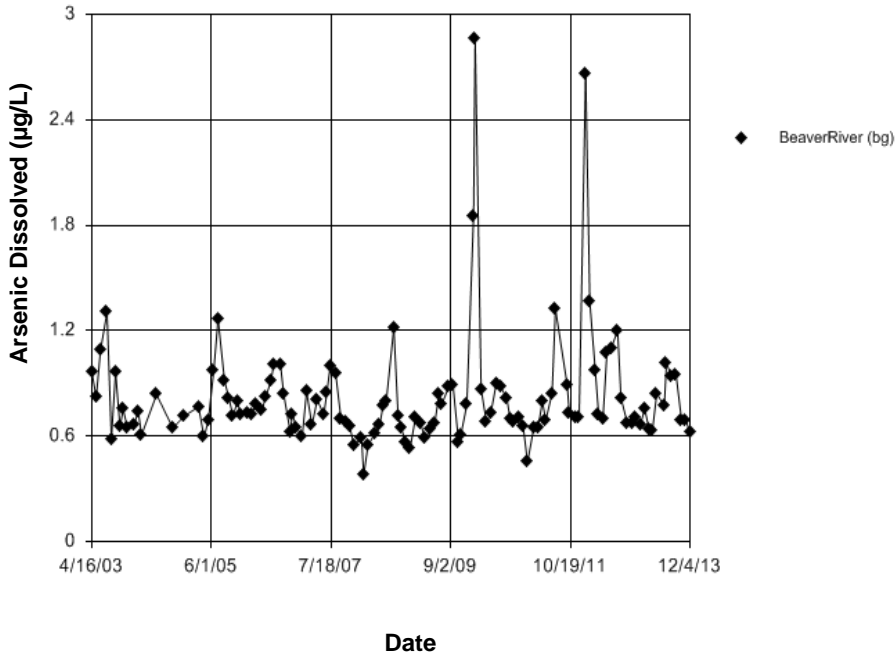


Figure E133 Beaver River: Arsenic Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 14.25
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H) was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 14.25
 Adjusted Kruskal-Wallis statistic (H) = 14.25

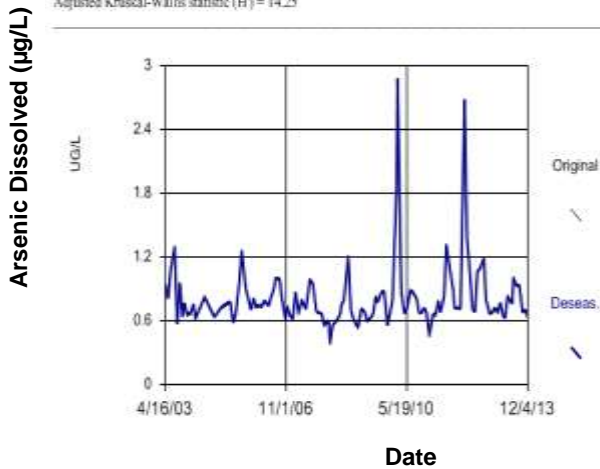


Figure E134 Beaver River: Arsenic Dissolved

Seasonal Kendall

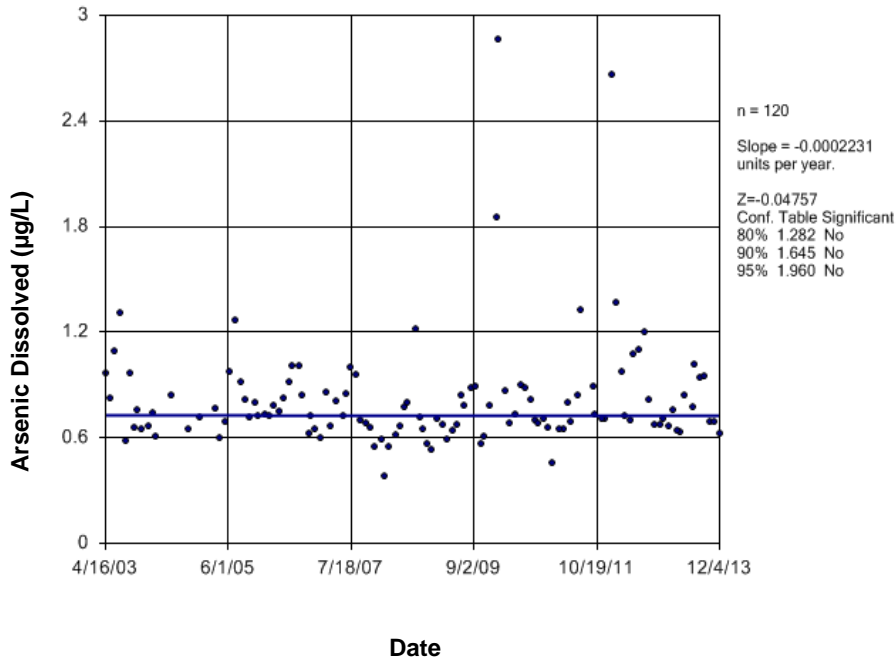


Figure E135 Beaver River: Arsenic Dissolved

Time Series

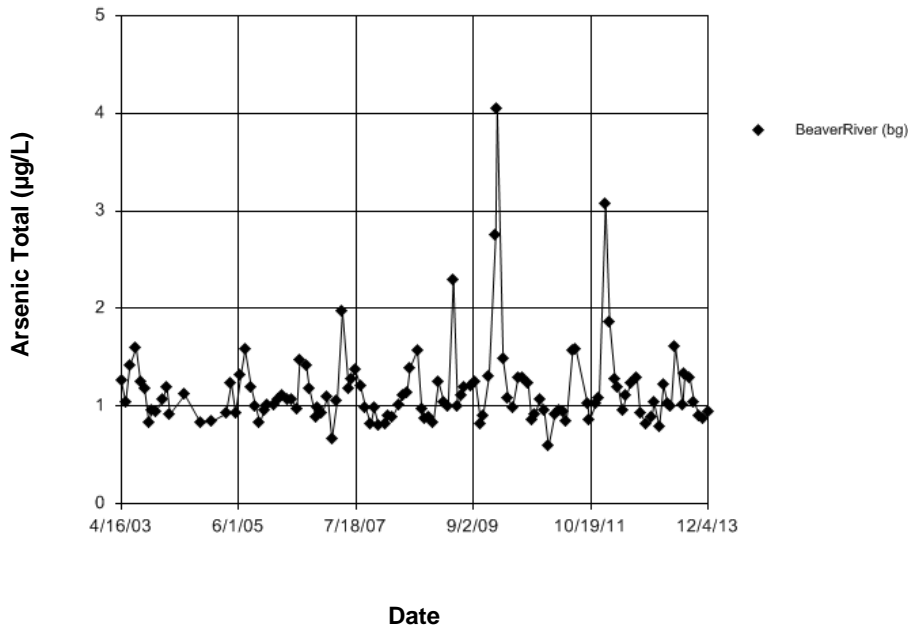


Figure E136 Beaver River: Arsenic Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 8.761
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 4 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H*) was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 8.761
 Adjusted Kruskal-Wallis statistic (H*) = 8.761

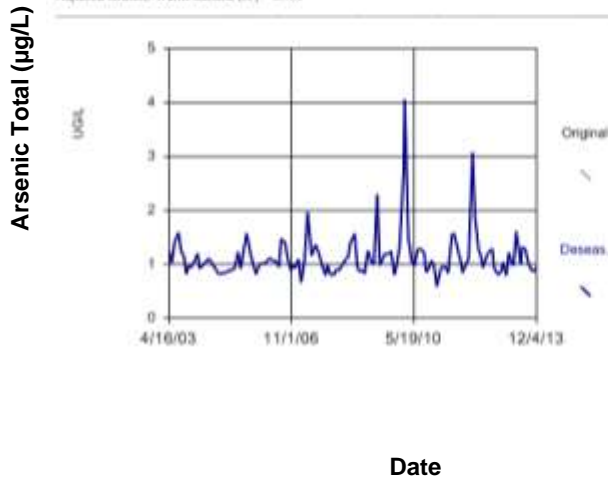


Figure E137 Beaver River: Arsenic Total

Seasonal Kendall

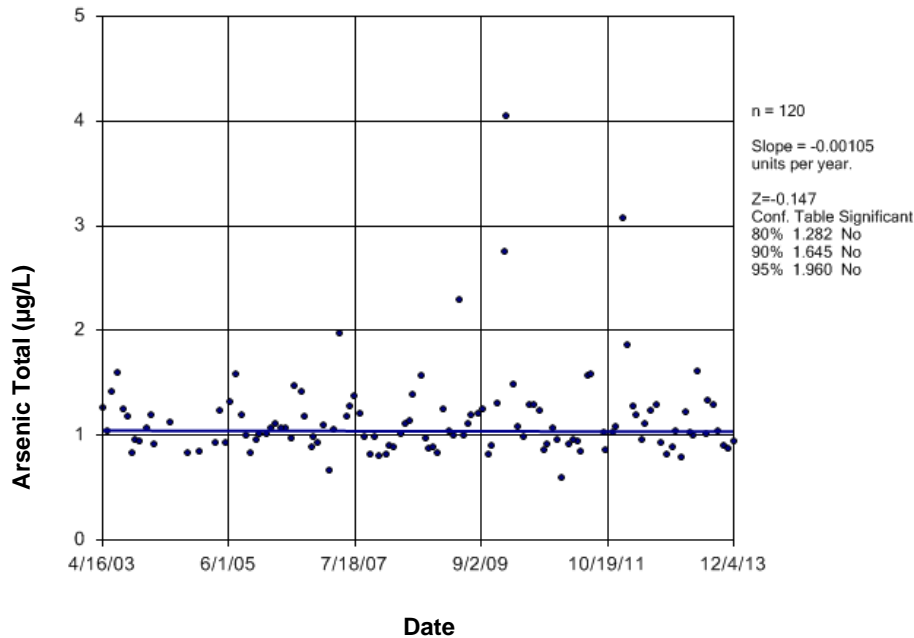


Figure E138 Beaver River: Arsenic Total

Time Series

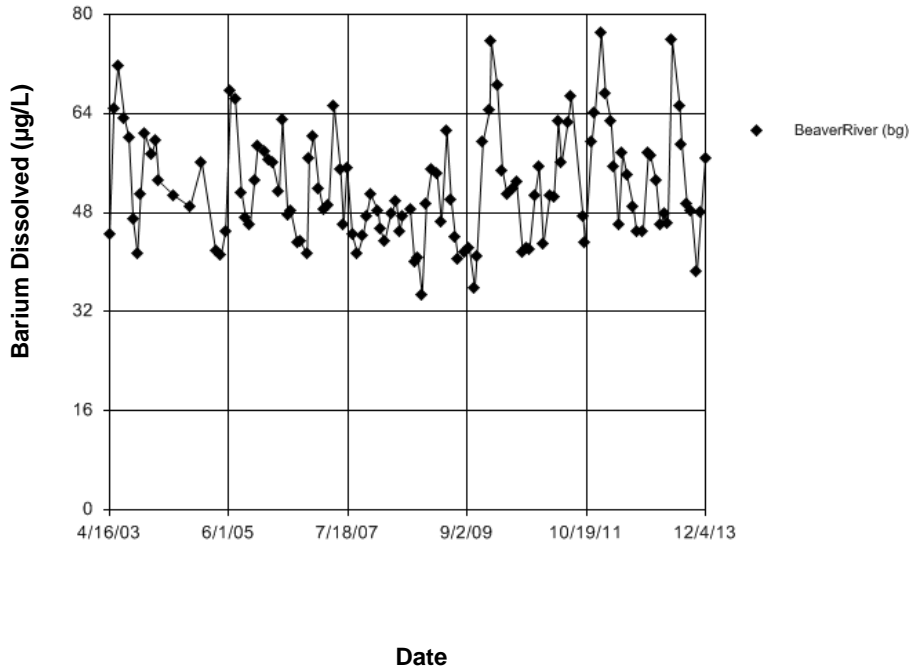


Figure E139 Beaver River: Barium Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 7.487
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 7.487
 Adjusted Kruskal-Wallis statistic (H') = 7.487

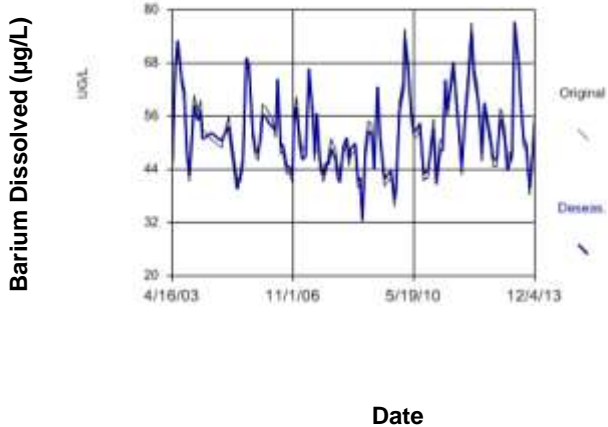


Figure E140 Beaver River: Barium Dissolved

Seasonal Kendall

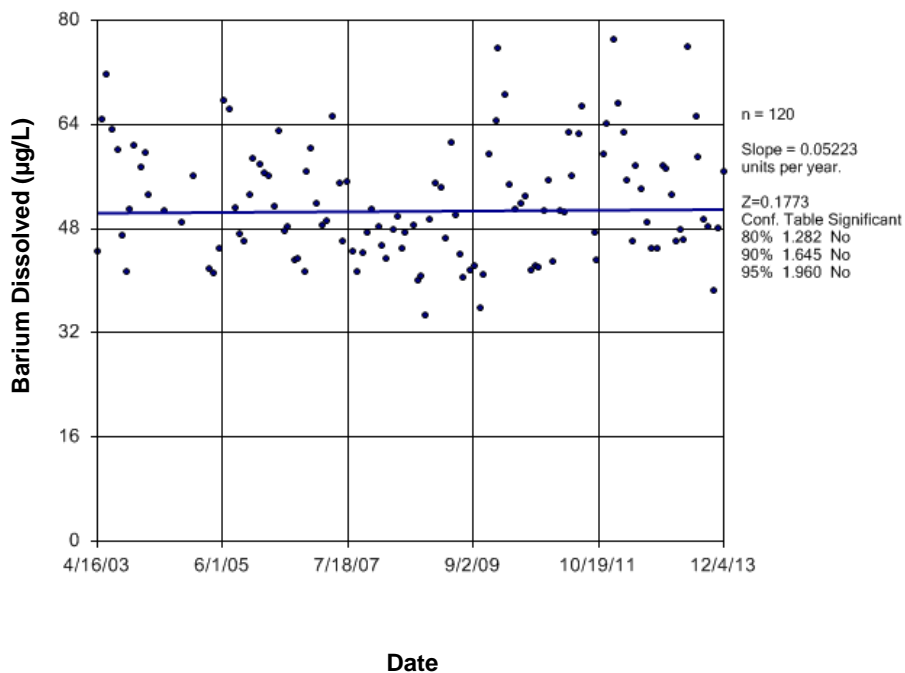


Figure E141 Beaver River: Barium Dissolved

Time Series

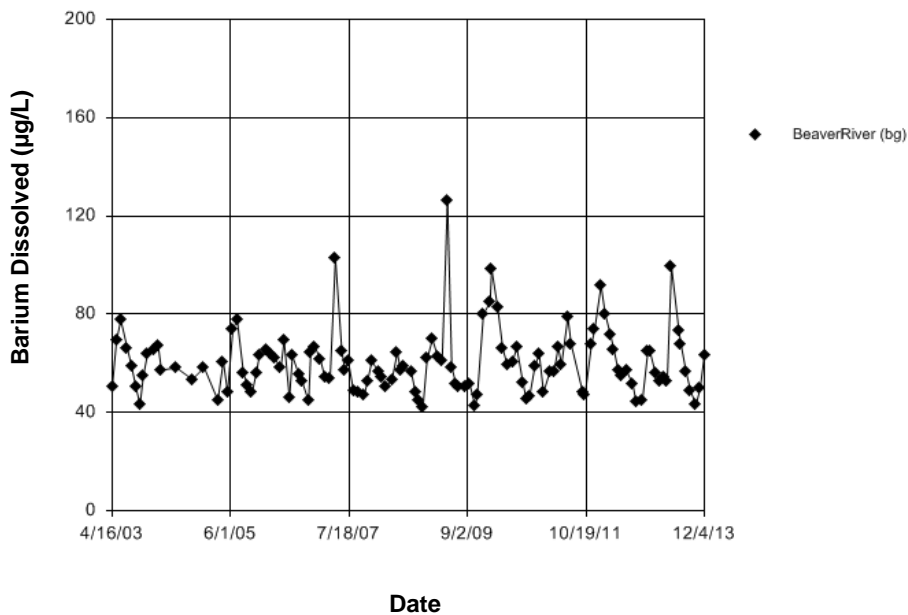


Figure E142 Beaver River: Barium Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 6.124
 Tabulated Chi-squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 3 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 6.124
 Adjusted Kruskal-Wallis statistic (H') = 6.124

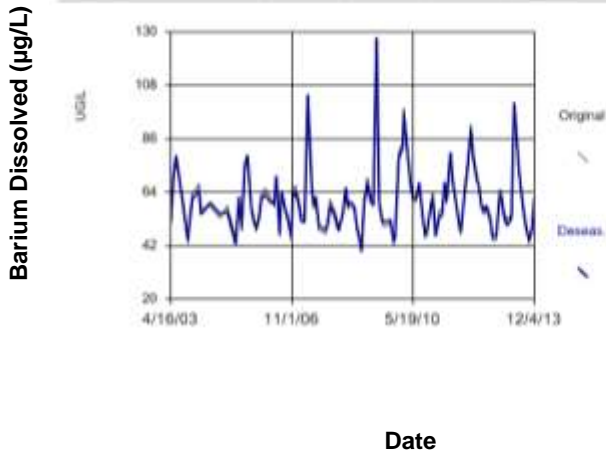


Figure E143 Beaver River: Barium Total

Seasonal Kendall

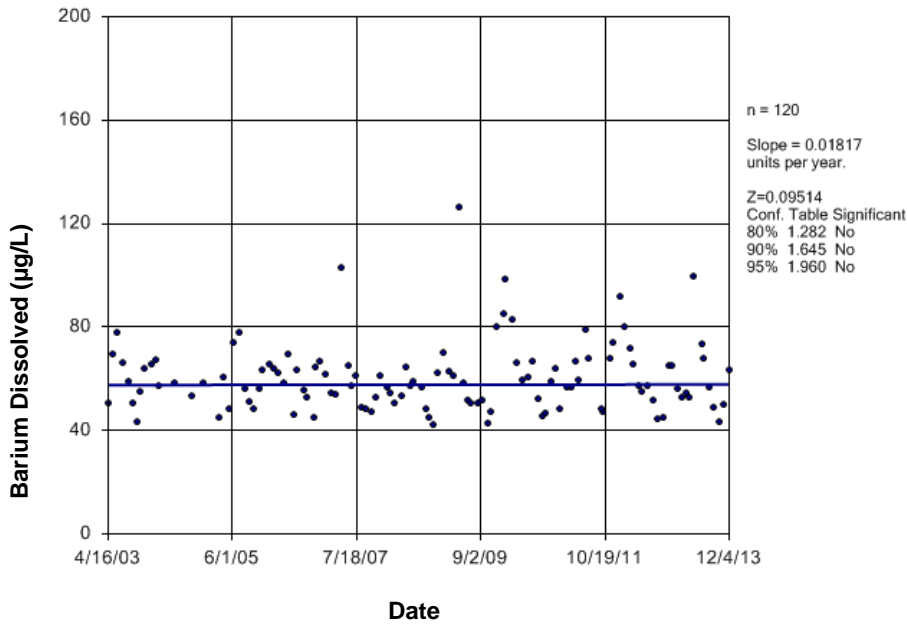


Figure E144 Beaver River: Barium Total

Time Series

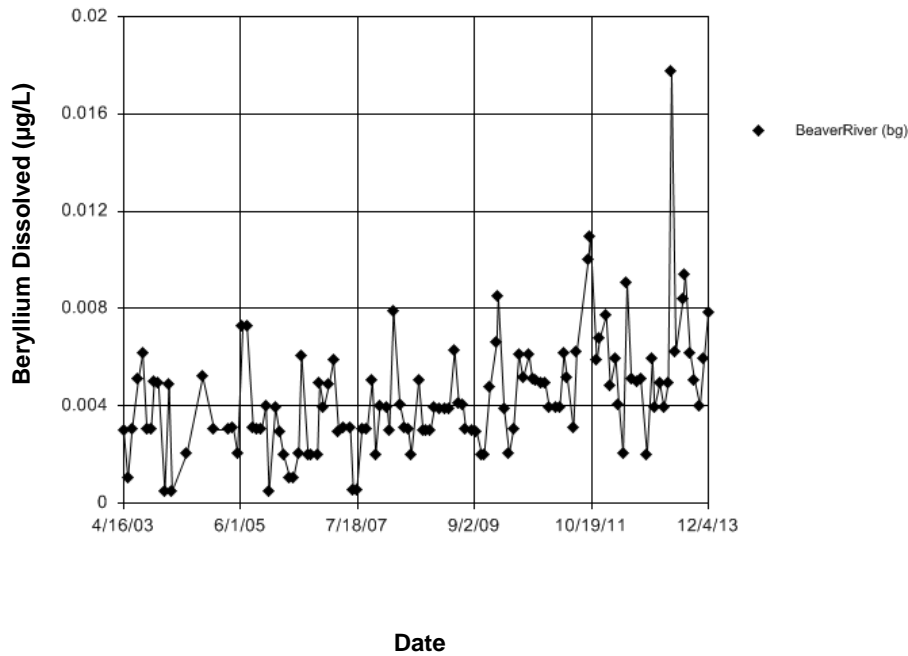


Figure E145 Beaver River: Beryllium Dissolved

Seasonality

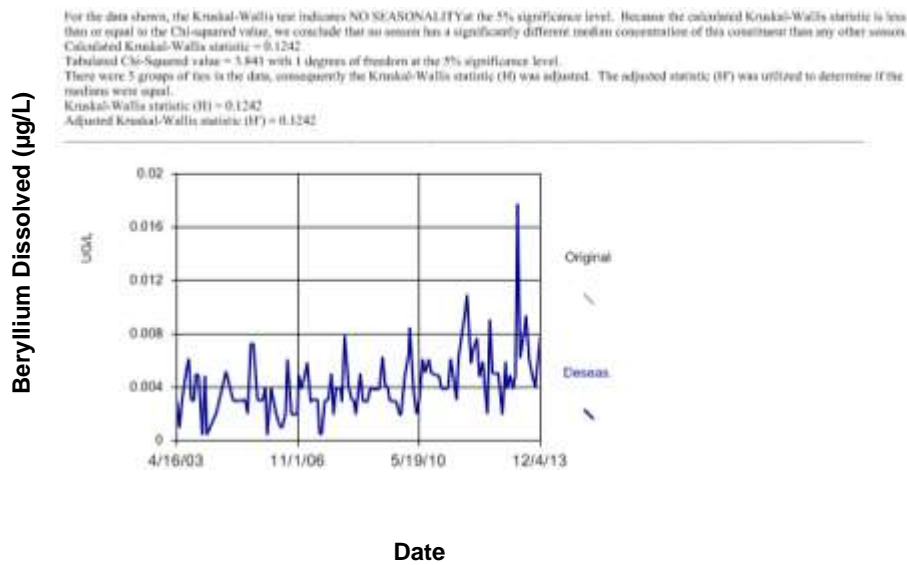


Figure E146 Beaver River: Beryllium Dissolved

Sen's Slope Estimator

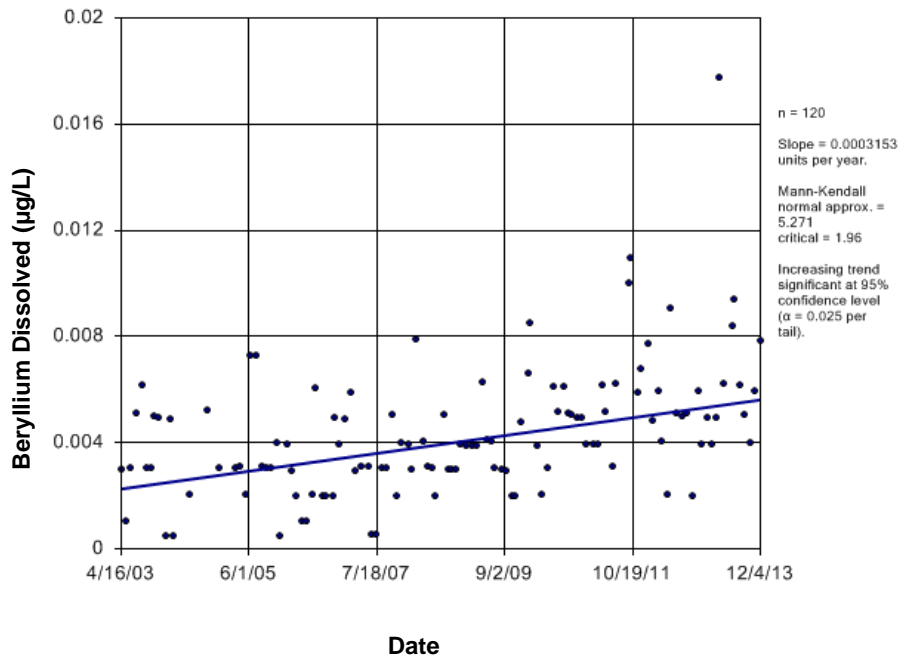


Figure E147 Beaver River: Beryllium Dissolved

Time Series

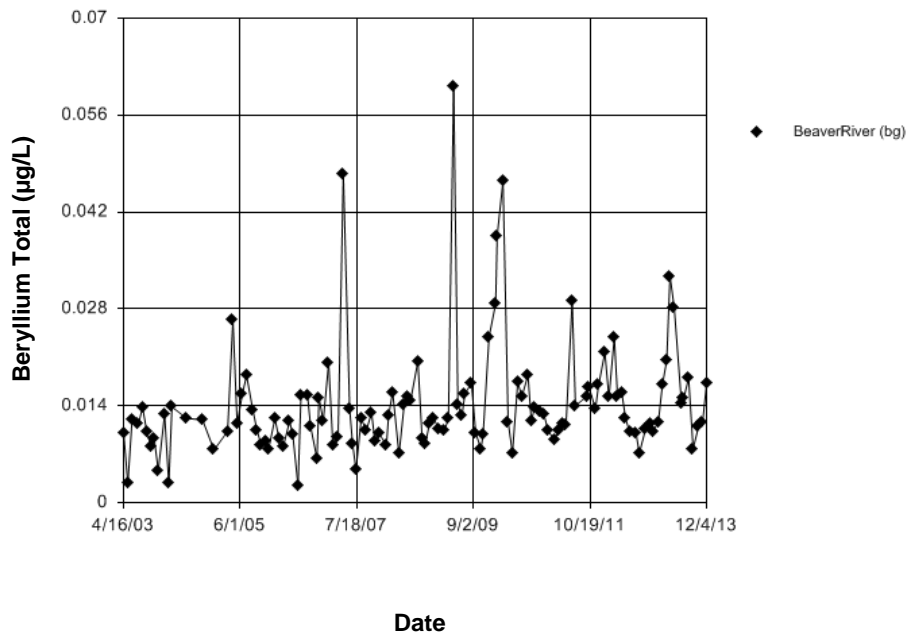


Figure E148 Beaver River: Beryllium Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.3203.
Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
There were 6 groups of days in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 0.3203
Adjusted Kruskal-Wallis statistic (H') = 0.3203

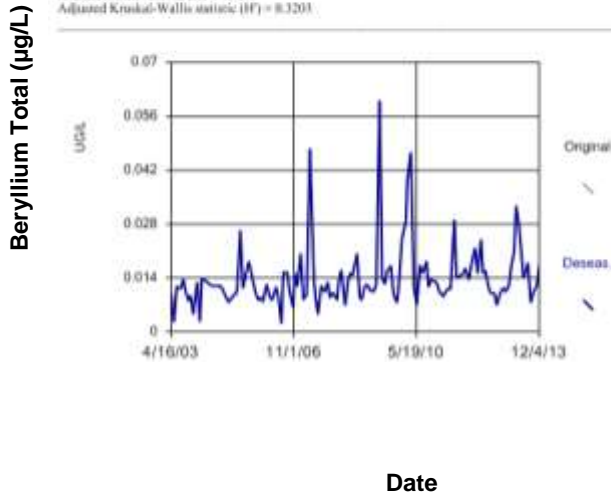


Figure E149 Beaver River: Beryllium Total

Sen's Slope Estimator

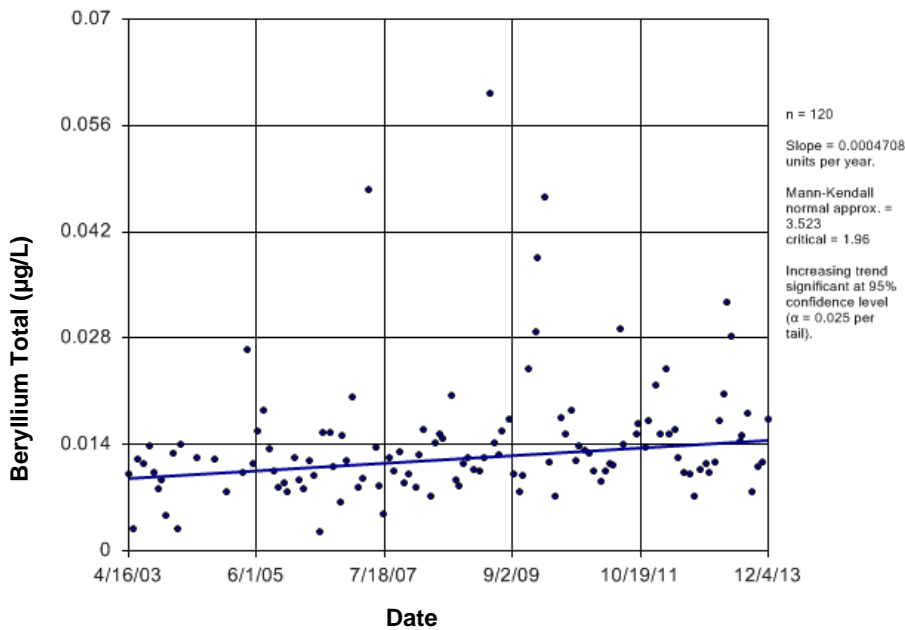


Figure E150 Beaver River: Beryllium Total

Time Series

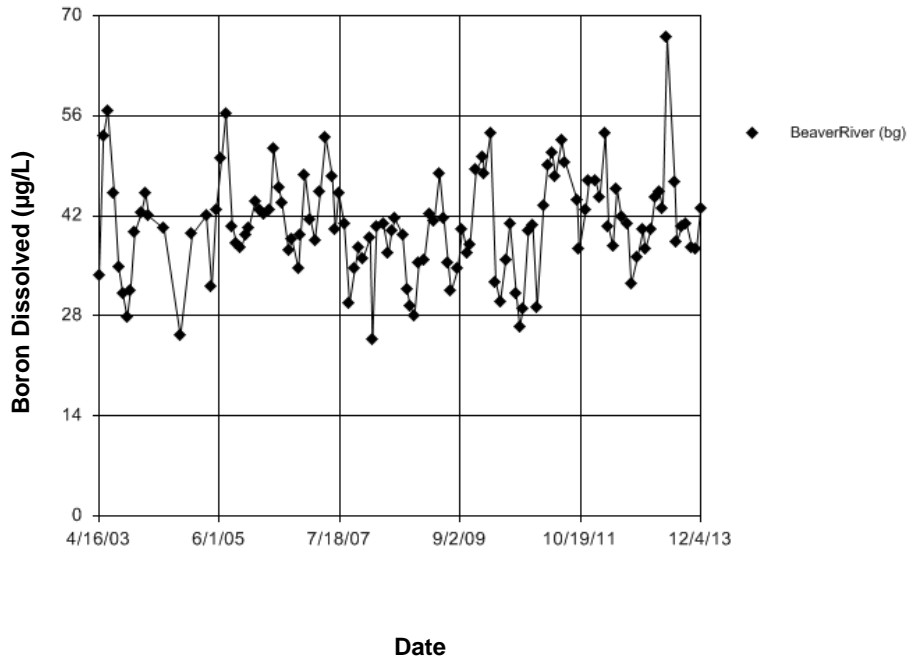


Figure E151 Beaver River: Boron Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 2.04
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 5 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 2.04
 Adjusted Kruskal-Wallis statistic (H') = 2.04

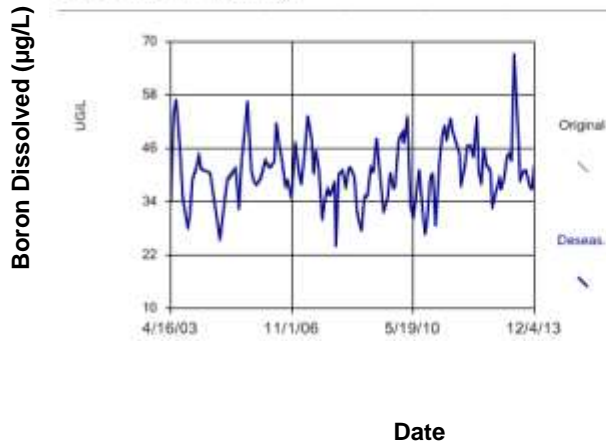


Figure E152 Beaver River: Boron Dissolved

Sen's Slope Estimator

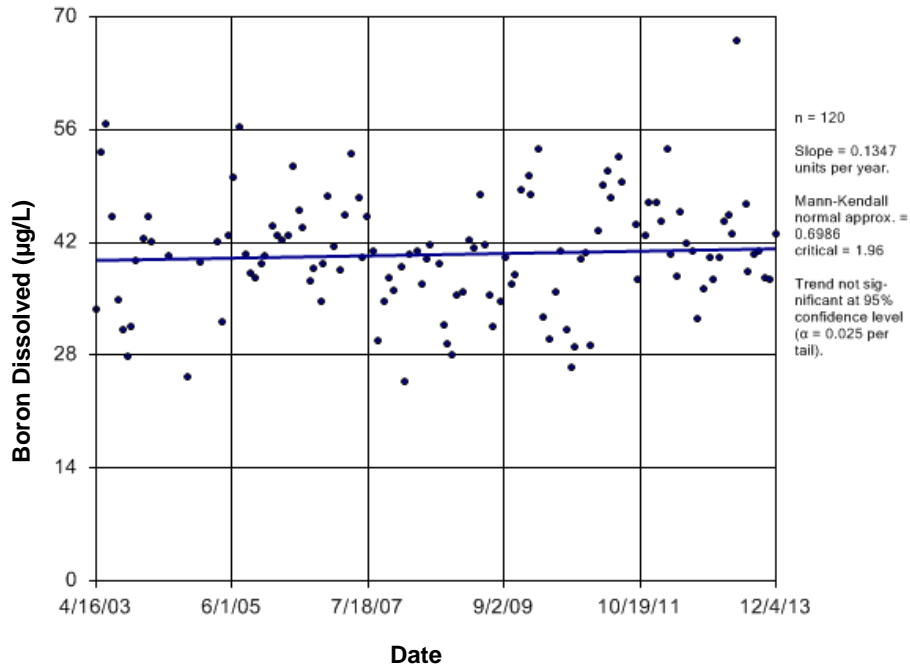


Figure E153 Beaver River: Boron Dissolved

Time Series

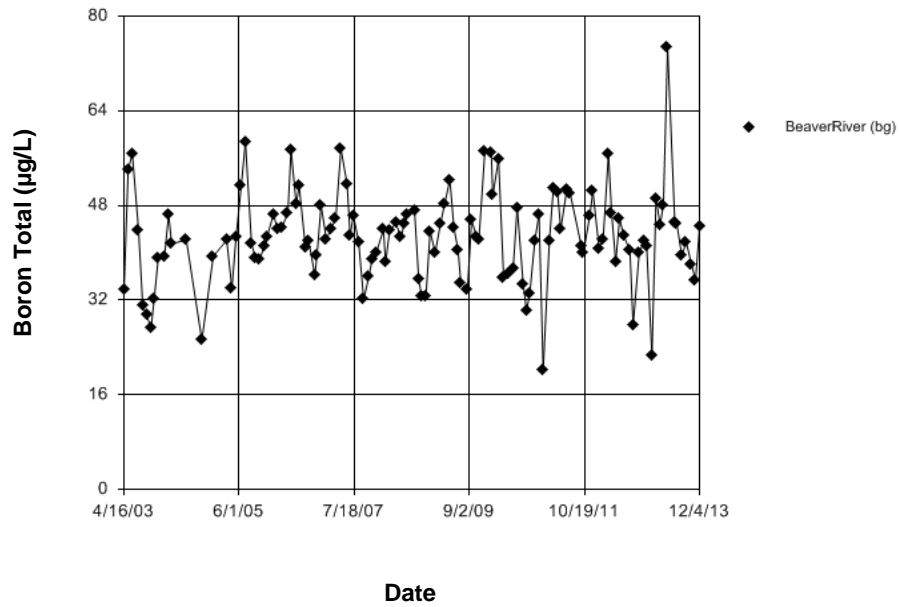


Figure E154 Beaver River: Boron Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.5748
Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
There were 6 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 0.5748
Adjusted Kruskal-Wallis statistic (H') = 0.5748

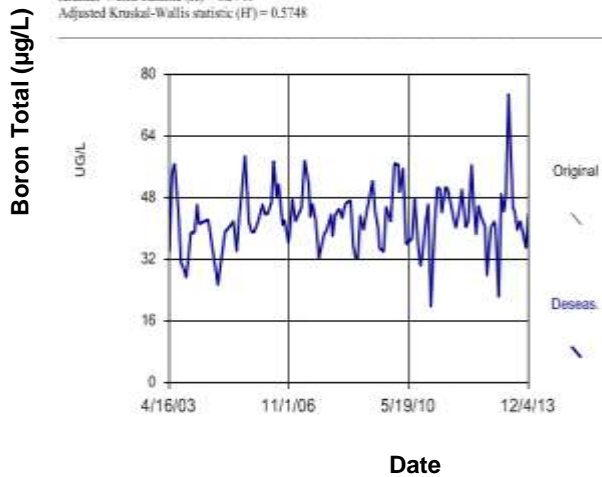


Figure E155 Beaver River: Boron Total

Sen's Slope Estimator

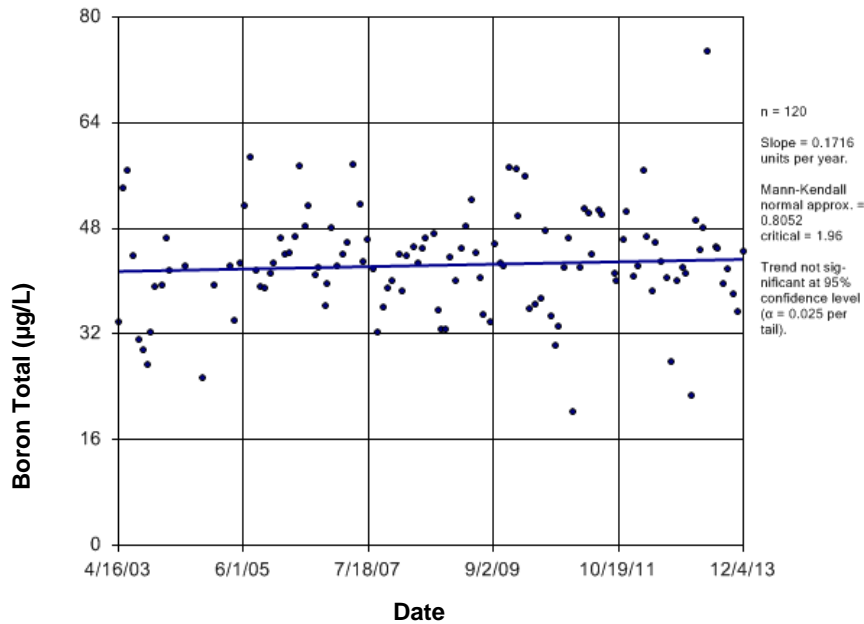


Figure E156 Beaver River: Boron Total

Time Series

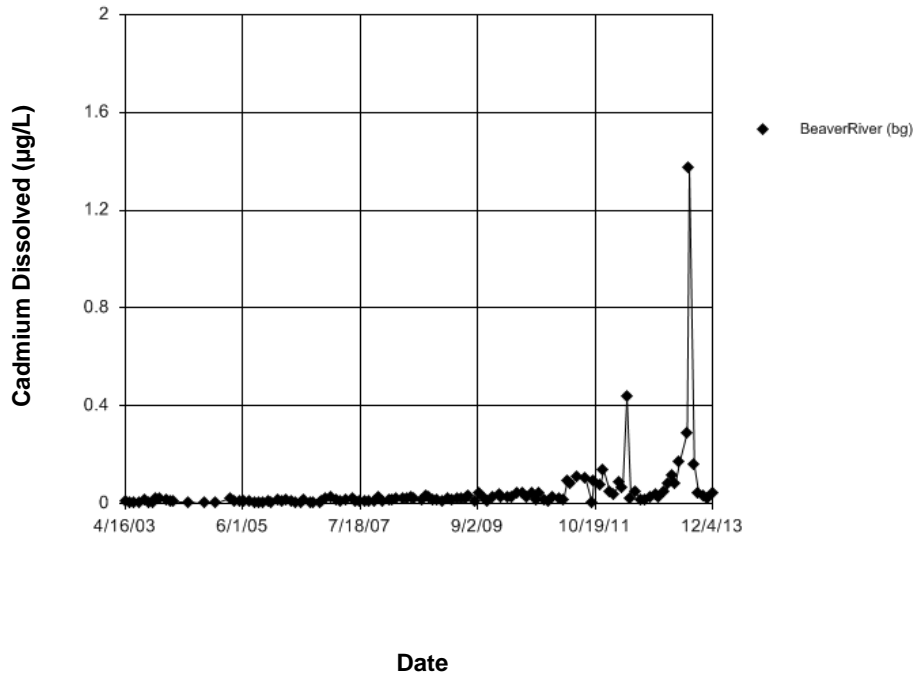


Figure E157 Beaver River: Cadmium Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.6982. Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level. There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

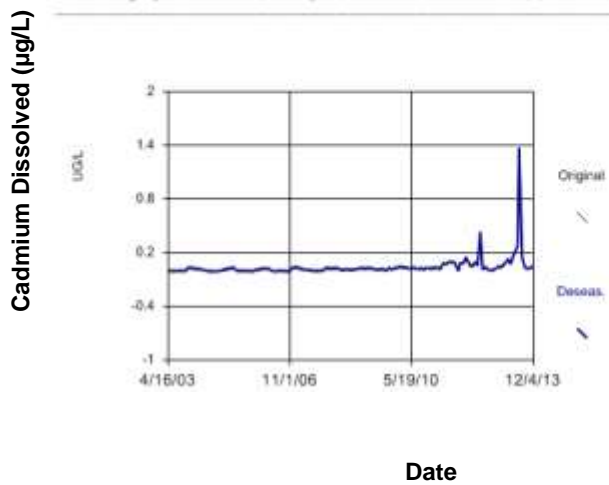


Figure E158 Beaver River: Cadmium Dissolved

Sen's Slope Estimator

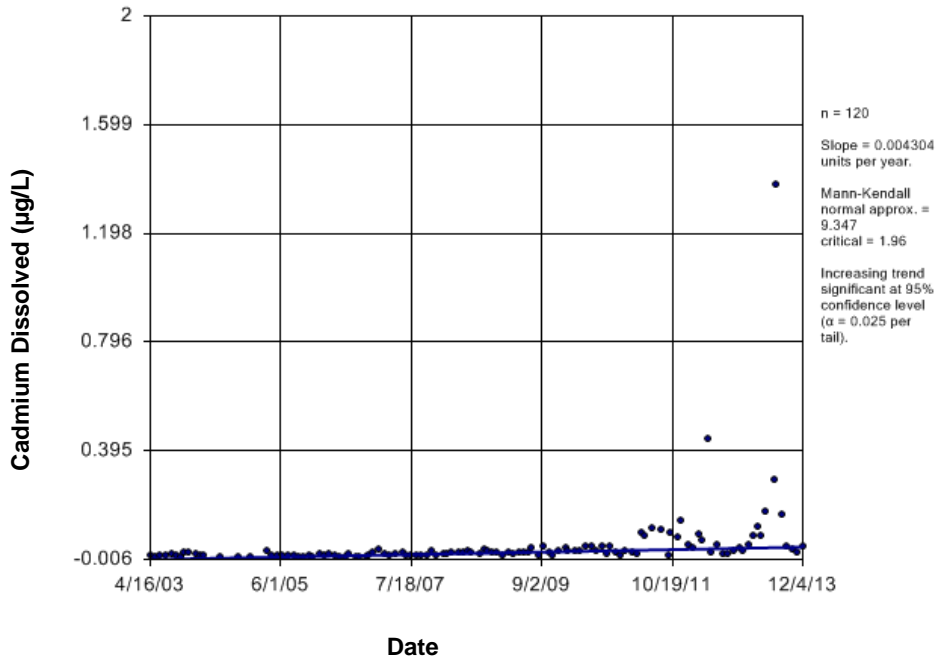


Figure E159 Beaver River: Cadmium Dissolved

Time Series

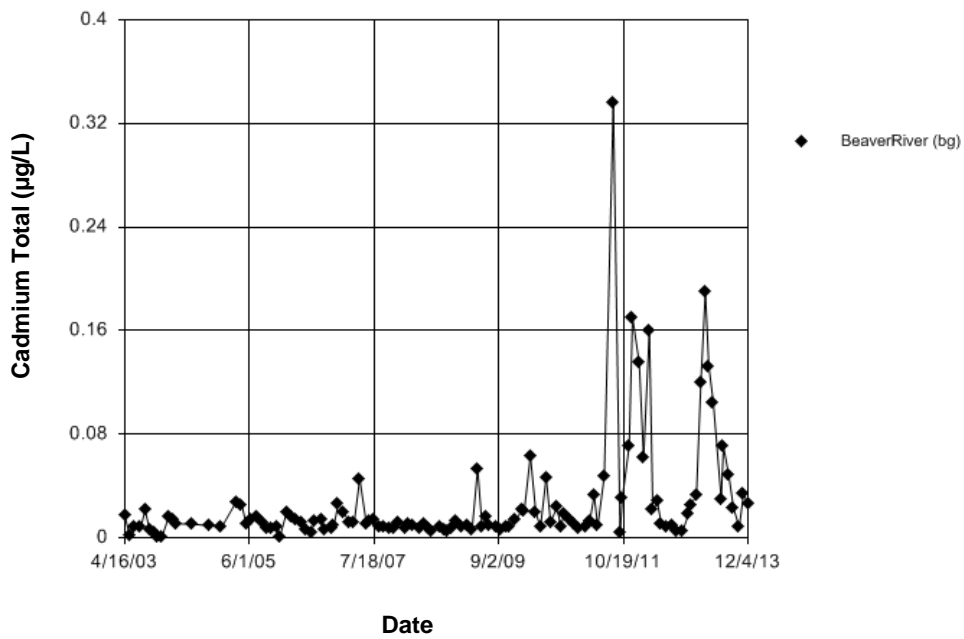


Figure E160 Beaver River: Cadmium Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 3.19
Tabulated Chi-Squared value = 5.841 with 1 degree of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

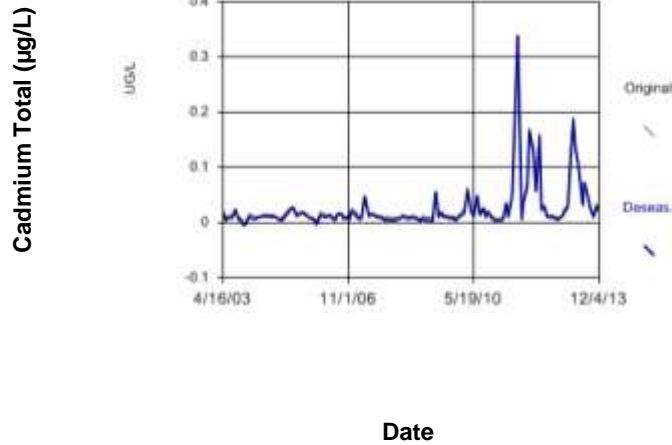


Figure E161 Beaver River: Cadmium Total

Sen's Slope Estimator

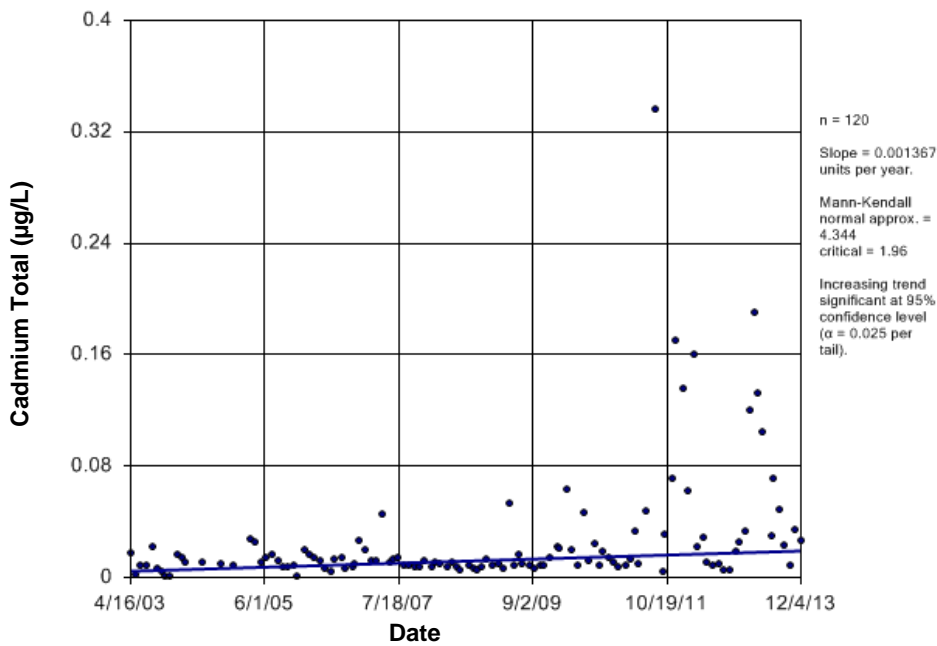


Figure E162 Beaver River: Cadmium Total

Time Series

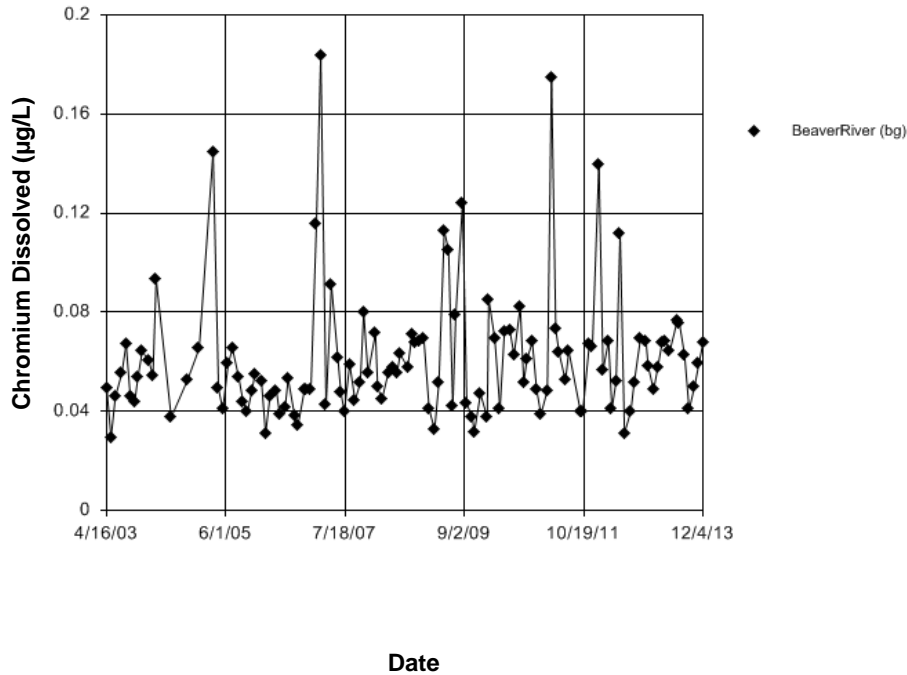


Figure E163 Beaver River: Chromium Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 2.164. Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level. There were 4 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal. Kruskal-Wallis statistic (H) = 2.164. Adjusted Kruskal-Wallis statistic (H') = 2.164.

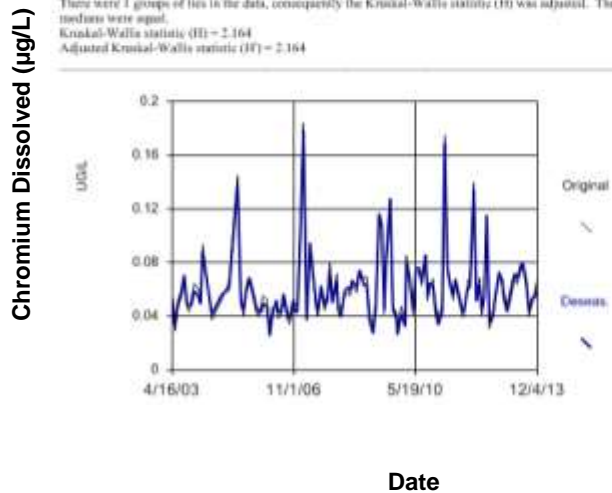


Figure E164 Beaver River: Chromium Dissolved

Sen's Slope Estimator

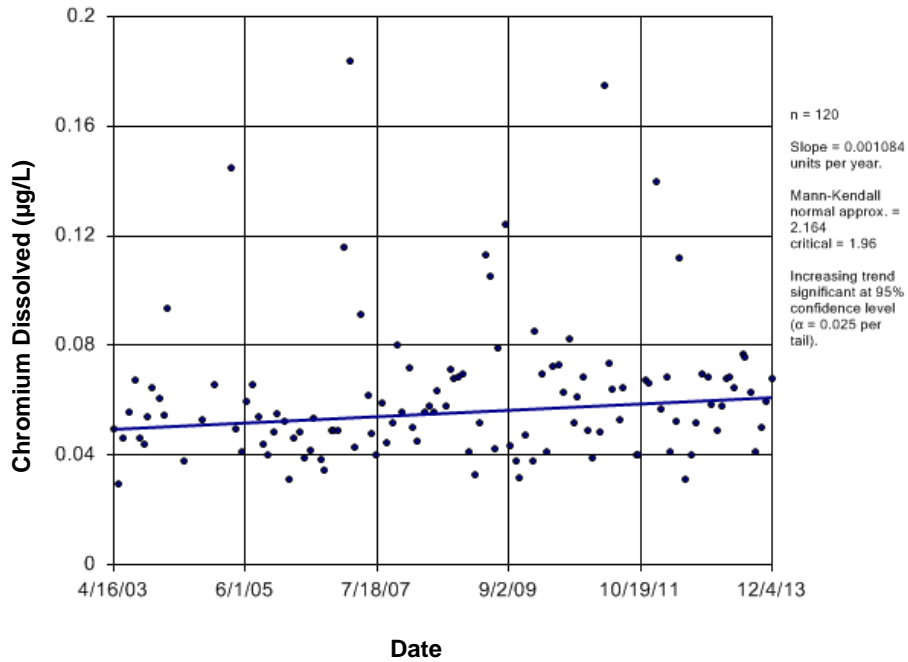


Figure E165 Beaver River: Chromium Dissolved

Time Series

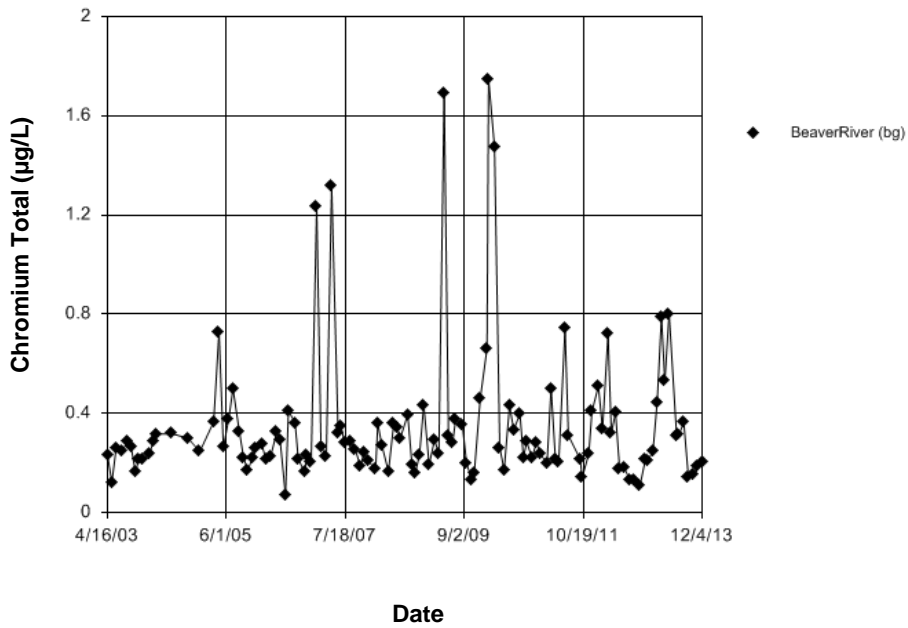
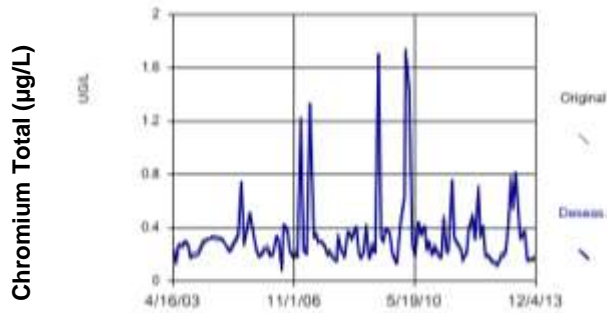


Figure E166 Beaver River: Chromium Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.5492. Calculated Chi-squared value = 3.841 with 1 degree of freedom at the 5% significance level. There were 9 groups of five in the data, so no adjustment to the Kruskal-Wallis statistic (DF) was necessary.



Date

Figure E167 Beaver River: Chromium Total

Sen's Slope Estimator

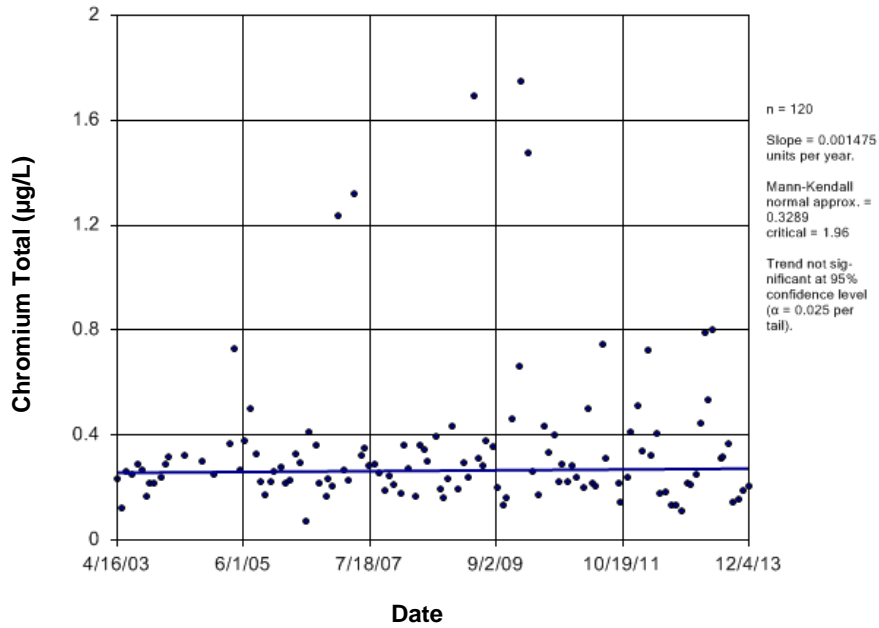


Figure E168 Beaver River: Chromium Total

Time Series

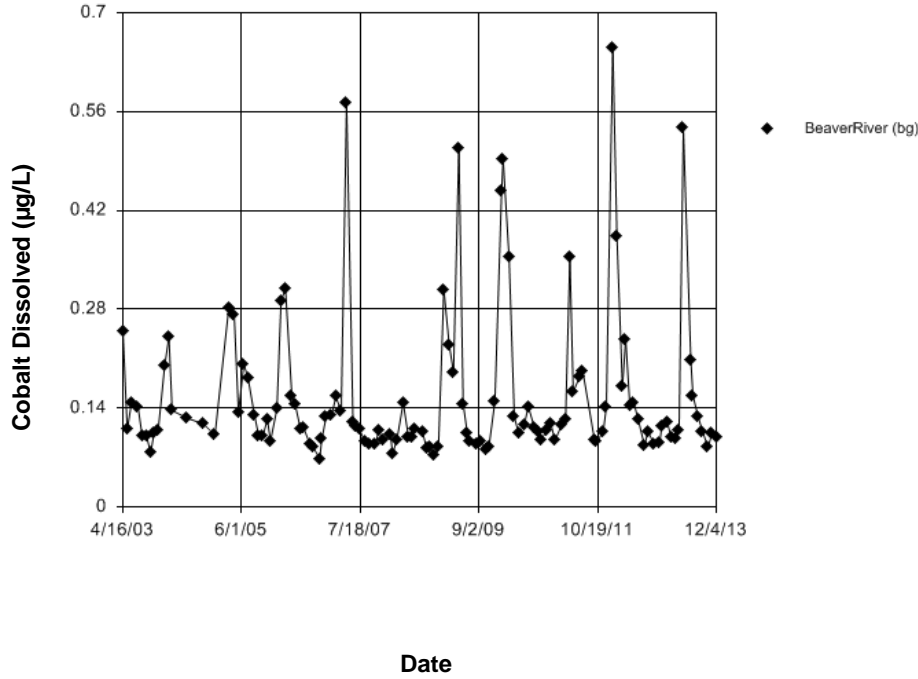


Figure E169 Beaver River: Cobalt Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the colorized Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 1.386. Tabulated Chi-Squared value = 3.843 with 1 degree of freedom at the 5% significance level. There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H*) was utilized to determine if the median were equal. Kruskal-Wallis statistic (H*) = 1.386. Adjusted Kruskal-Wallis statistic (H*) = 1.386.

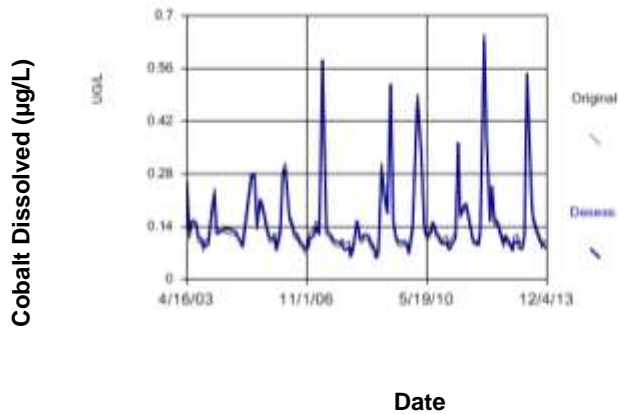


Figure E170 Beaver River: Cobalt Dissolved

Sen's Slope Estimator

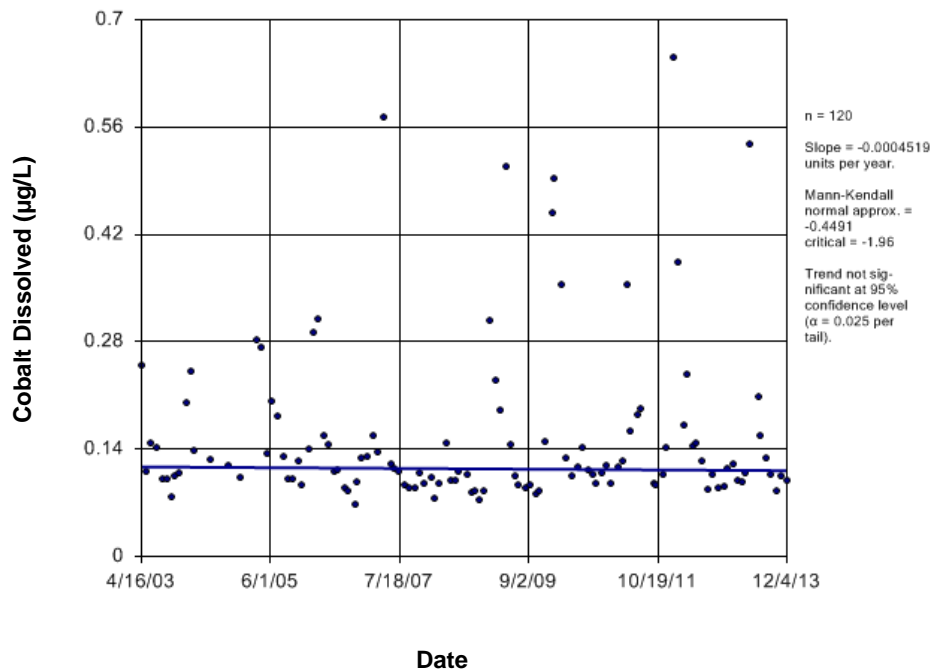


Figure E171 Beaver River: Cobalt Dissolved

Time Series

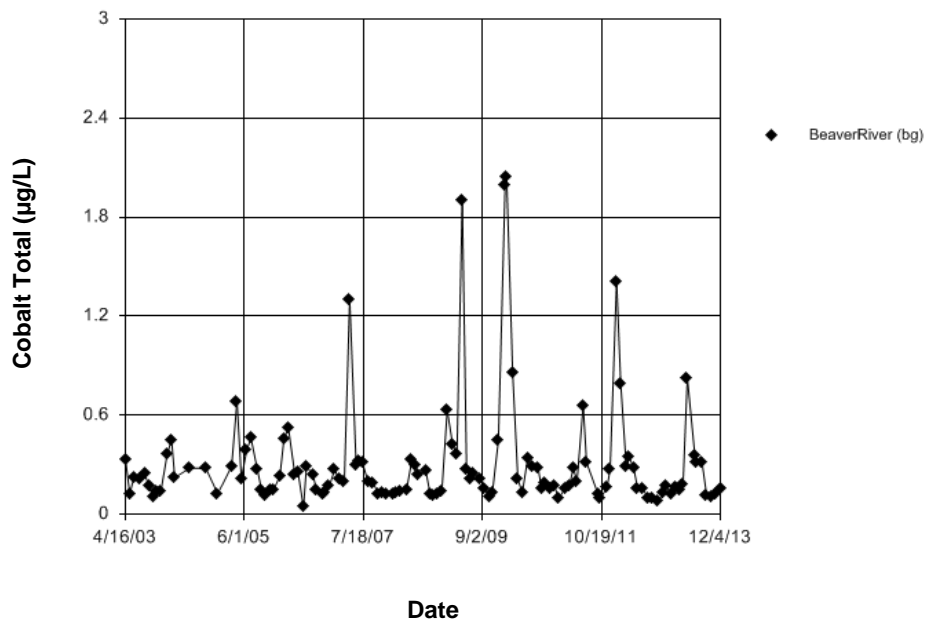
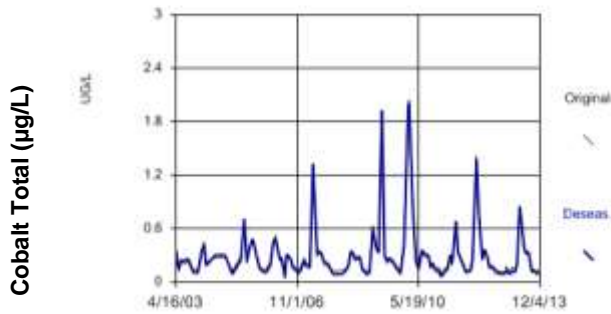


Figure E172 Beaver River: Cobalt Total

Seasonality

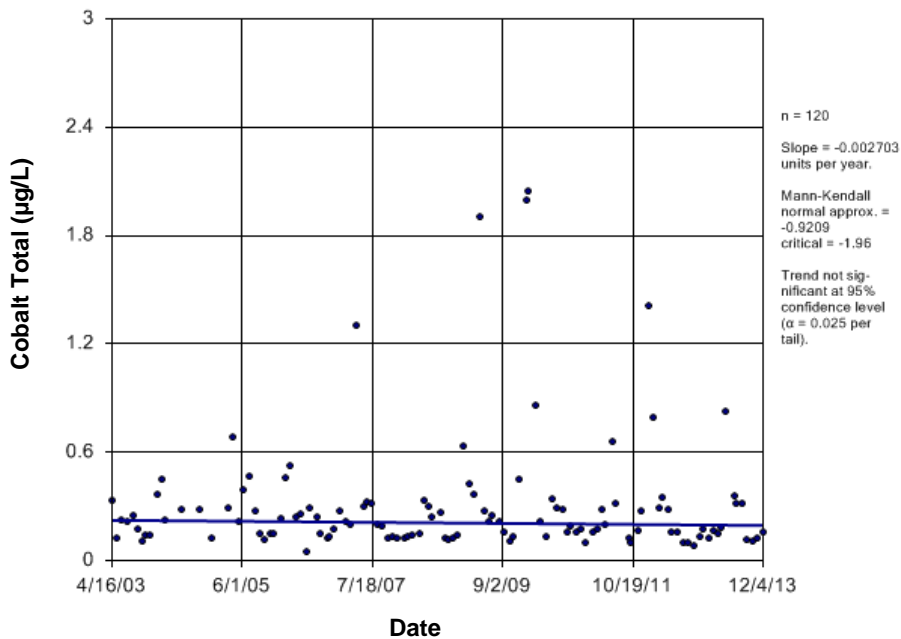
For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.04448
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 0.04448
 Adjusted Kruskal-Wallis statistic (H') = 0.04448



Date

Figure E173 Beaver River: Cobalt Total

Sen's Slope Estimator



Date

Figure E174 Beaver River: Cobalt Total

Time Series

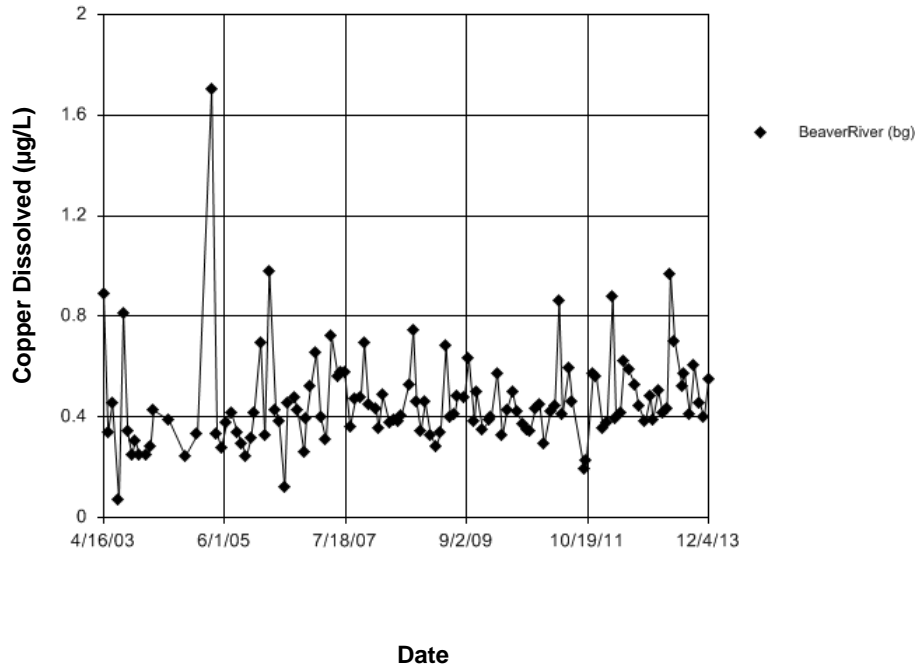


Figure E175 Beaver River: Copper Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.1668
 Tabulated Chi-squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 4 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 0.1668
 Adjusted Kruskal-Wallis statistic (H') = 0.1668

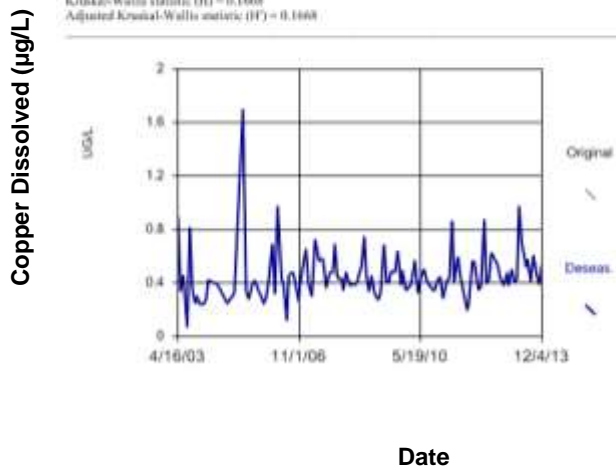


Figure E176 Beaver River: Copper Dissolved

Sen's Slope Estimator

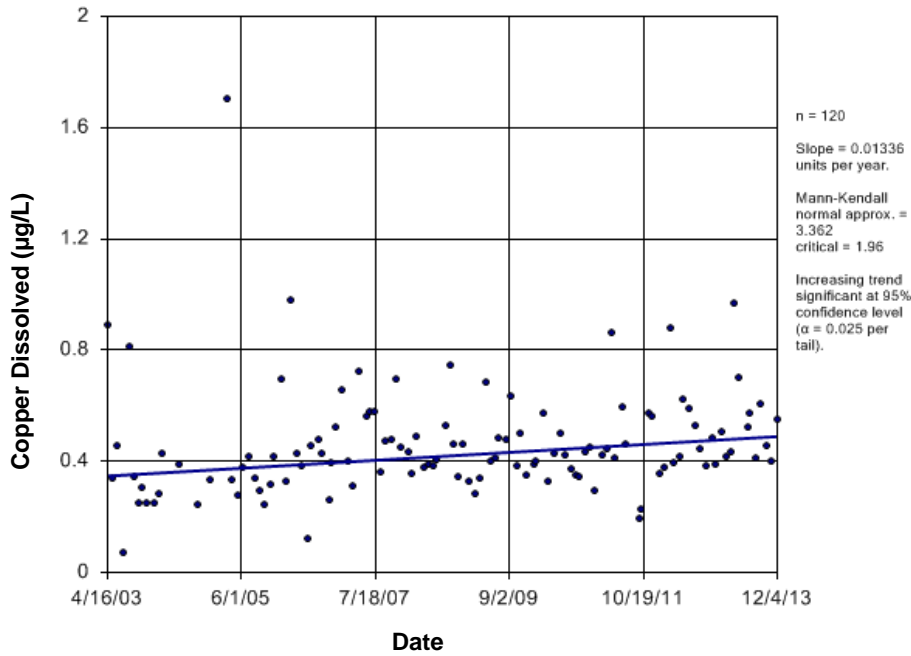


Figure E177 Beaver River: Copper Dissolved

Time Series

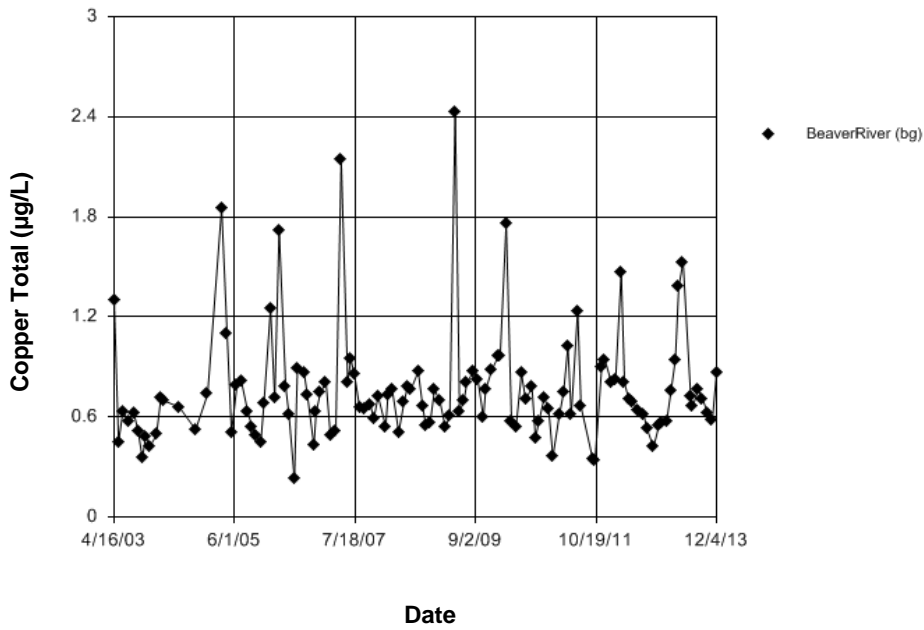
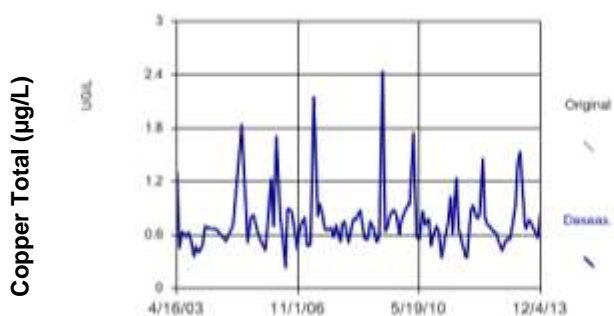


Figure E178 Beaver River: Copper Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-Squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.5408
Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
There were 8 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.



Date

Figure E179 Beaver River: Copper Total

Sen's Slope Estimator

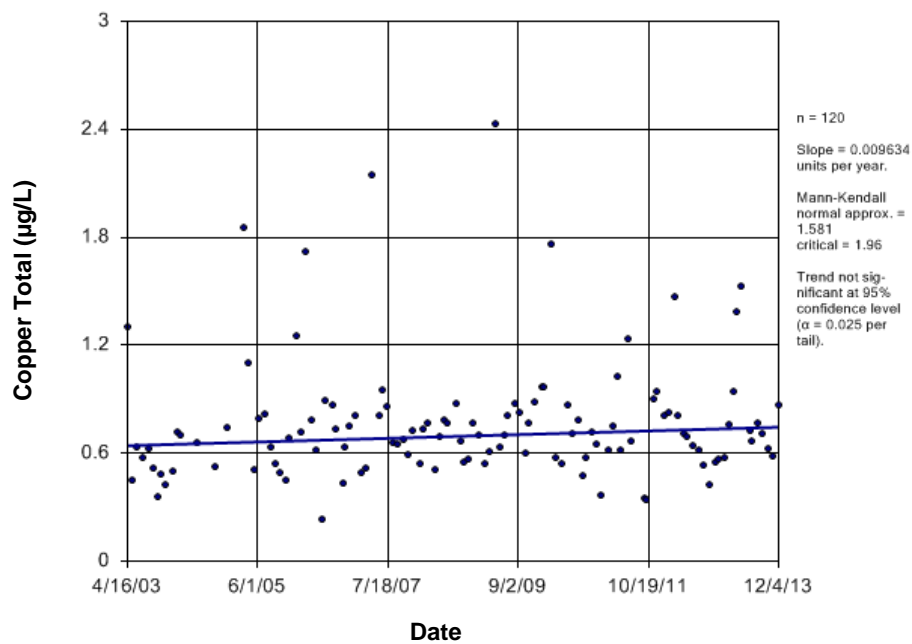


Figure E180 Beaver River: Copper Total

Time Series

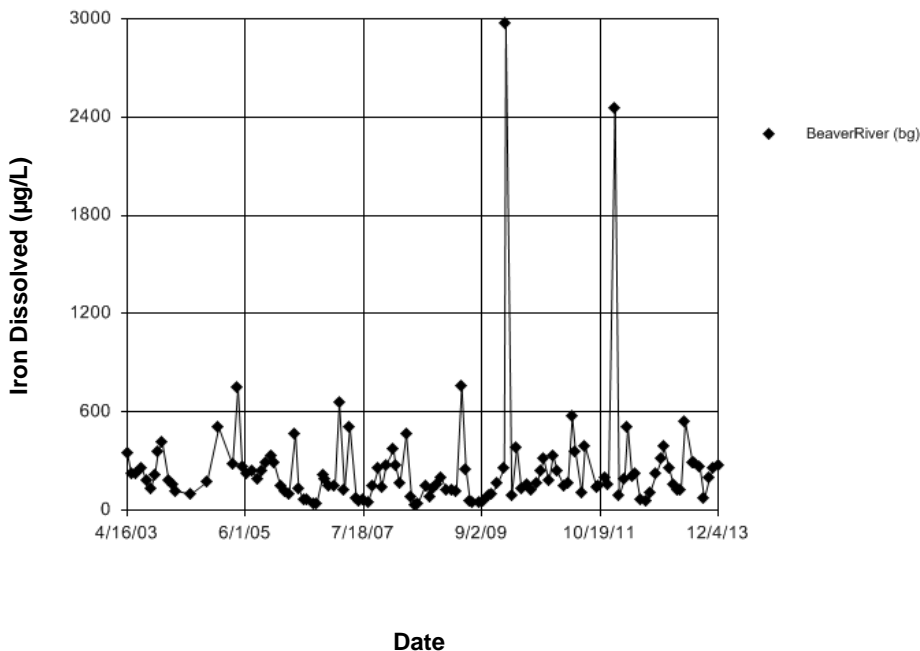


Figure E181 Beaver River: Iron Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 2.643. Tabulated Chi-Squared value = 3.841 with 4 degrees of freedom at the 5% significance level. There were 8 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

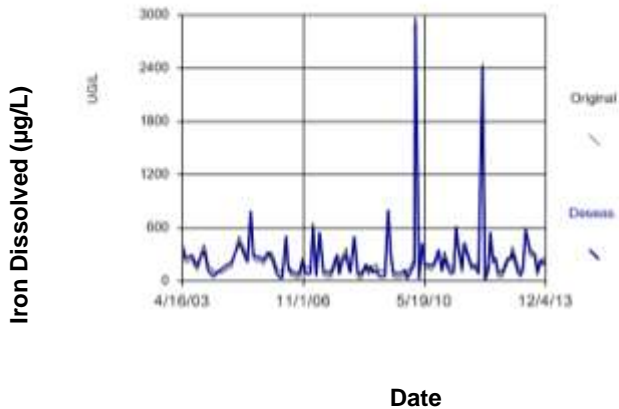


Figure E182 Beaver River: Iron Dissolved

Sen's Slope Estimator

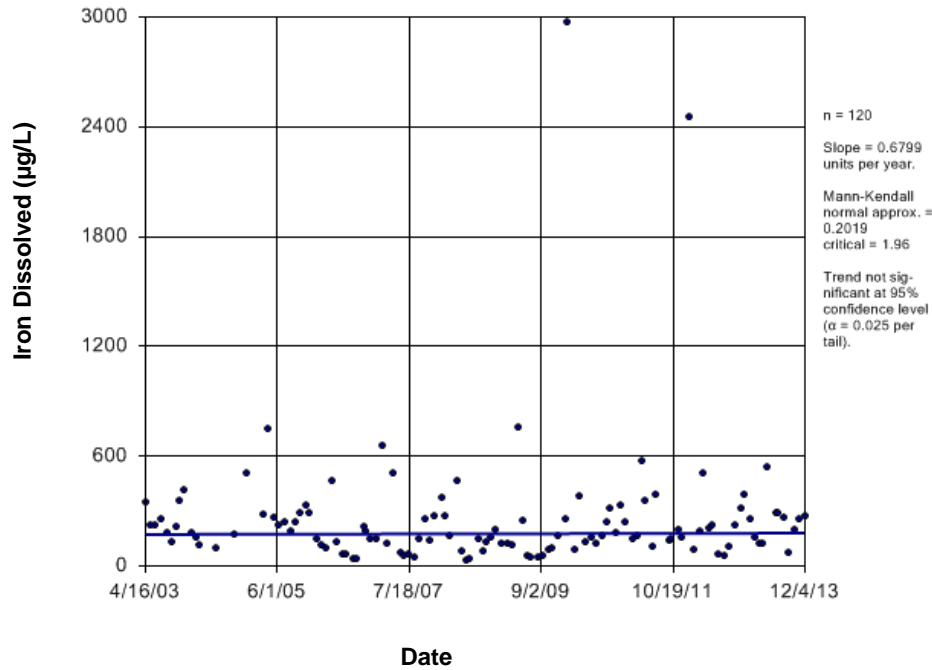


Figure E183 Beaver River: Iron Dissolved

Time Series

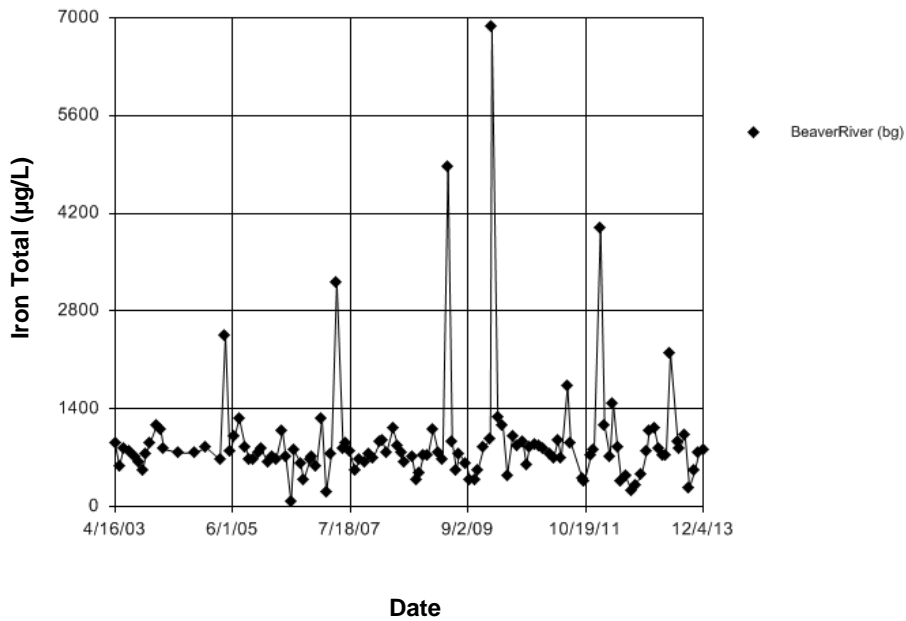
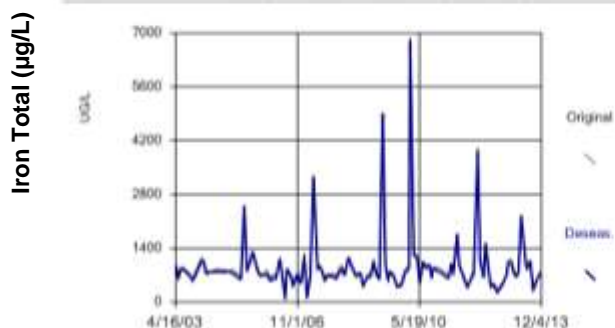


Figure E184 Beaver River: Iron Total

Seasonality

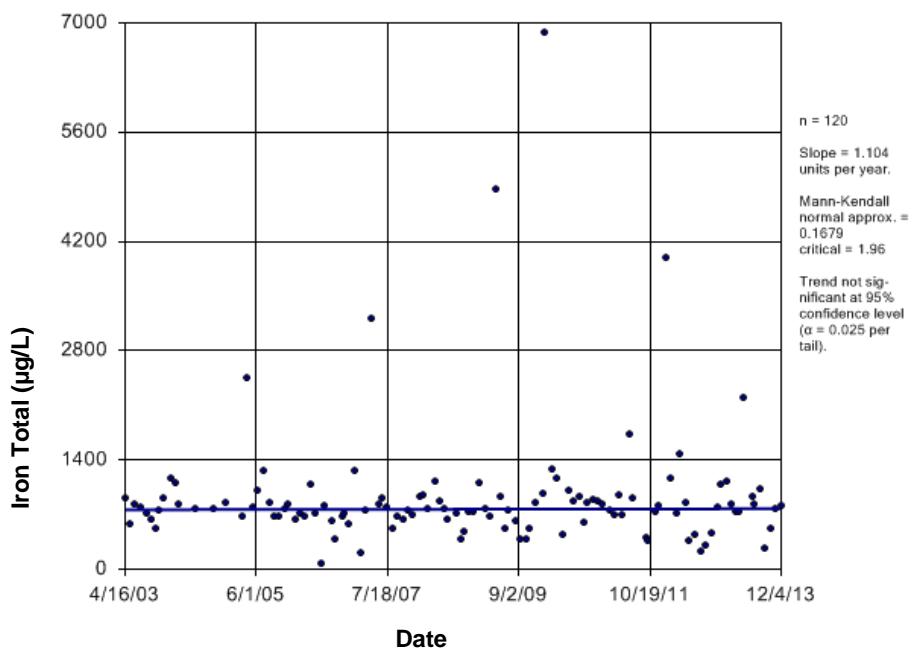
For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 3.777
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 3.777
 Adjusted Kruskal-Wallis statistic (H') = 3.777



Date

Figure E185 Beaver River: Iron Total

Sen's Slope Estimator



Date

Figure E186 Beaver River: Iron Total

Time Series

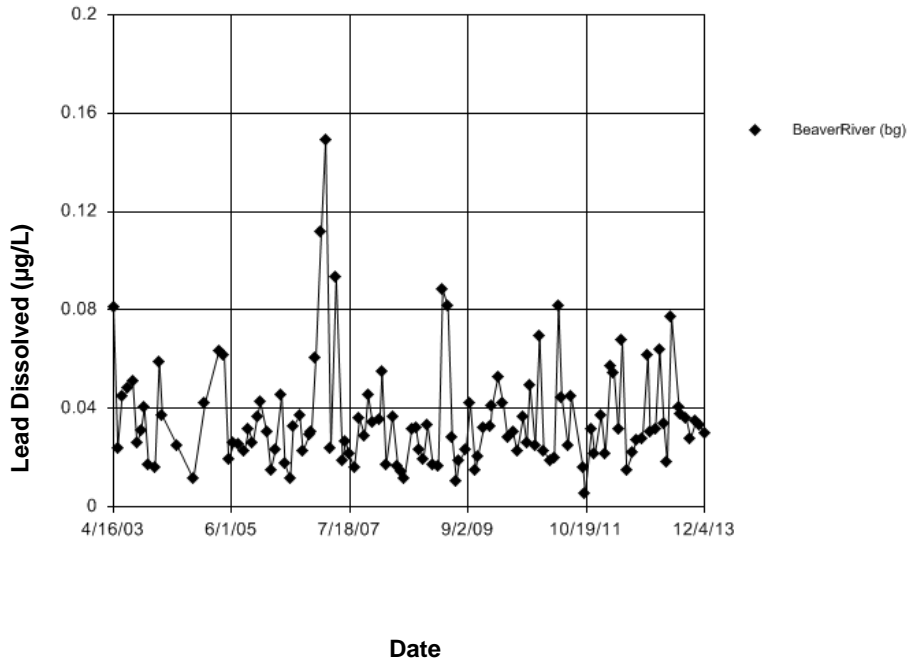


Figure E187 Beaver River: Lead Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 2.489. Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level. There were 6 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

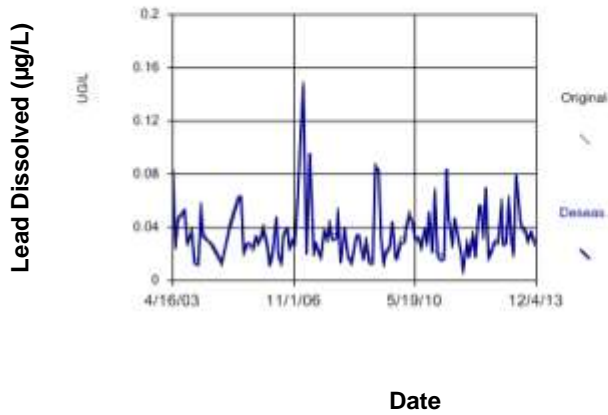


Figure E188 Beaver River: Lead Dissolved

Sen's Slope Estimator

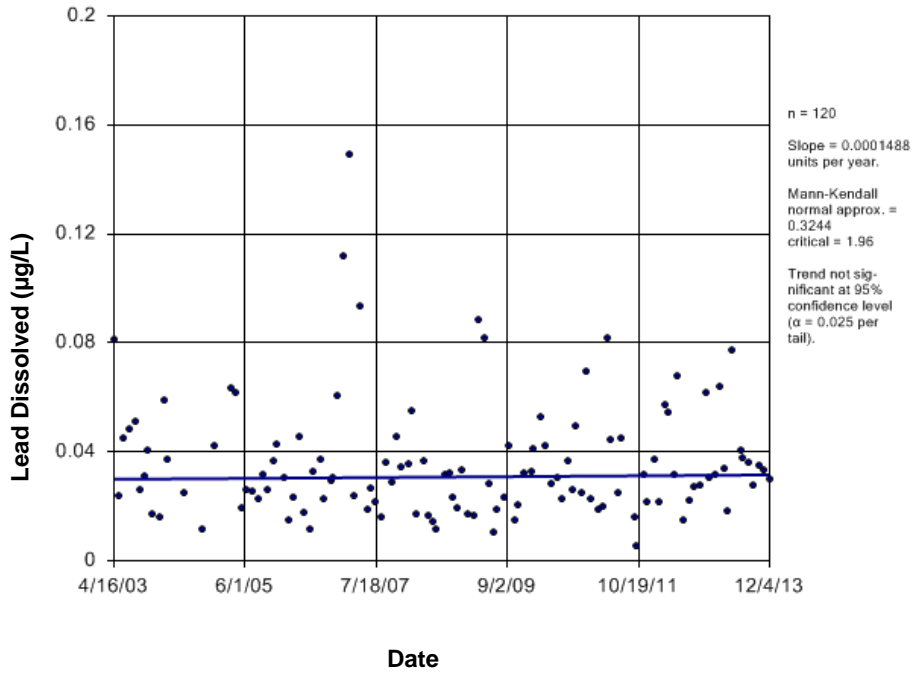


Figure E189 Beaver River: Lead Dissolved

Time Series

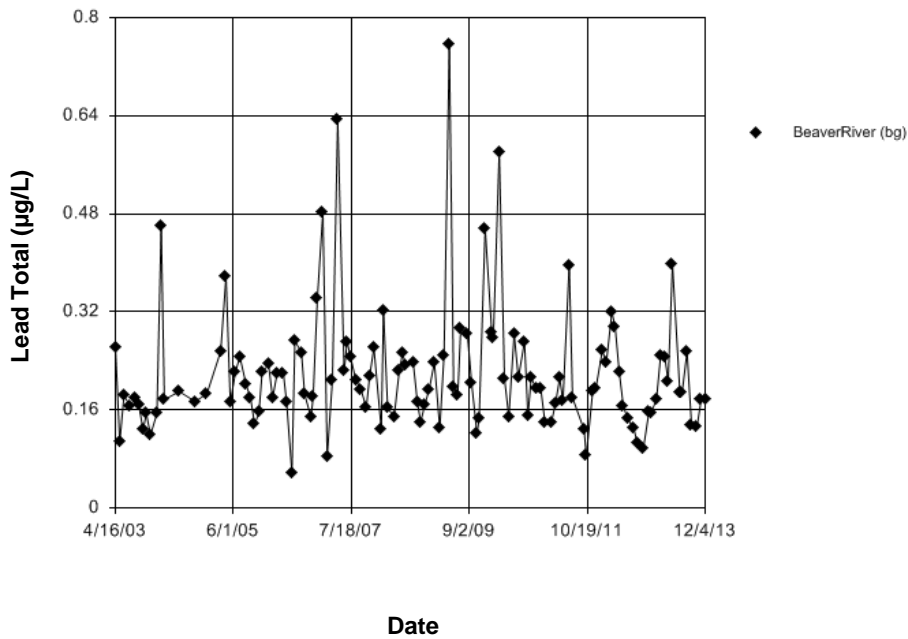


Figure E190 Beaver River: Lead Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.4929
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 0.4929
 Adjusted Kruskal-Wallis statistic (H') = 0.4929

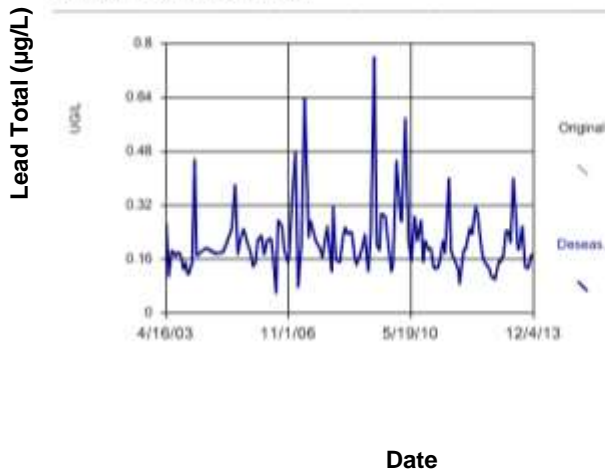


Figure E191 Beaver River: Lead Total

Sen's Slope Estimator

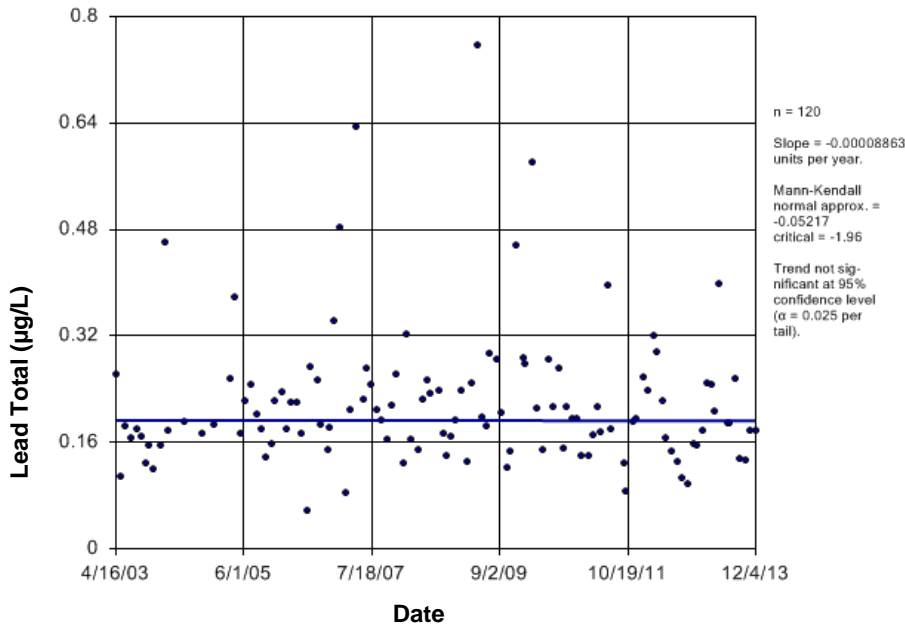


Figure E192 Beaver River: Lead Total

Time Series

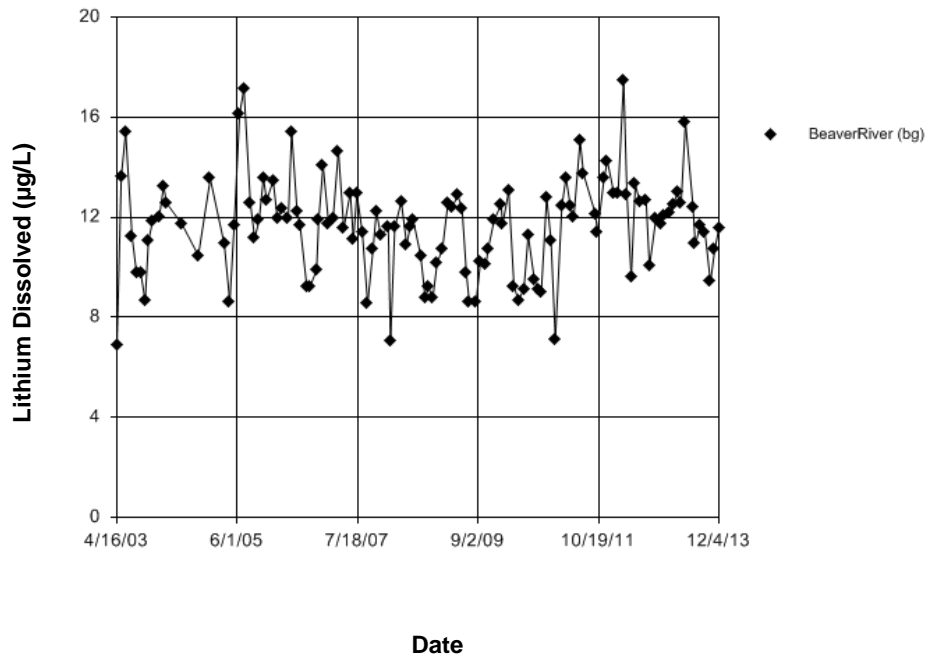


Figure E193 Beaver River: Lithium Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates **SEASONALITY** at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
 Calculated Kruskal-Wallis statistic = 8.129
 Tabulated Chi-Squared value = 3.841 with 3 degrees of freedom at the 5% significance level.
 There were 7 groups of this in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 8.129
 Adjusted Kruskal-Wallis statistic (H') = 8.129

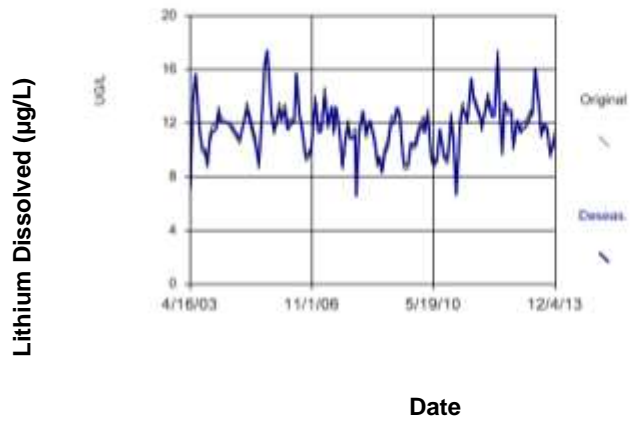


Figure E194 Beaver River: Lithium Dissolved

Seasonal Kendall

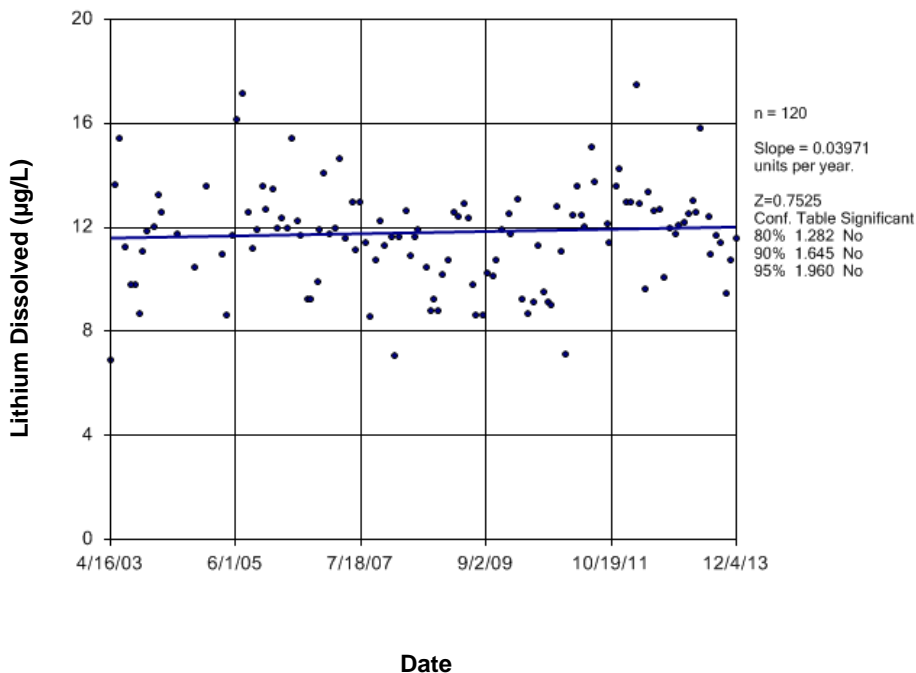


Figure E195 Beaver River: Lithium Dissolved

Time Series

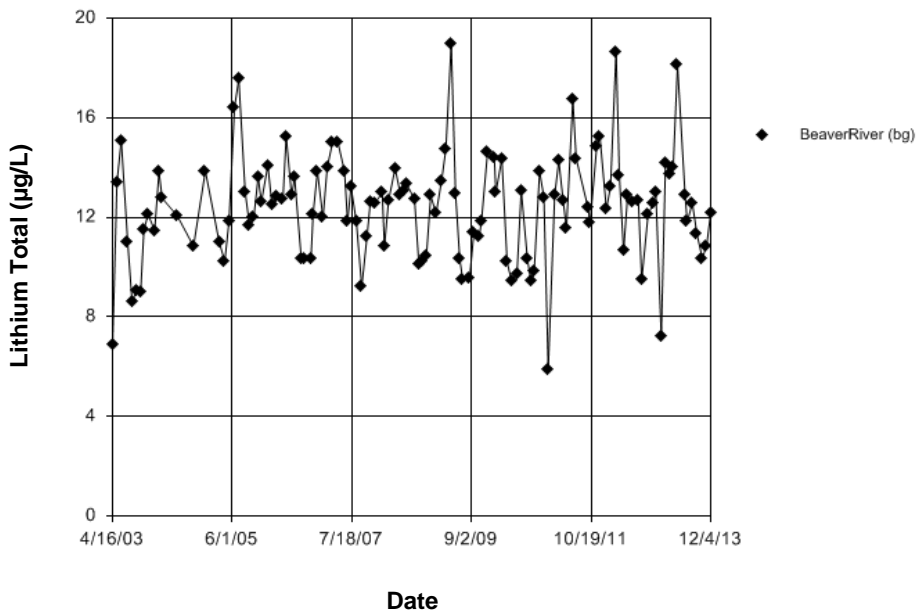


Figure E196 Beaver River: Lithium Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-Squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 8.298
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 7 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 8.297
 Adjusted Kruskal-Wallis statistic (H') = 8.298

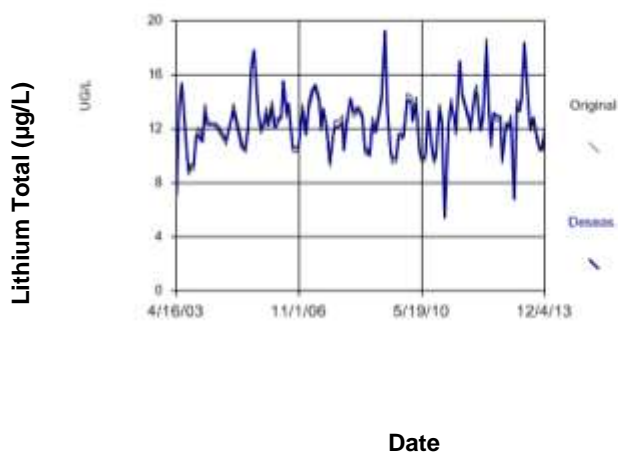


Figure E197 Beaver River: Lithium Total

Seasonal Kendall

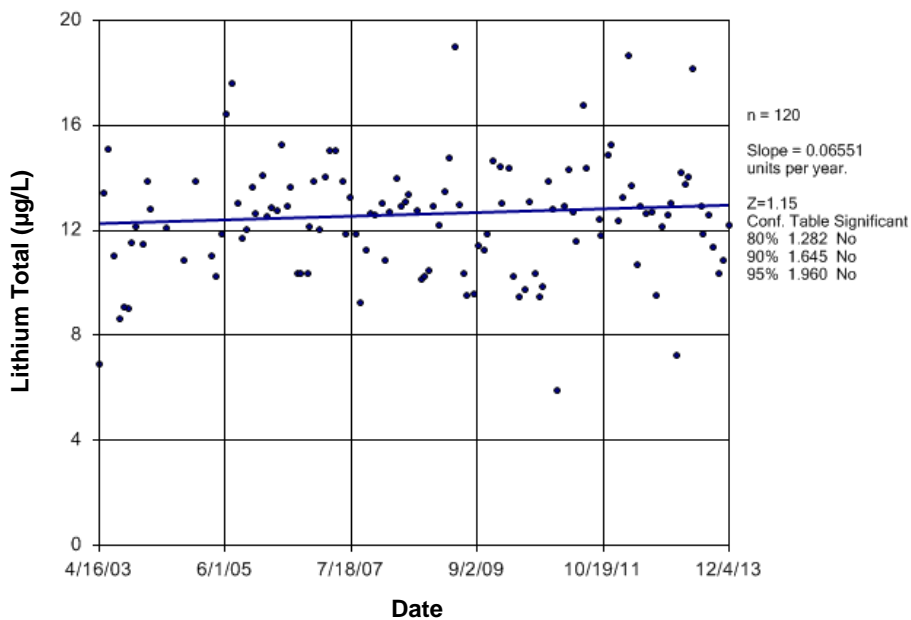


Figure E198 Beaver River: Lithium Total

Time Series

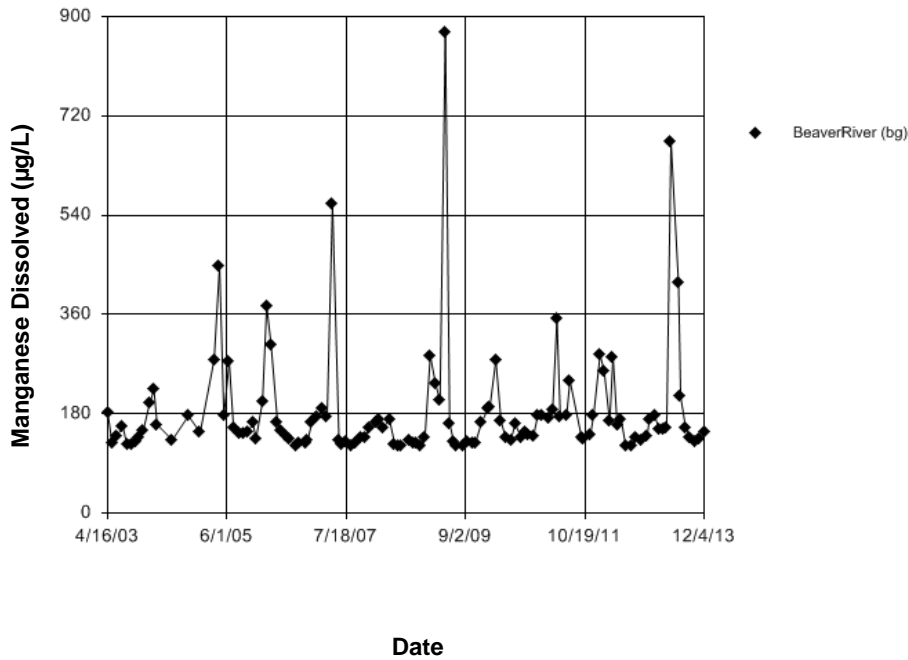


Figure E199 Beaver River: Manganese Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
 Calculated Kruskal-Wallis statistic = 15.59
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 3 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 15.59
 Adjusted Kruskal-Wallis statistic (H') = 15.59

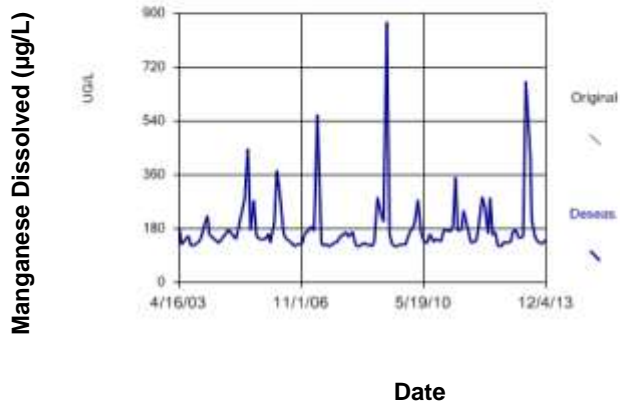


Figure E200 Beaver River: Manganese Dissolved

Seasonal Kendall

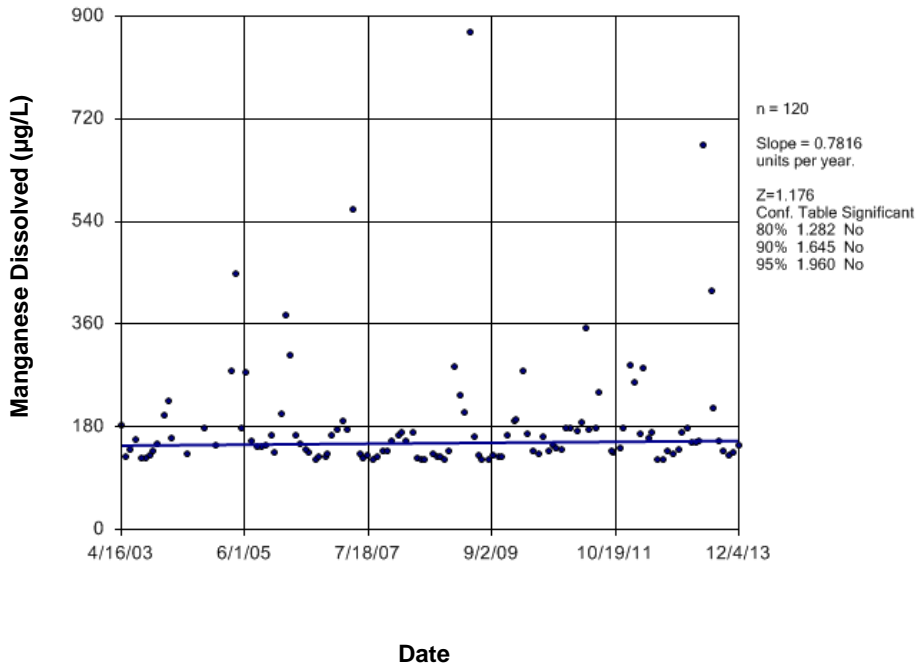


Figure E201 Beaver River: Manganese Dissolved

Time Series

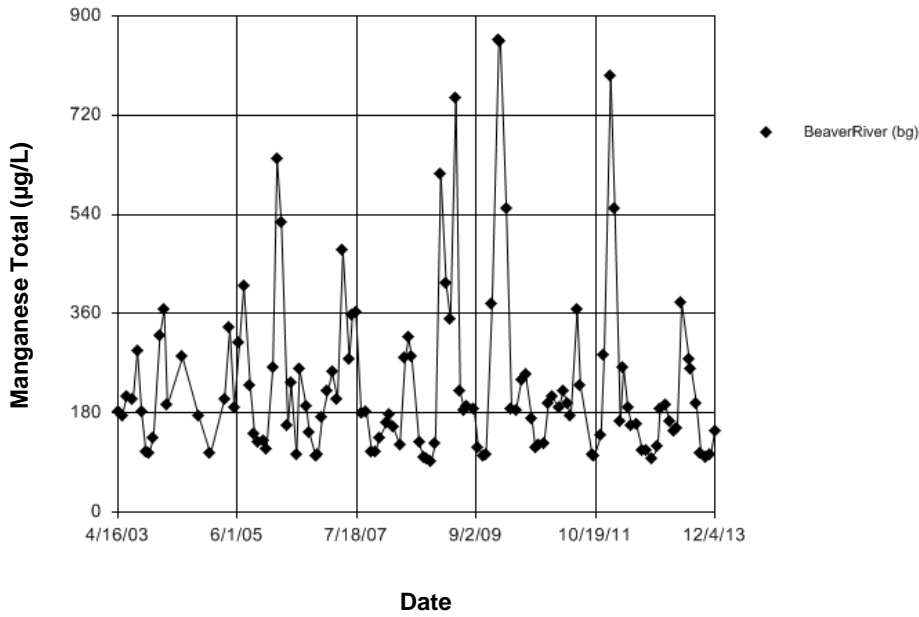
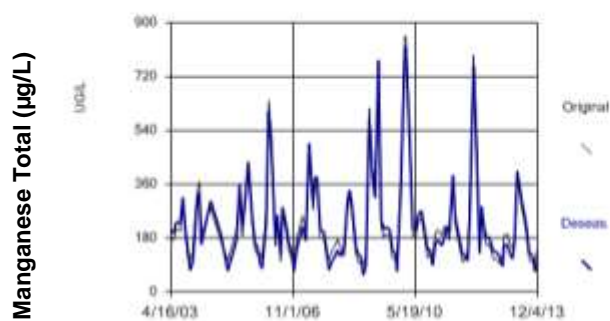


Figure E202 Beaver River: Manganese Total

Seasonality

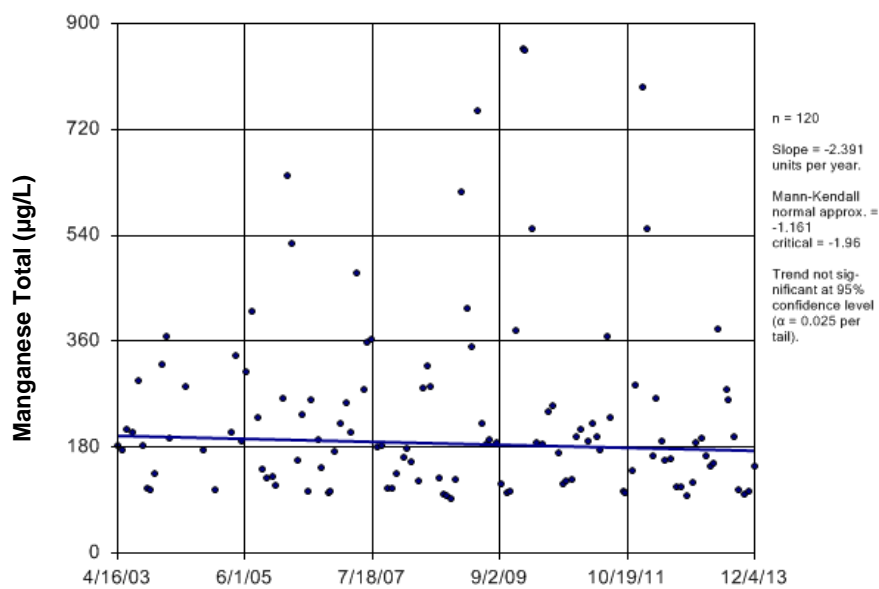
For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.6543
Tabulated Chi-squared value = 3.841 with 1 degree of freedom at the 5% significance level.
There were 3 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H_{adj}) was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 0.6543
Adjusted Kruskal-Wallis statistic (H_{adj}) = 0.6543



Date

Figure E203 Beaver River: Manganese Total

Sen's Slope Estimator



Date

Figure E204 Beaver River: Manganese Total

Time Series

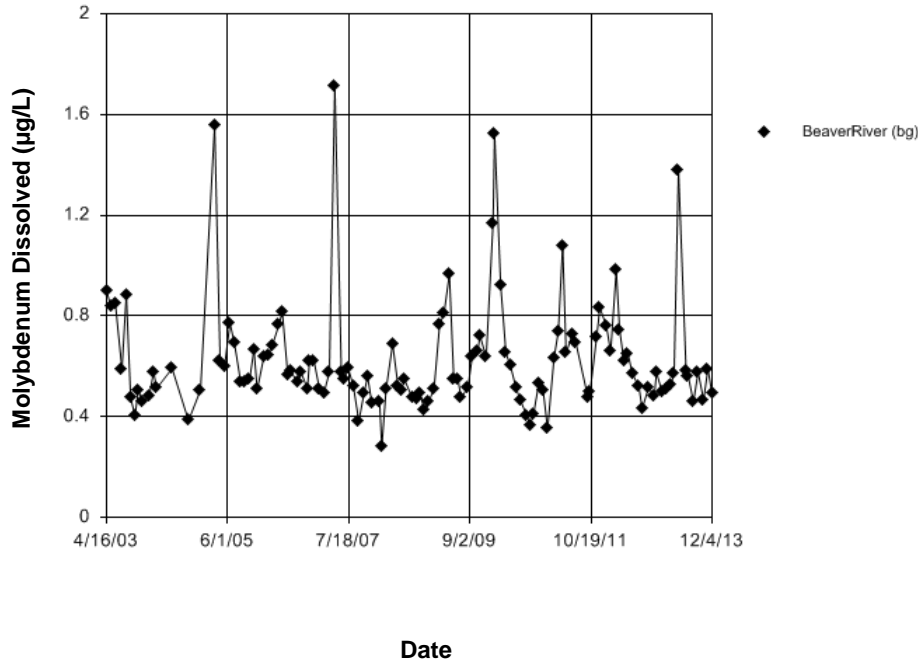


Figure E205 Beaver River: Molybdenum Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.01318
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the residuals were equal.
 Kruskal-Wallis statistic (H) = 0.01318
 Adjusted Kruskal-Wallis statistic (H') = 0.01318

Molybdenum Dissolved

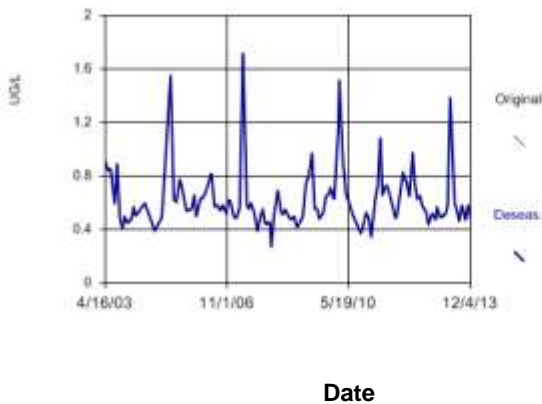


Figure E206 Beaver River: Molybdenum Dissolved

Sen's Slope Estimator

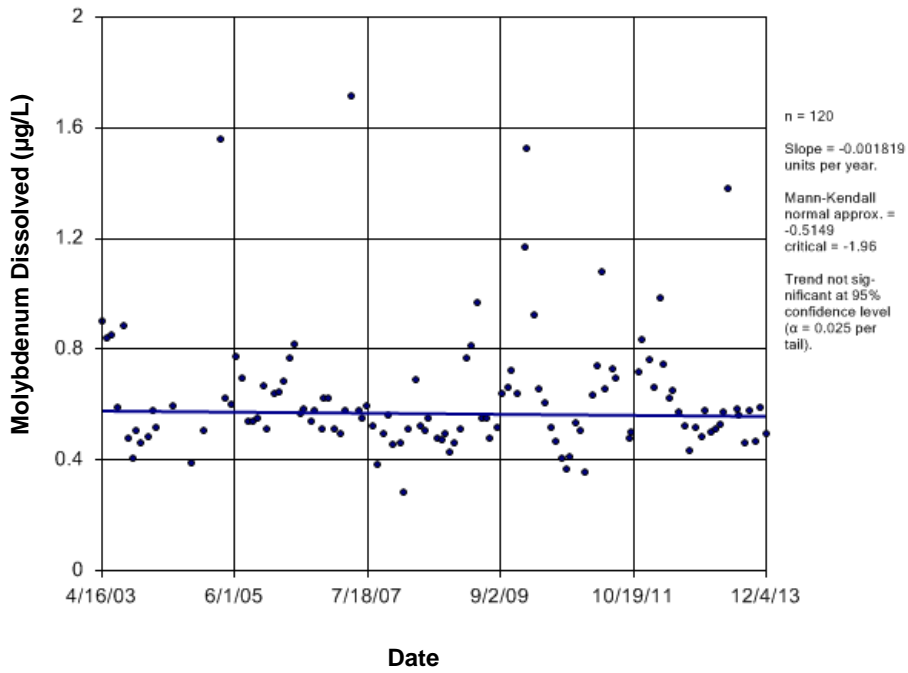


Figure E207 Beaver River: Molybdenum Dissolved

Time Series

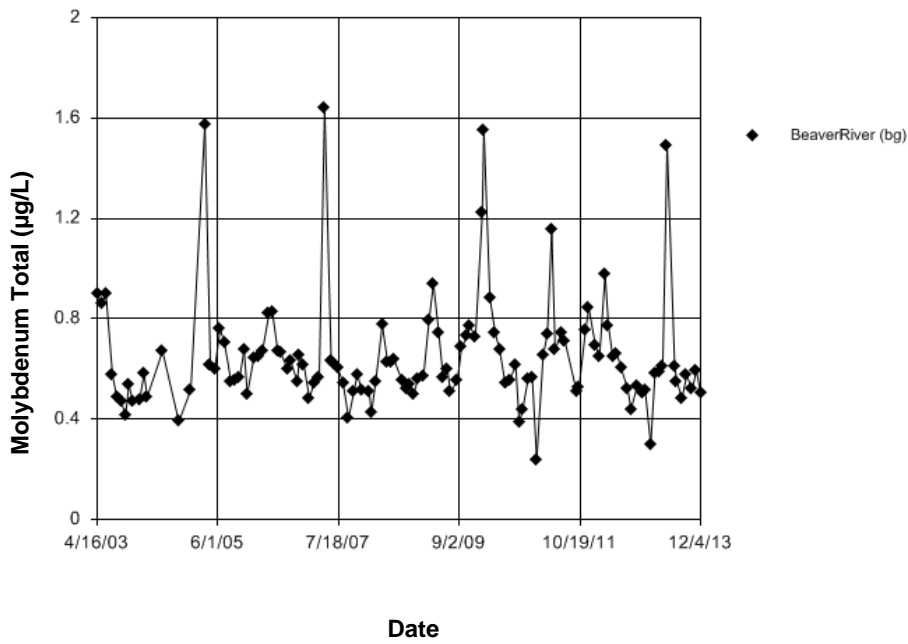


Figure E208 Beaver River: Molybdenum Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-Squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.1149
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 0.1149
 Adjusted Kruskal-Wallis statistic (H') = 0.1149

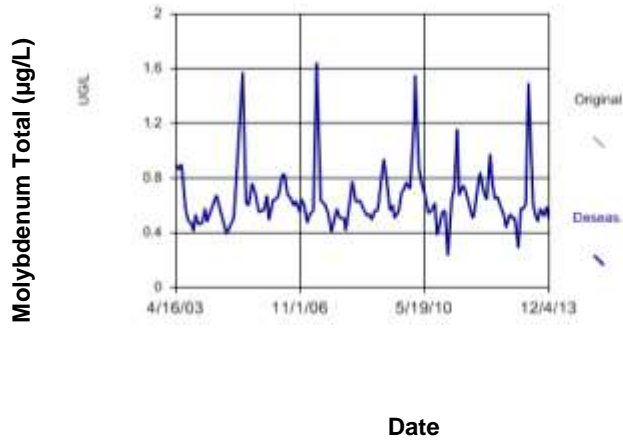


Figure E209 Beaver River: Molybdenum Total

Sen's Slope Estimator

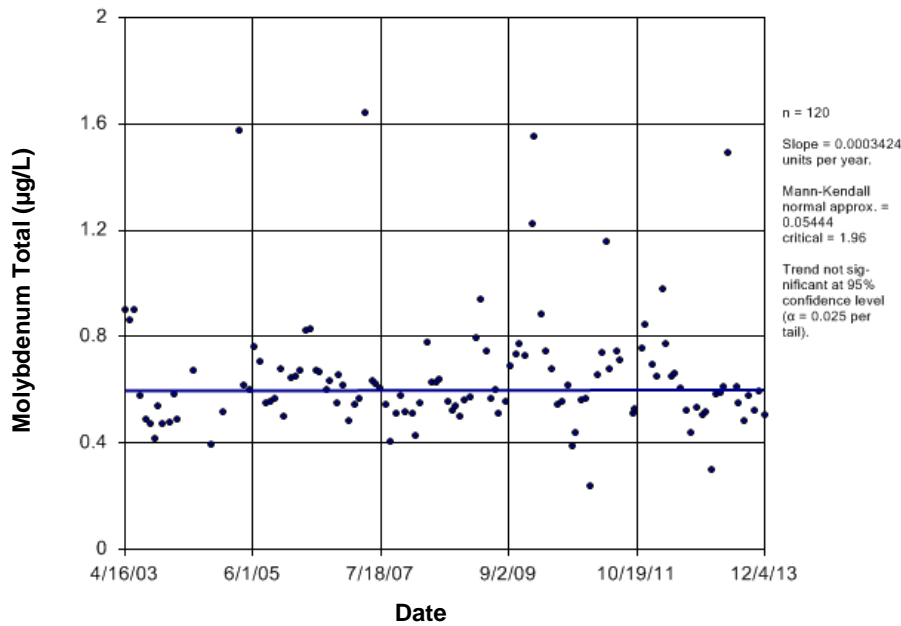


Figure E210 Beaver River: Molybdenum Total

Time Series

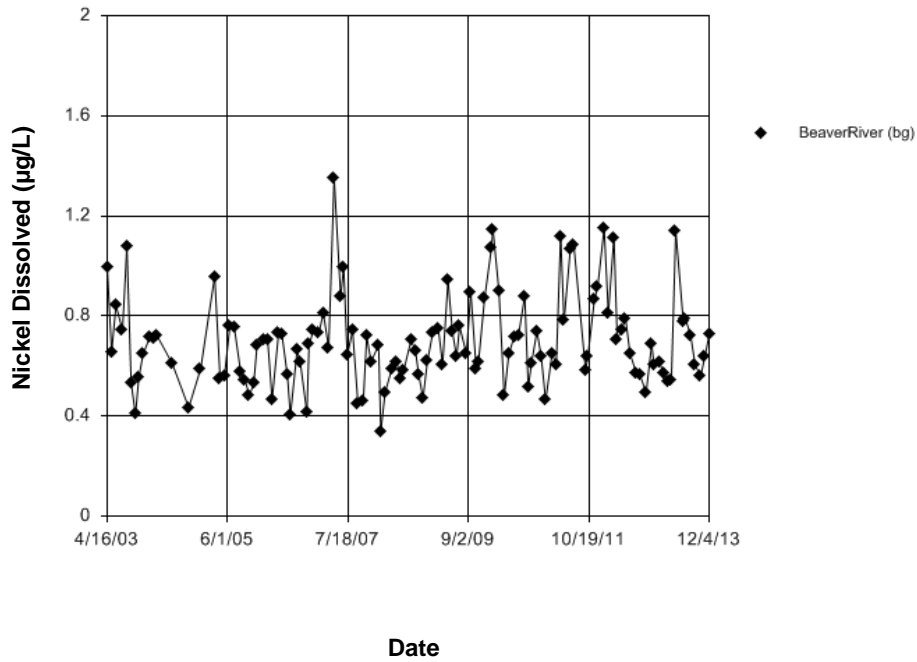


Figure E211 Beaver River: Nickel Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.5234. Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level. There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal. Kruskal-Wallis statistic (H) = 0.5234. Adjusted Kruskal-Wallis statistic (H') = 0.5234.

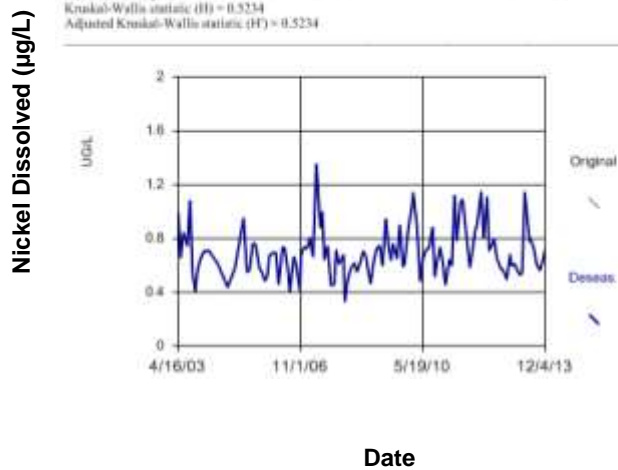


Figure E212 Battle River: Nickel Dissolved

Sen's Slope Estimator

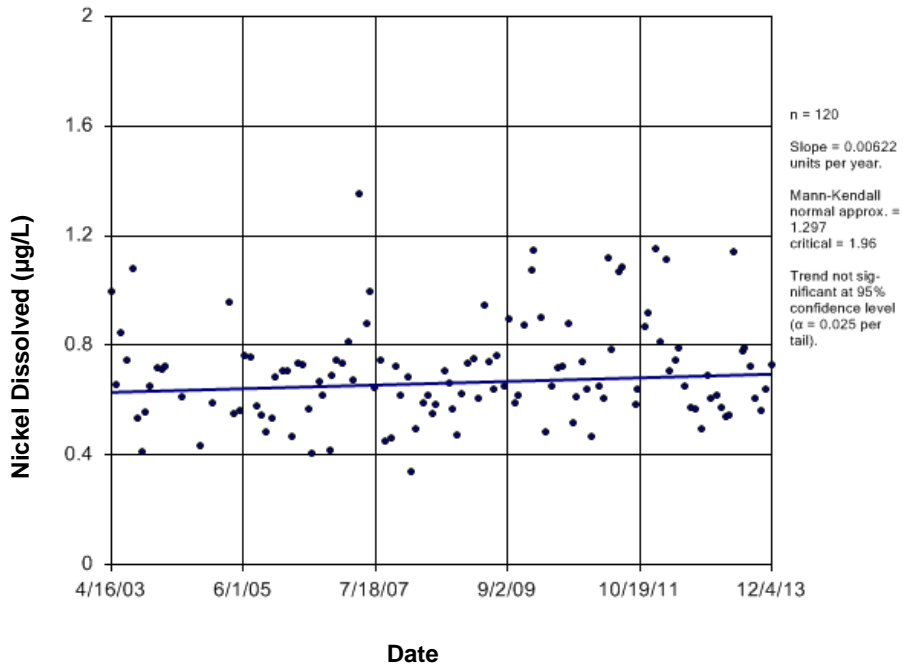


Figure E213 Beaver River: Nickel Dissolved

Time Series

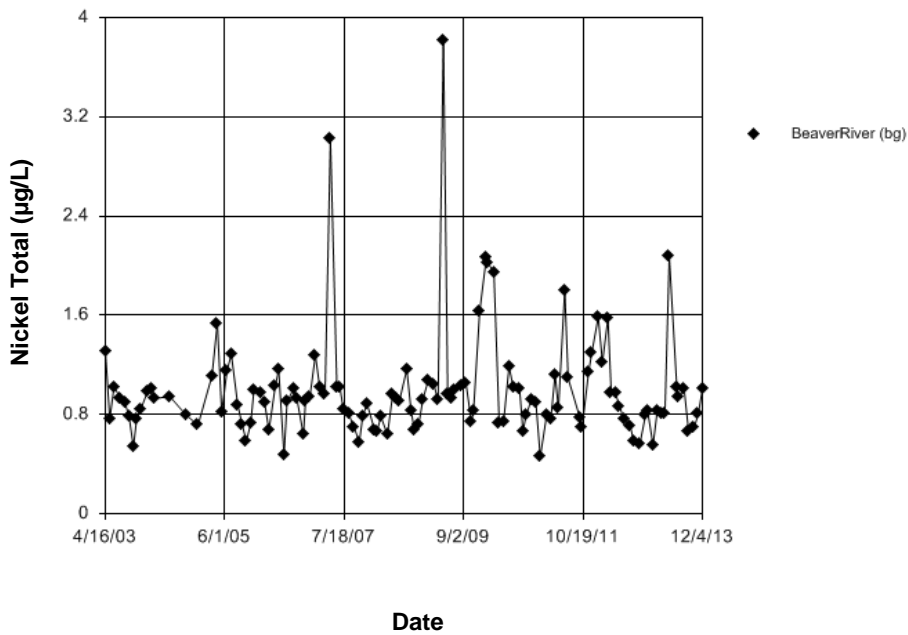


Figure E214 Beaver River: Nickel Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.4003
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 0.4003
 Adjusted Kruskal-Wallis statistic (H') = 0.4003

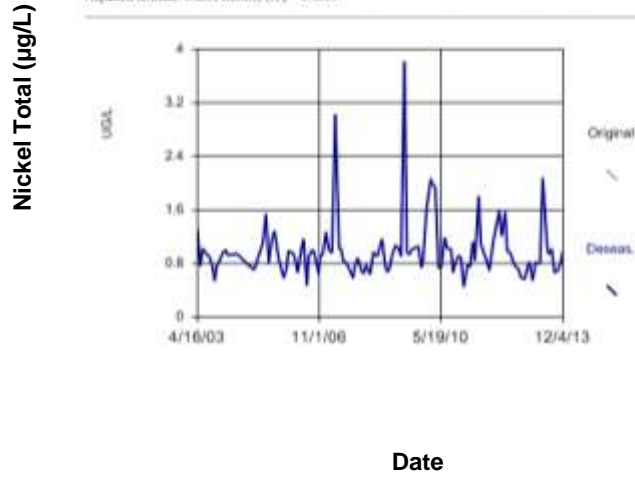


Figure E215 Beaver River: Nickel Total

Sen's Slope Estimator

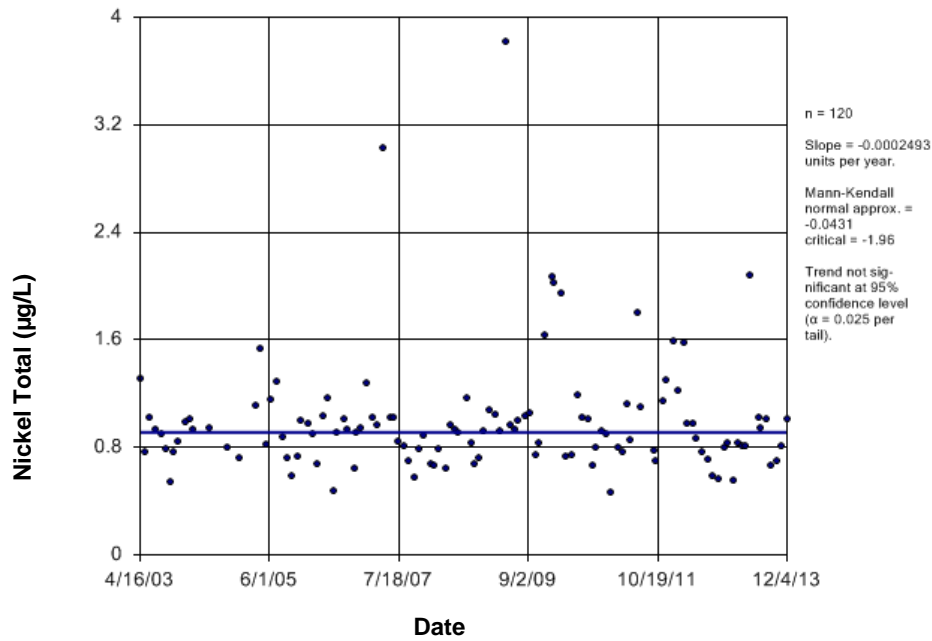


Figure E216 Beaver River: Nickel Total

Time Series

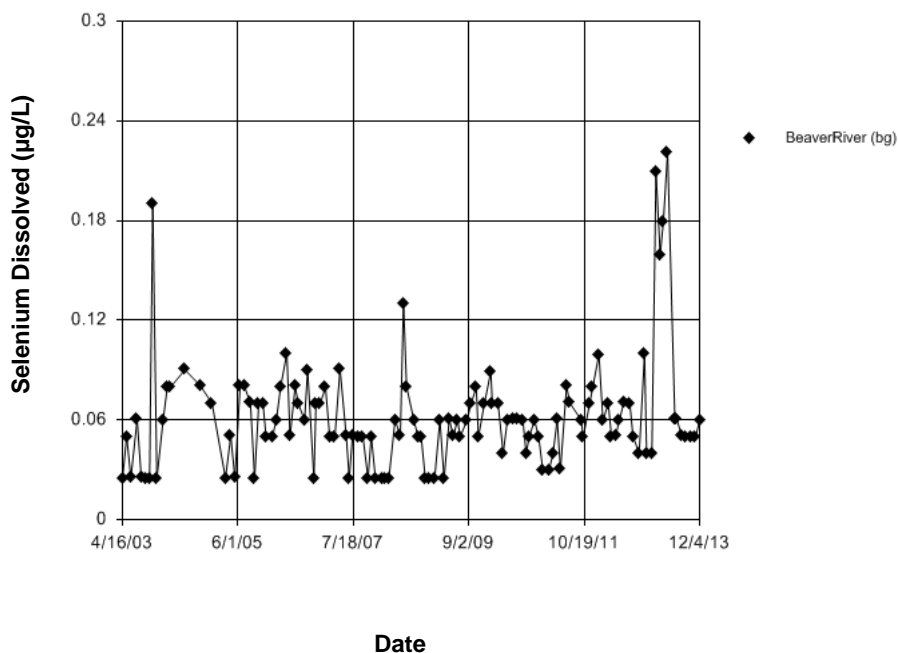


Figure E217 Beaver River: Selenium Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 1.306
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 17 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 1.305
 Adjusted Kruskal-Wallis statistic (H') = 1.306

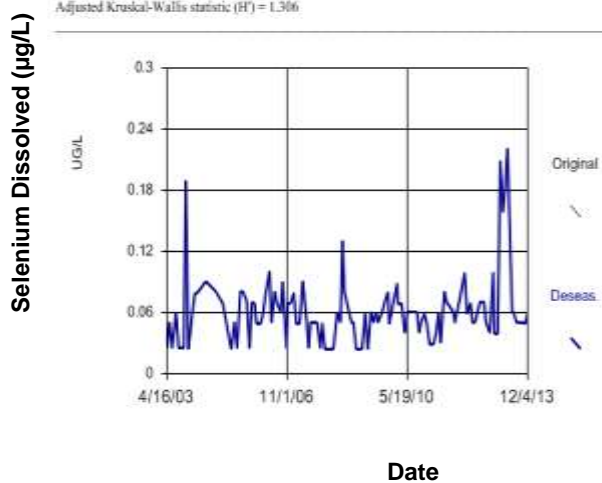


Figure E218 Beaver River: Selenium Dissolved

Sen's Slope Estimator

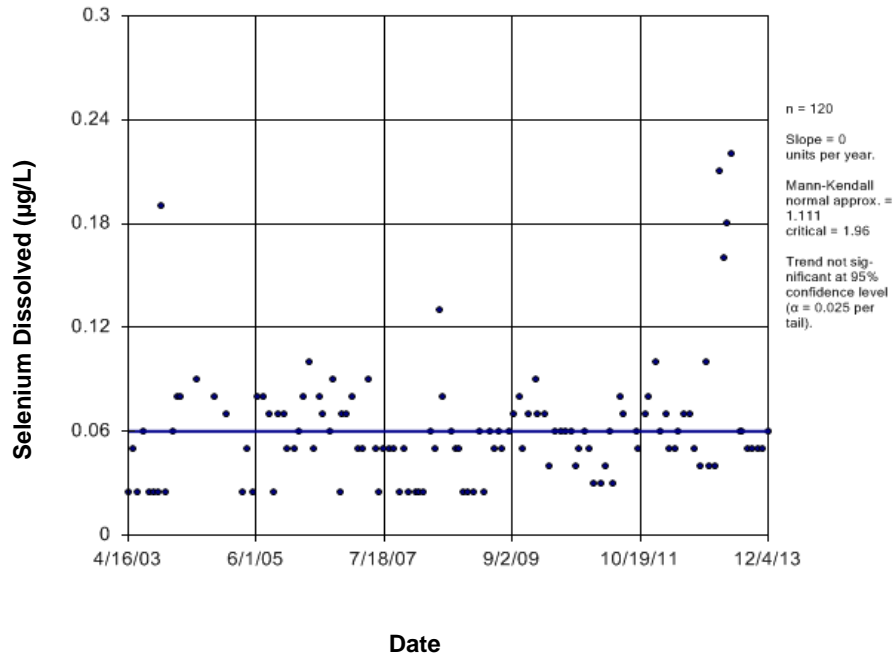


Figure E219 Beaver River: Selenium Dissolved

Time Series

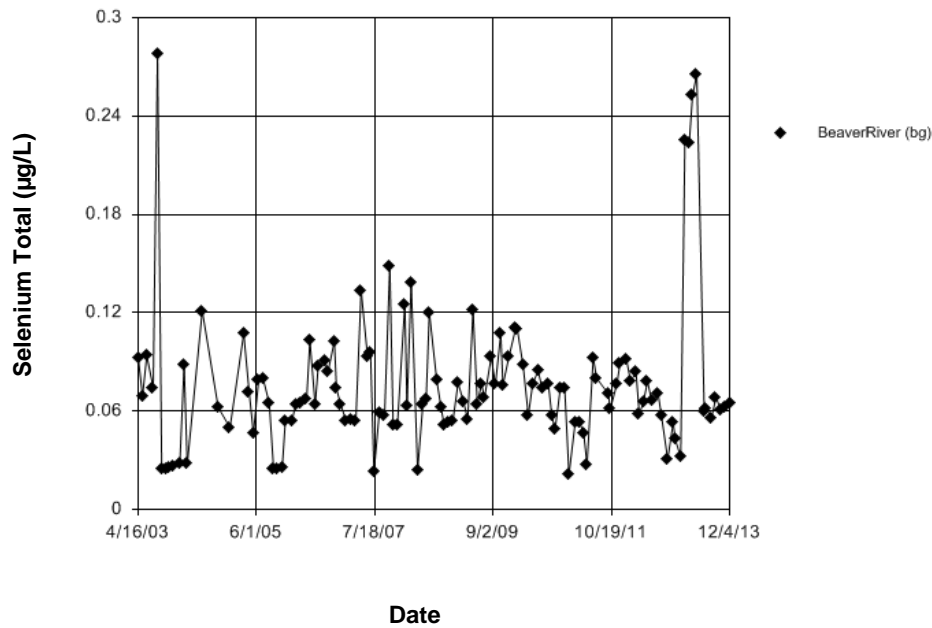
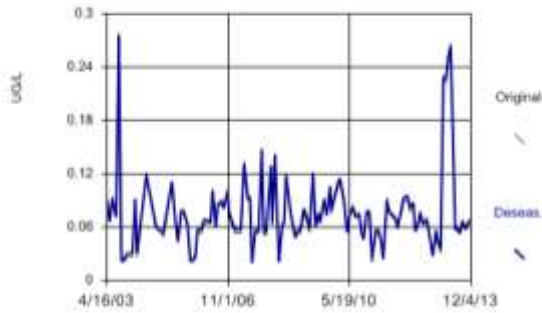


Figure E220 Beaver River: Selenium Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates **NO SEASONALITY** at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 1.987
Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
There were 3 groups of data in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 1.987
Adjusted Kruskal-Wallis statistic (H') = 1.987

Selenium Total ($\mu\text{g/L}$)



Date

Figure E221 Beaver River: Selenium Total

Sen's Slope Estimator

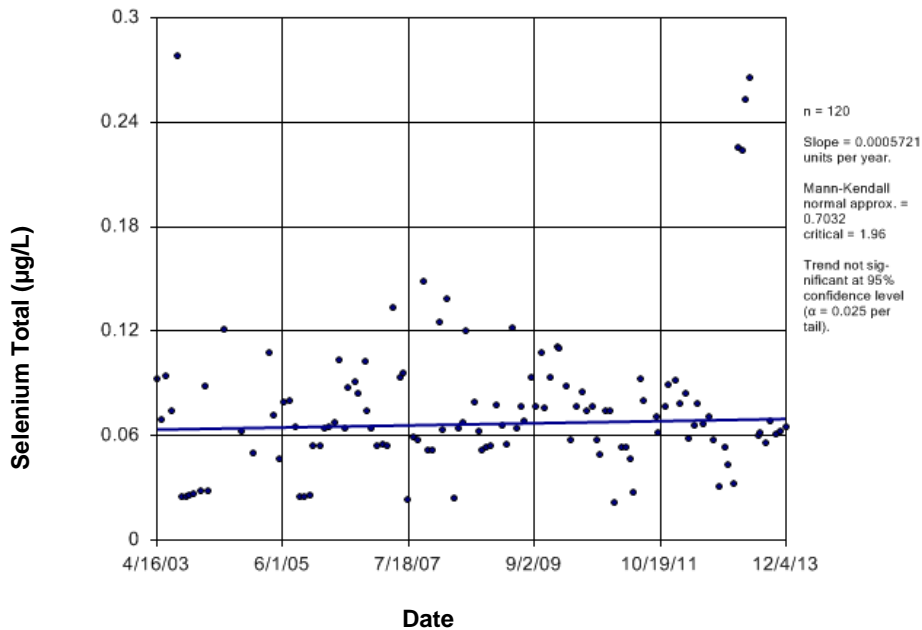


Figure E222 Beaver River: Selenium Total

Time Series

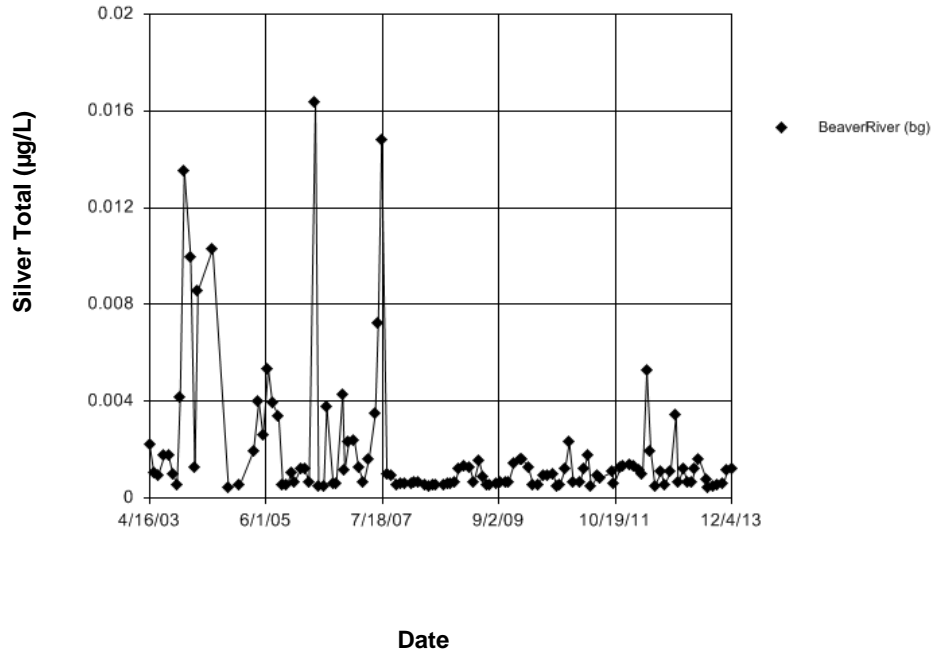


Figure E223 Beaver River: Silver Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
 Calculated Kruskal-Wallis statistic = 6.747
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 6.747
 Adjusted Kruskal-Wallis statistic (H') = 6.747

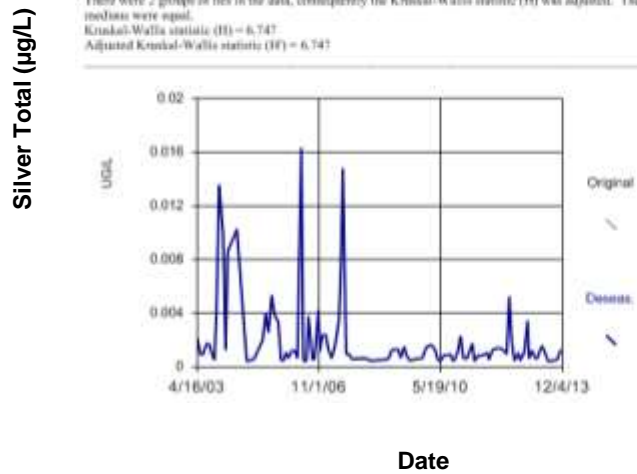


Figure E224 Beaver River: Silver Total

Seasonal Kendall

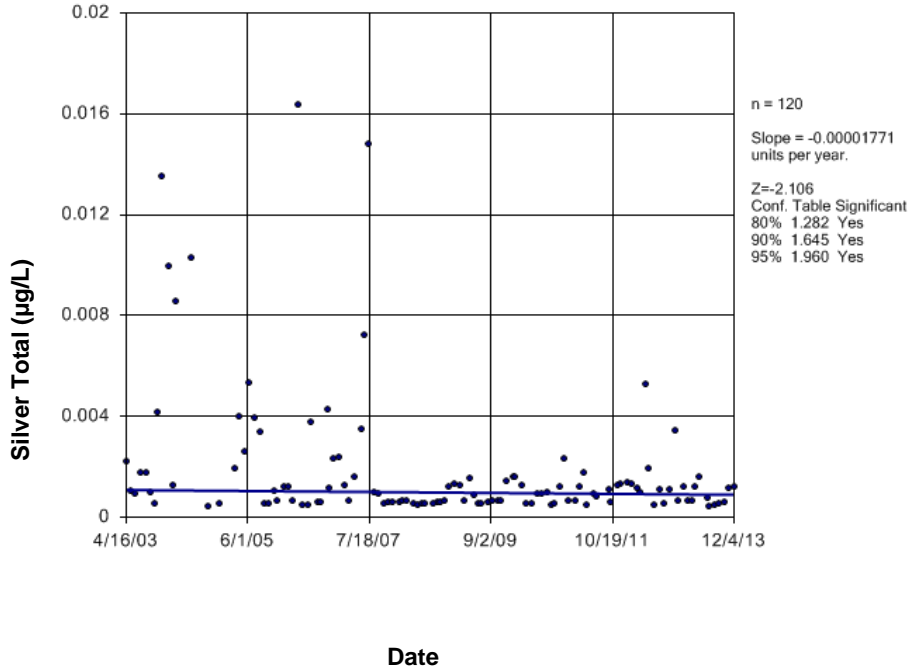


Figure E225 Beaver River: Silver Total

Time Series

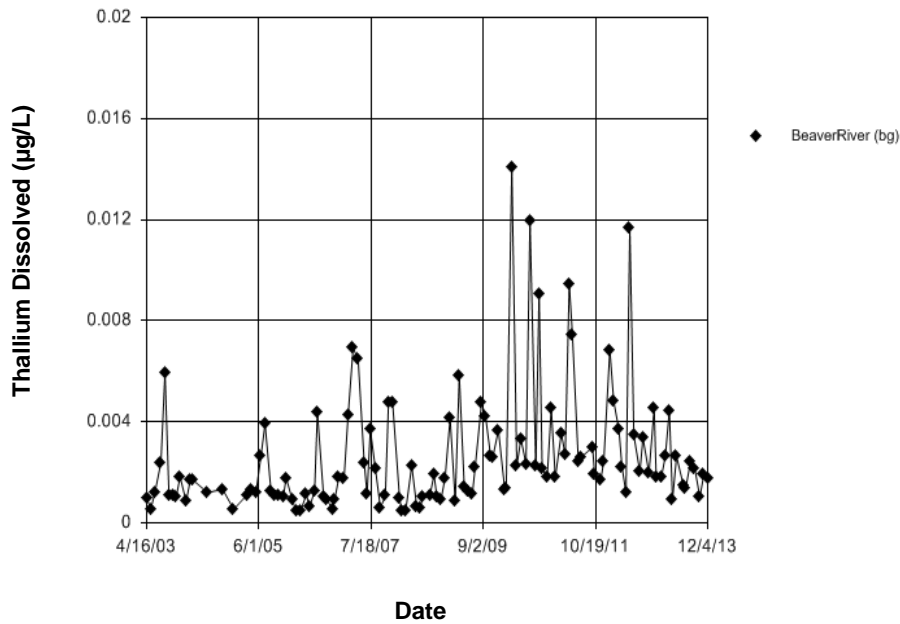


Figure E226 Beaver River: Thallium Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.03903
Tabulated Chi-Squared value = 5.841 with 1 degree of freedom at the 5% significance level.
There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 0.03903
Adjusted Kruskal-Wallis statistic (H') = 0.03903

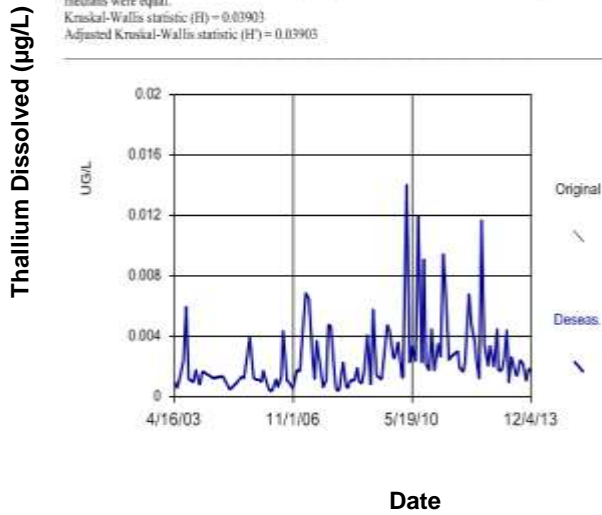


Figure E227 Beaver River: Thallium Dissolved

Sen's Slope Estimator

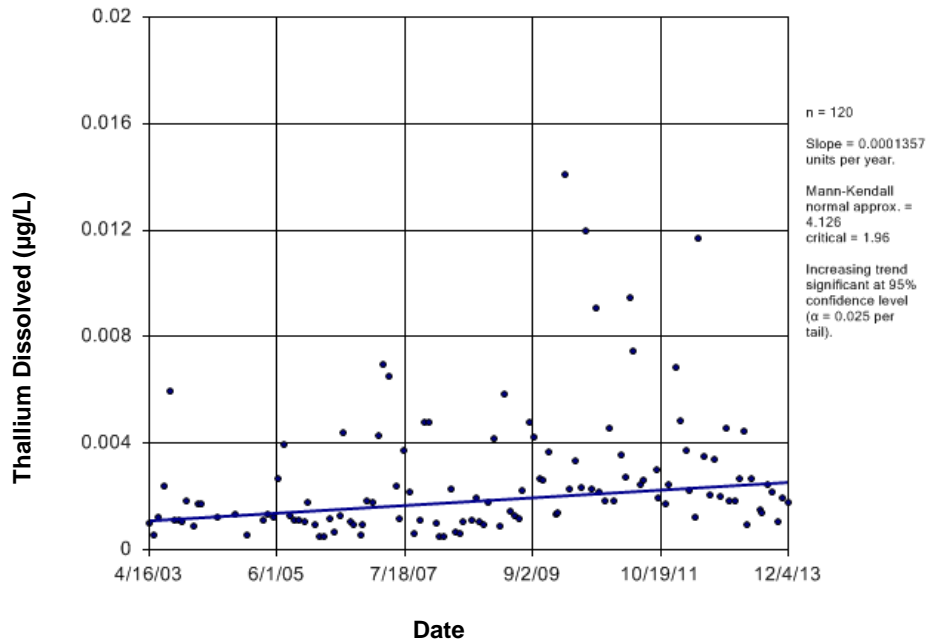


Figure E228 Beaver River: Thallium Dissolved

Time Series

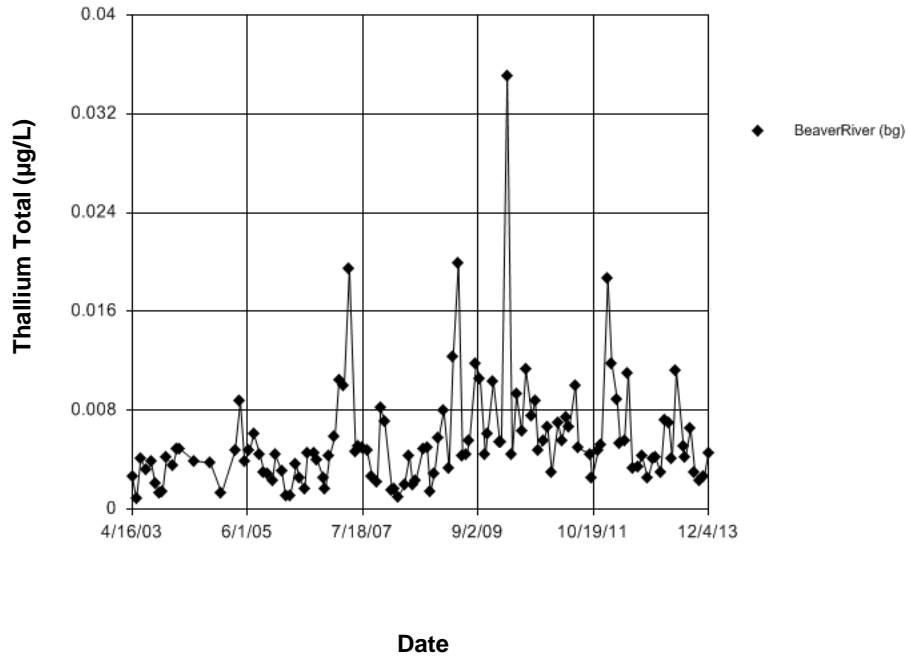


Figure E229 Beaver River: Thallium Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.6543
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

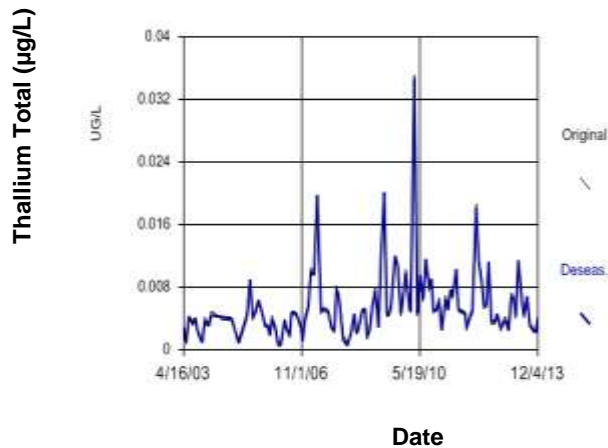


Figure E230 Beaver River: Thallium Total

Sen's Slope Estimator

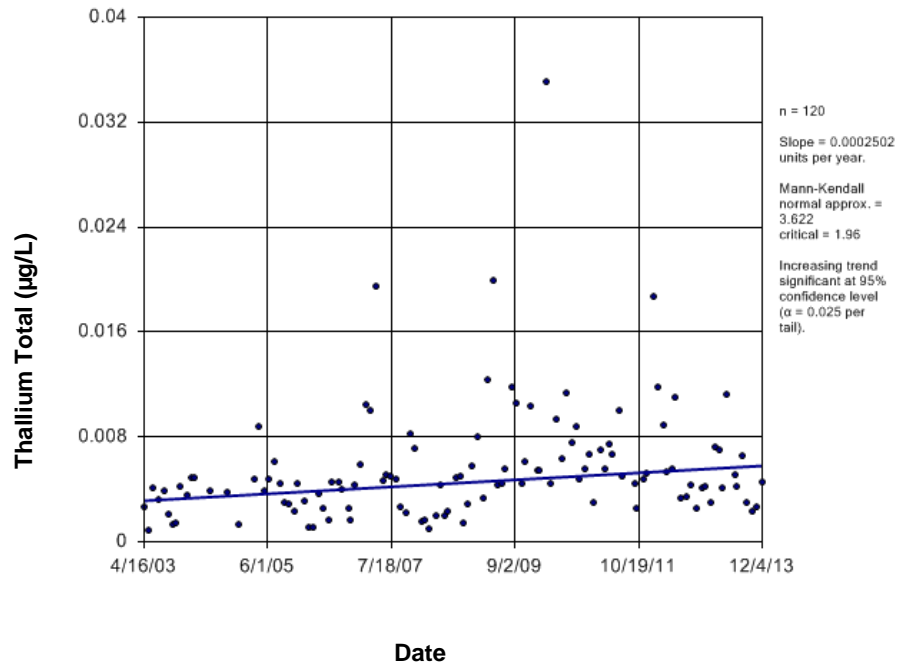


Figure E231 Beaver River: Thallium Total

Time Series

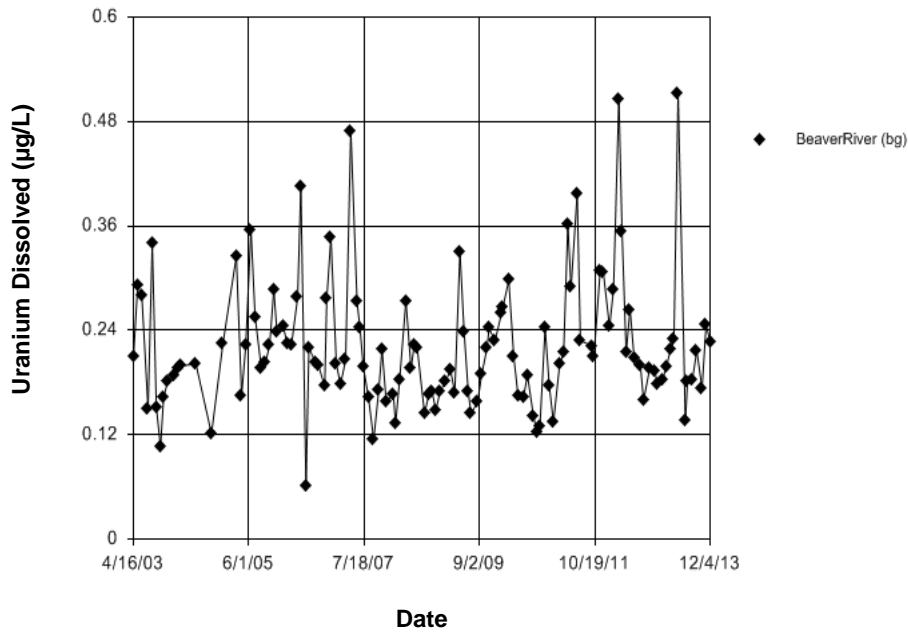


Figure E232 Beaver River: Uranium Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 1.024
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 6 groups of files in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 1.024
 Adjusted Kruskal-Wallis statistic (H') = 1.024

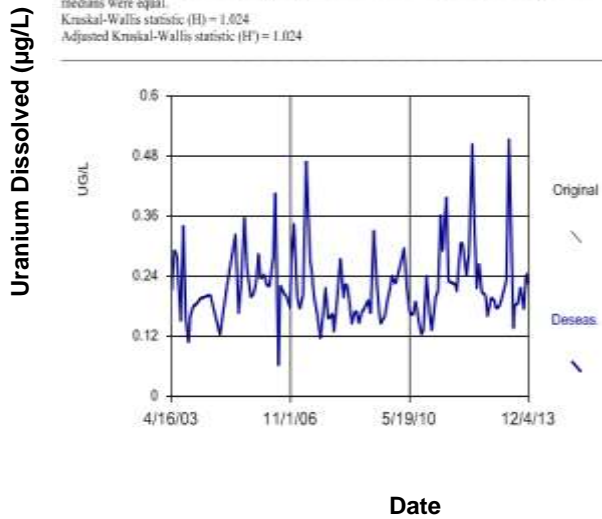


Figure E233 Beaver River: Uranium Dissolved

Sen's Slope Estimator

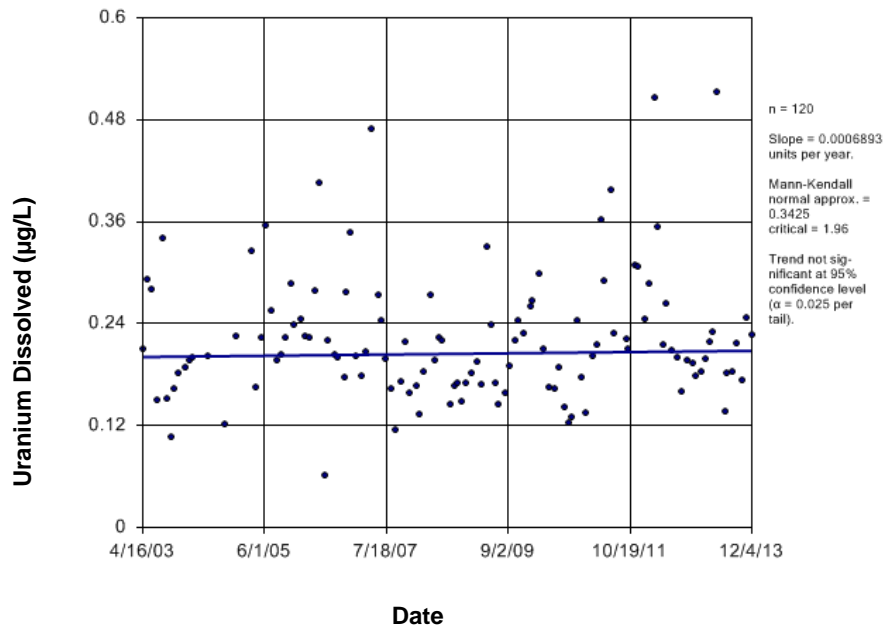


Figure E234 Beaver River: Uranium Dissolved

Time Series

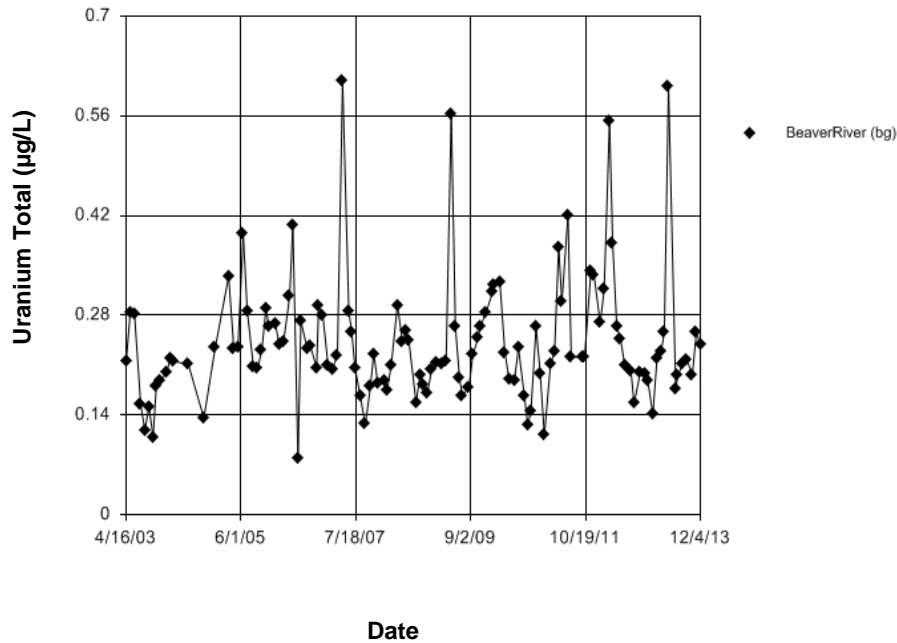


Figure E235 Beaver River: Uranium Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 1.263
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 6 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 1.263
 Adjusted Kruskal-Wallis statistic (H') = 1.263

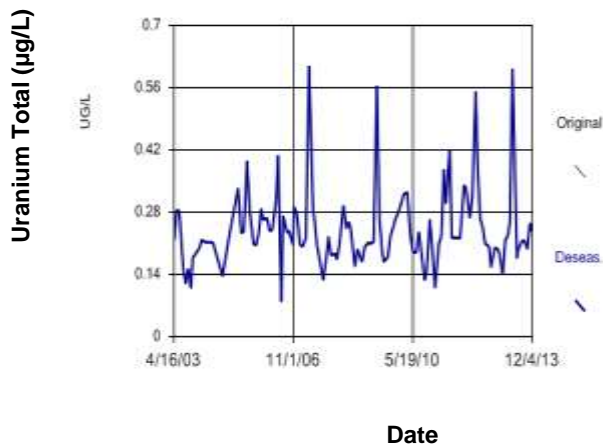


Figure E236 Beaver River: Uranium Total

Sen's Slope Estimator

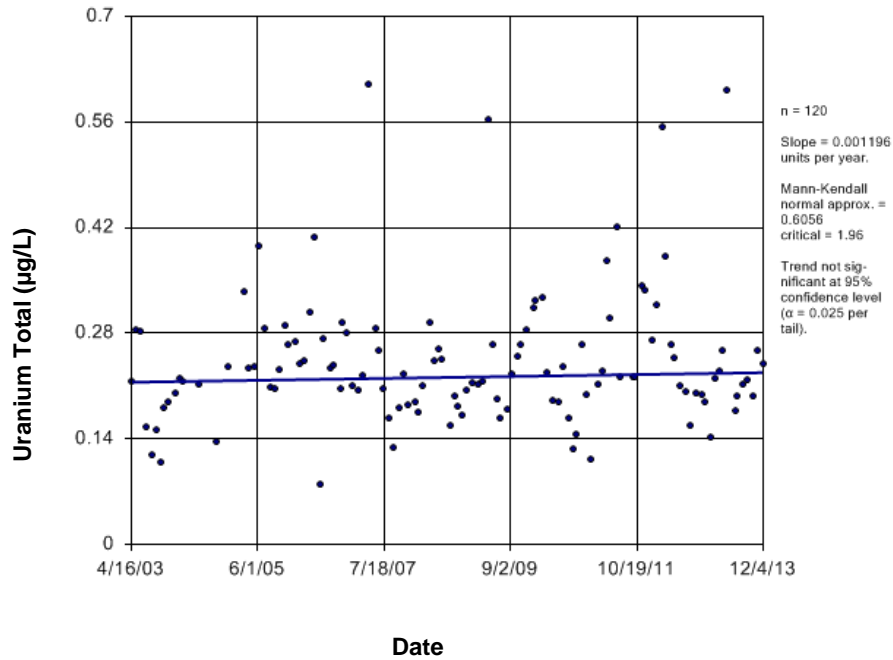


Figure E237 Beaver River: Uranium Total

Time Series

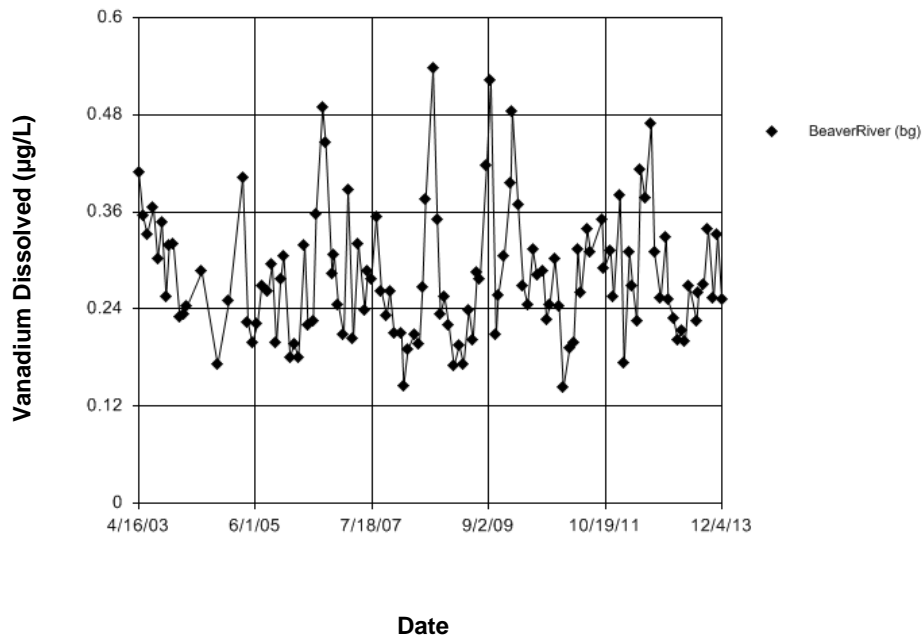
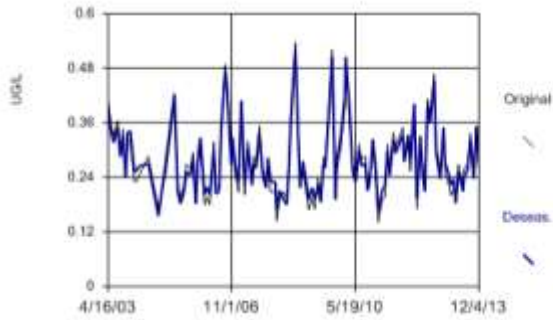


Figure E238 Beaver River: Vanadium Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 7.62
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 3 groups of data in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 7.619
 Adjusted Kruskal-Wallis statistic (H') = 7.62

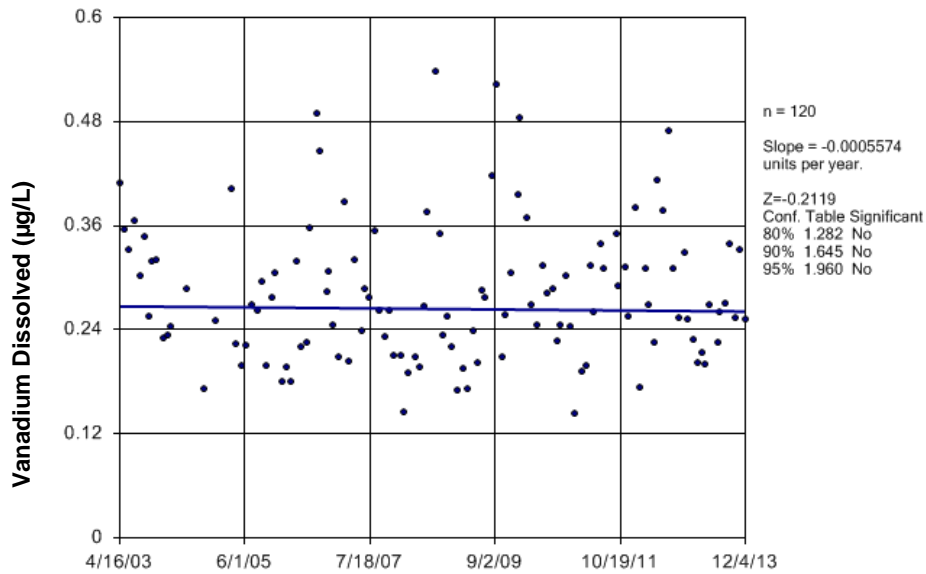
Vanadium Dissolved ($\mu\text{g/L}$)



Date

Figure E239 Beaver River: Vanadium Dissolved

Seasonal Kendall



Date

Figure E240 Beaver River: Vanadium Dissolved

Time Series

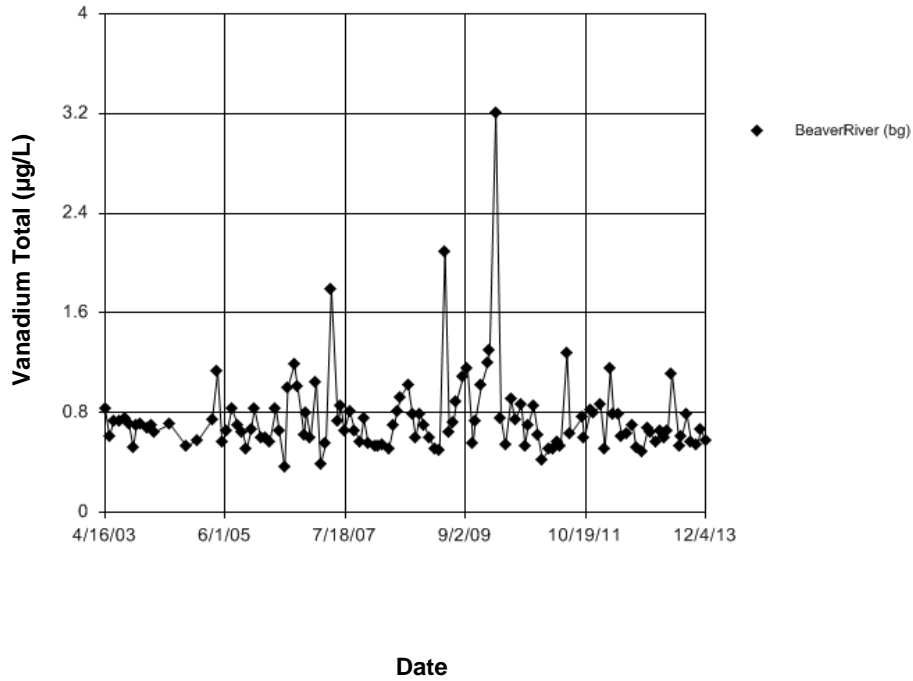


Figure E241 Beaver River: Vanadium Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 1.957
 Tabulated Chi-Squared value = 3.841 with 3 degrees of freedom at the 5% significance level.
 There were 3 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H*) was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 1.957
 Adjusted Kruskal-Wallis statistic (H*) = 1.957

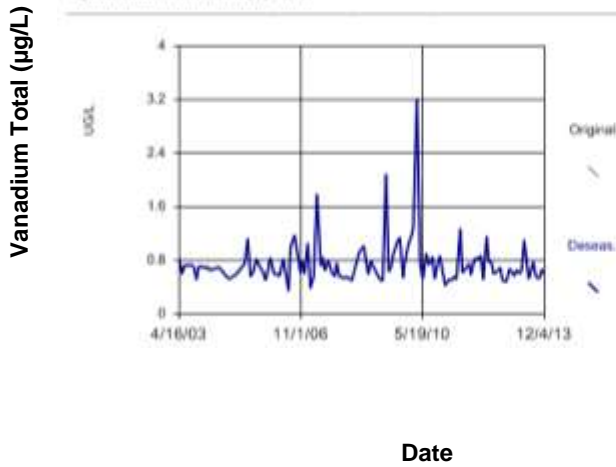


Figure E242 Beaver River: Vanadium Total

Sen's Slope Estimator

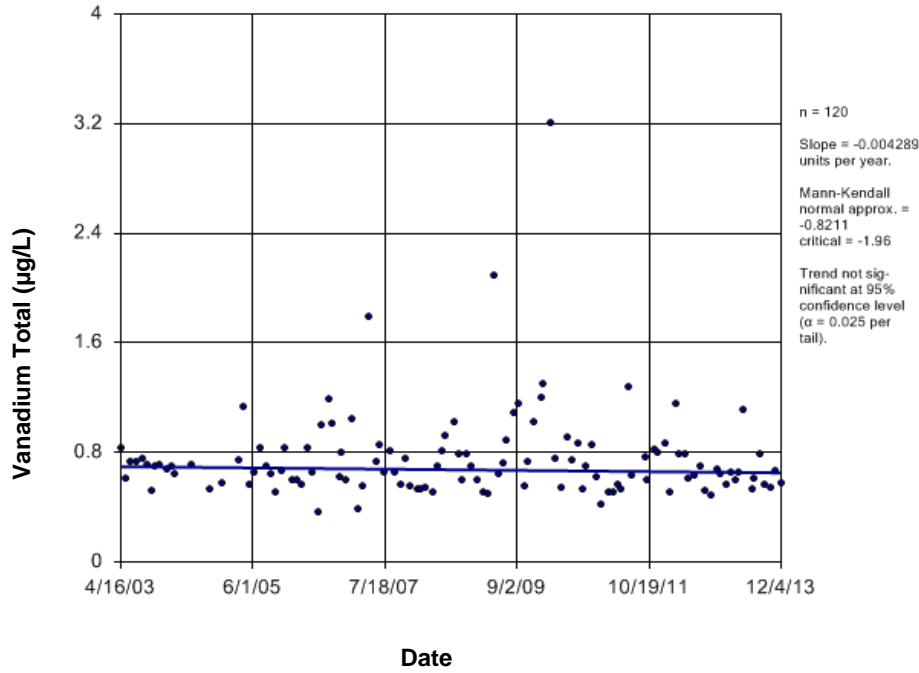


Figure E243 Beaver River: Vanadium Total

Time Series

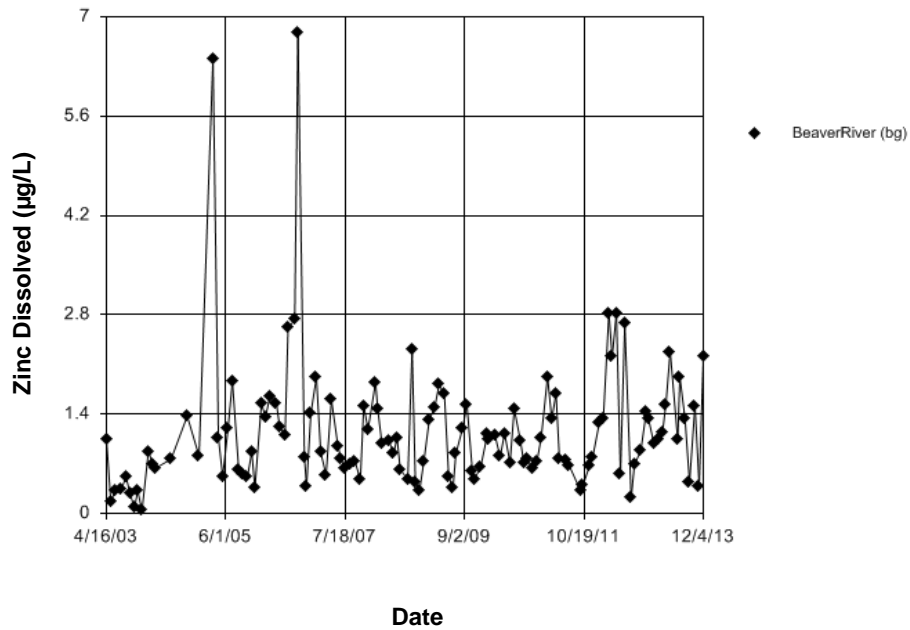


Figure E244 Beaver River: Zinc Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 1.475
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 1.475
 Adjusted Kruskal-Wallis statistic (H') = 1.475

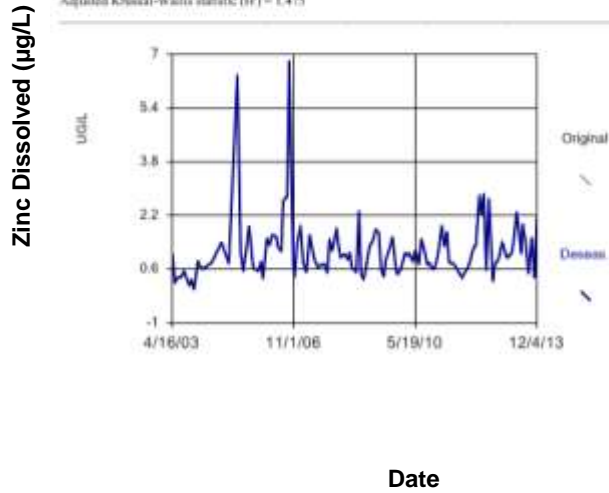


Figure E245 Beaver River: Zinc Dissolved

Sen's Slope Estimator

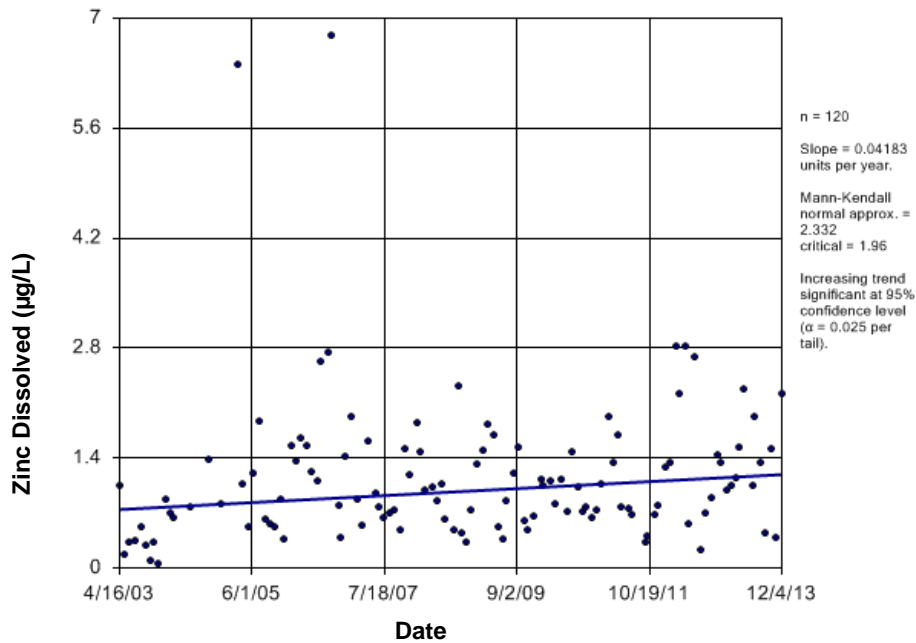


Figure E246 Beaver River: Zinc Dissolved

Time Series

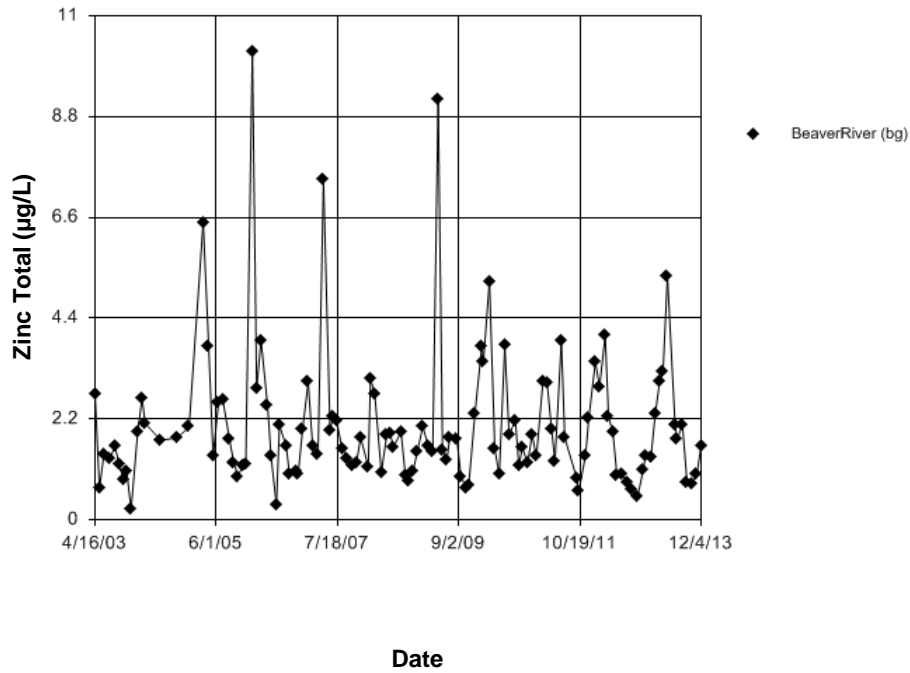


Figure E247 Beaver River: Zinc Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates **SEASONALITY** at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
 Calculated Kruskal-Wallis statistic = 5.928
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H_{adj}) was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 5.927
 Adjusted Kruskal-Wallis statistic (H_{adj}) = 5.928

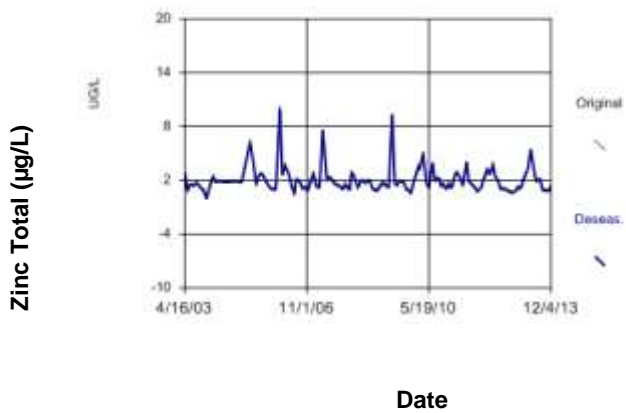


Figure E248 Beaver River: Zinc Total

Seasonal Kendall

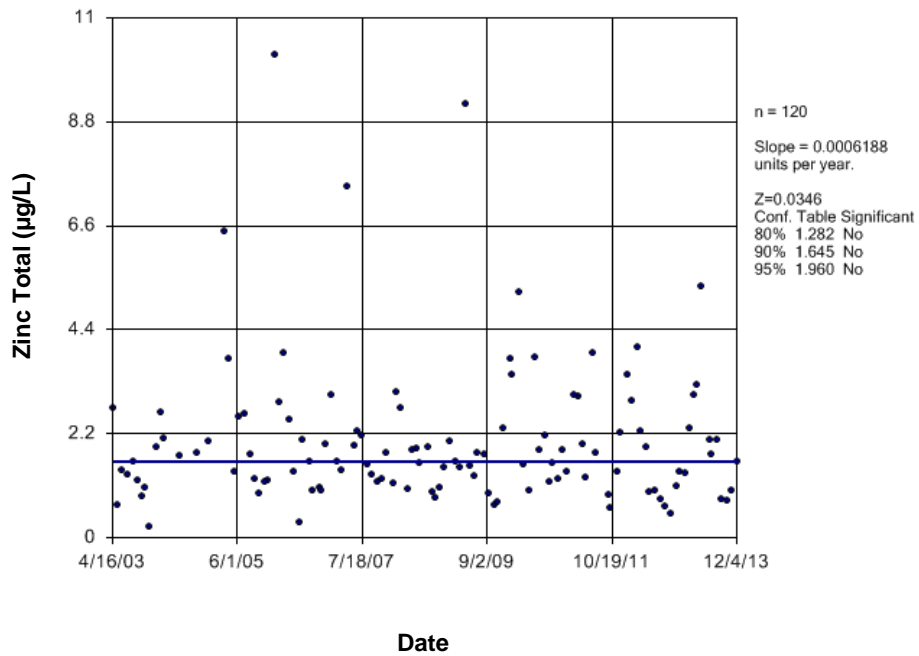


Figure E249 Beaver River: Zinc Total

Time Series

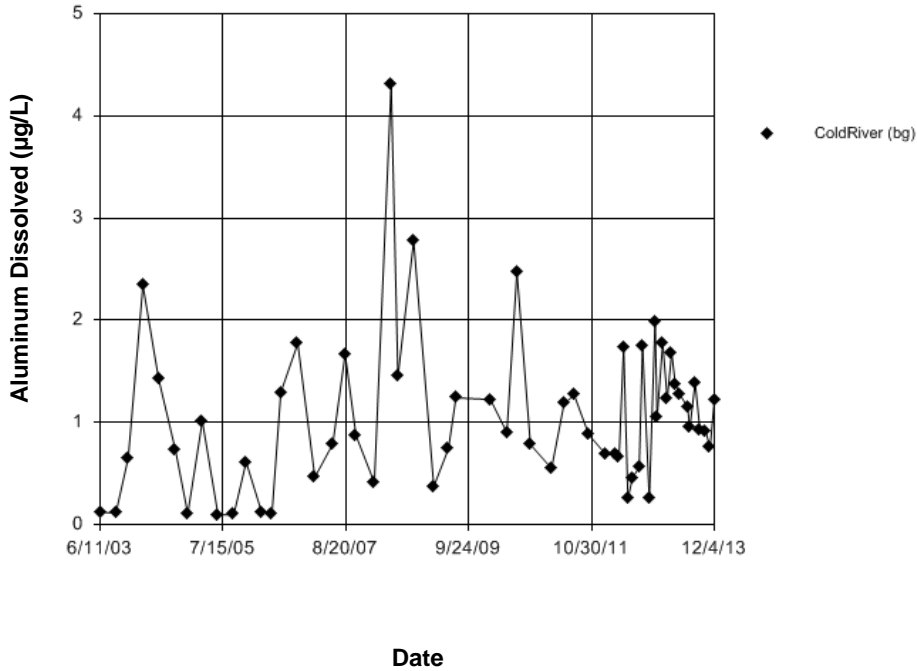


Figure E250 Cold River: Aluminum Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.5662
 Tabulated Chi-Squared value = 3.841 with 1 degrees of freedom at the 5% significance level.
 There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

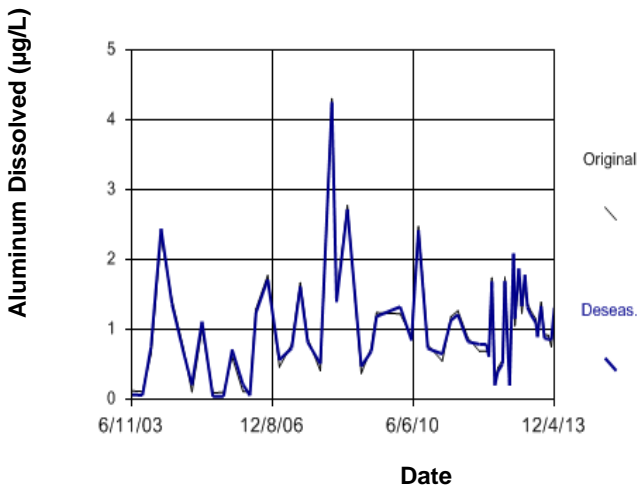


Figure E251 Cold River: Aluminum Dissolved

Sen's Slope Estimator

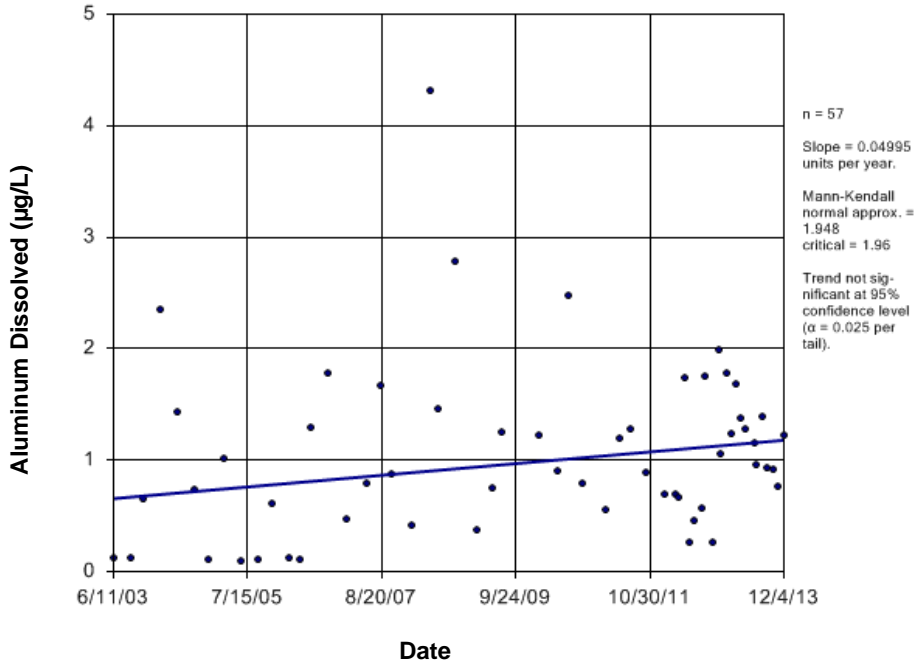


Figure E252 Cold River: Aluminum Dissolved

Time Series

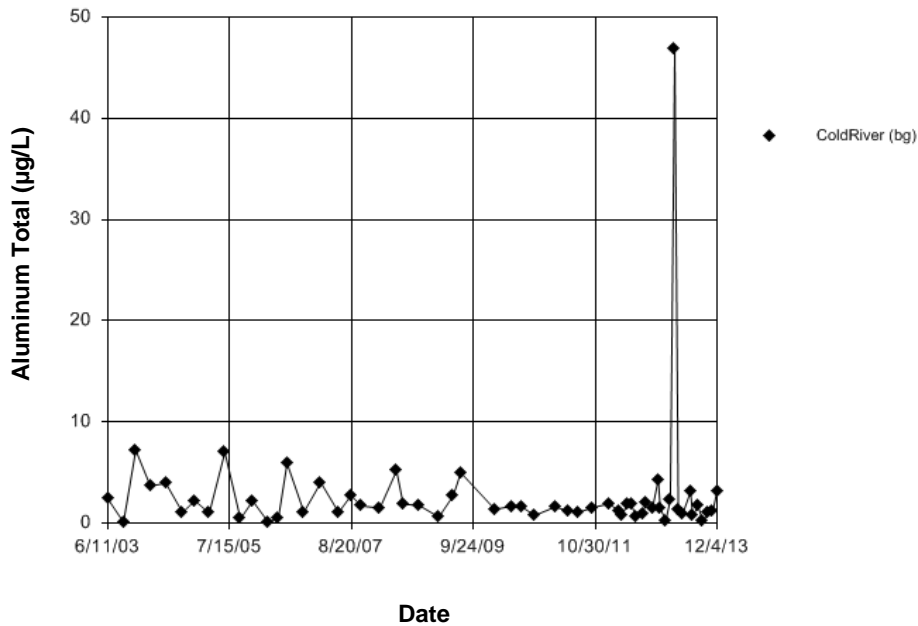
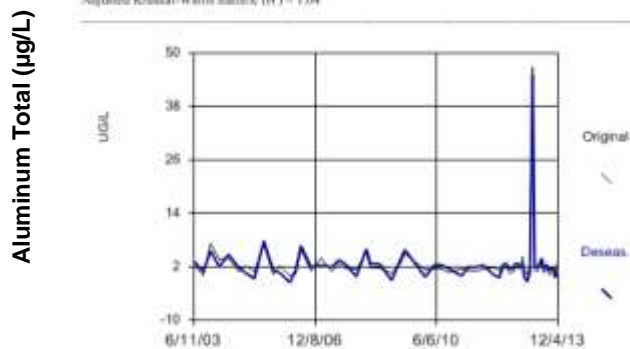


Figure E253 Cold River: Aluminum Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 1.04
Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 1.04
Adjusted Kruskal-Wallis statistic (H') = 1.04



Date

Figure E254 Cold River: Aluminum Total

Sen's Slope Estimator

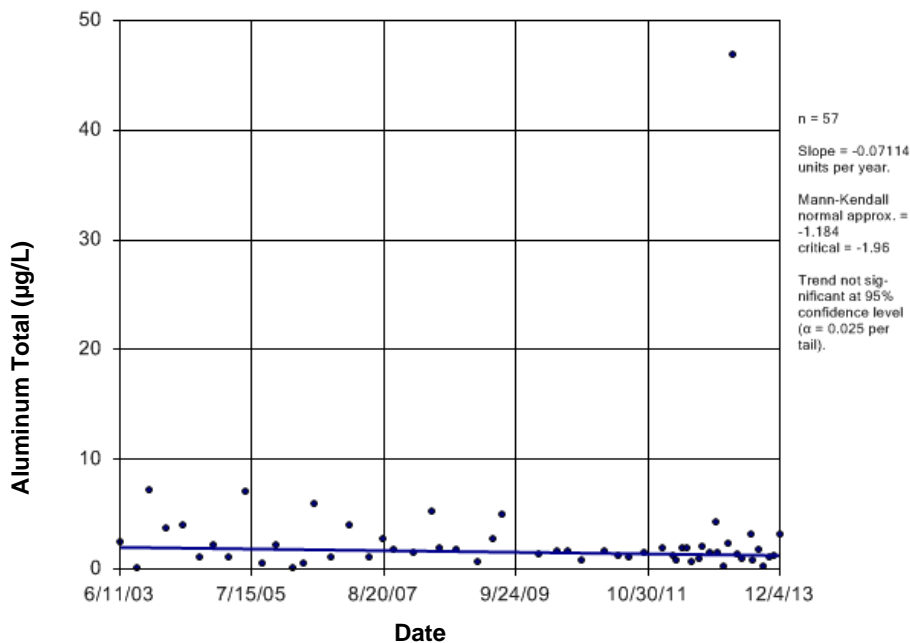


Figure E255 Cold River: Aluminum Total

Time Series

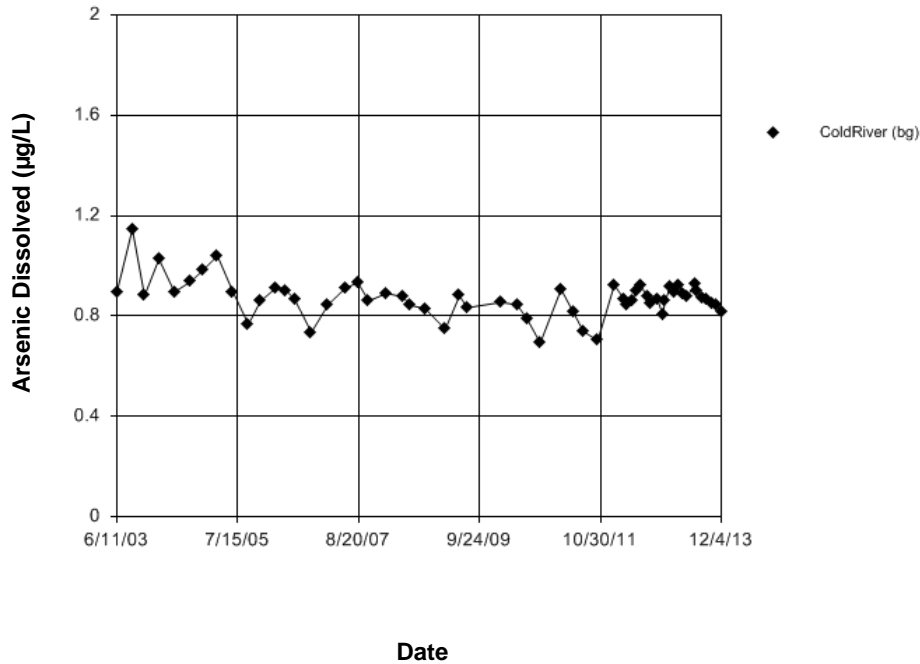


Figure E256 Cold River: Arsenic Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 1.331
Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 1.331
Adjusted Kruskal-Wallis statistic (H') = 1.114

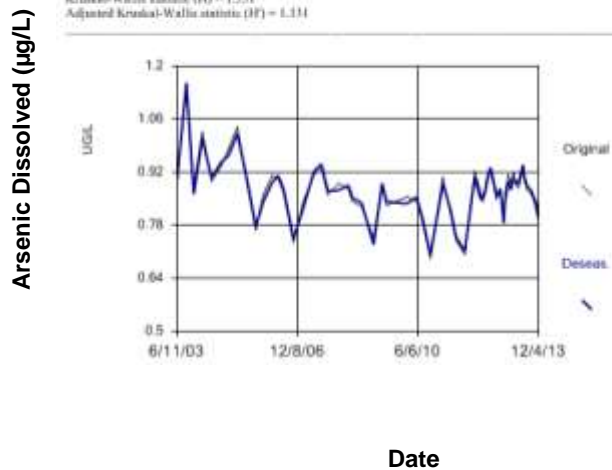


Figure E257 Cold River: Arsenic Dissolved

Sen's Slope Estimator

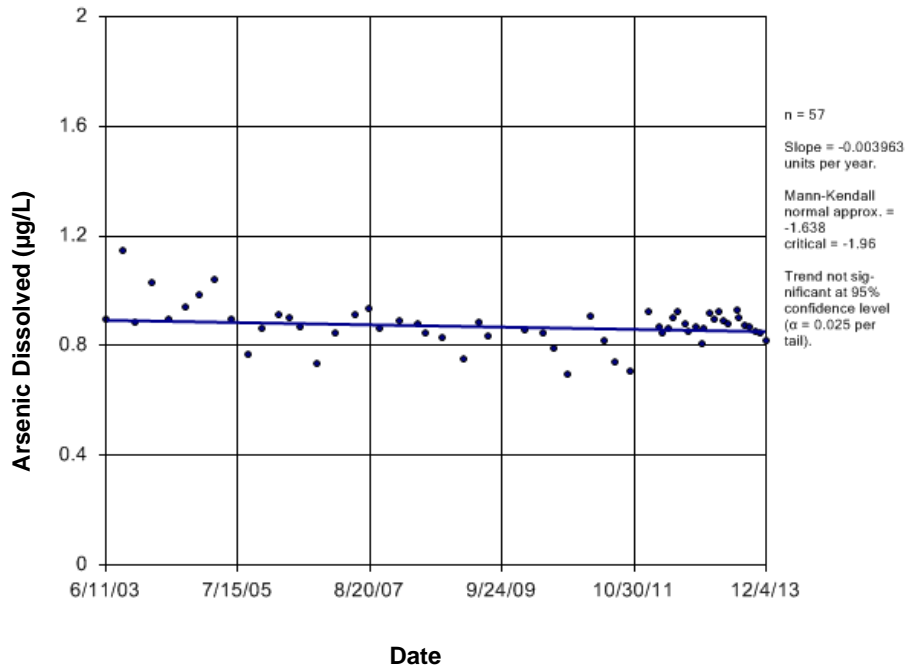


Figure E258 Cold River: Arsenic Dissolved

Time Series

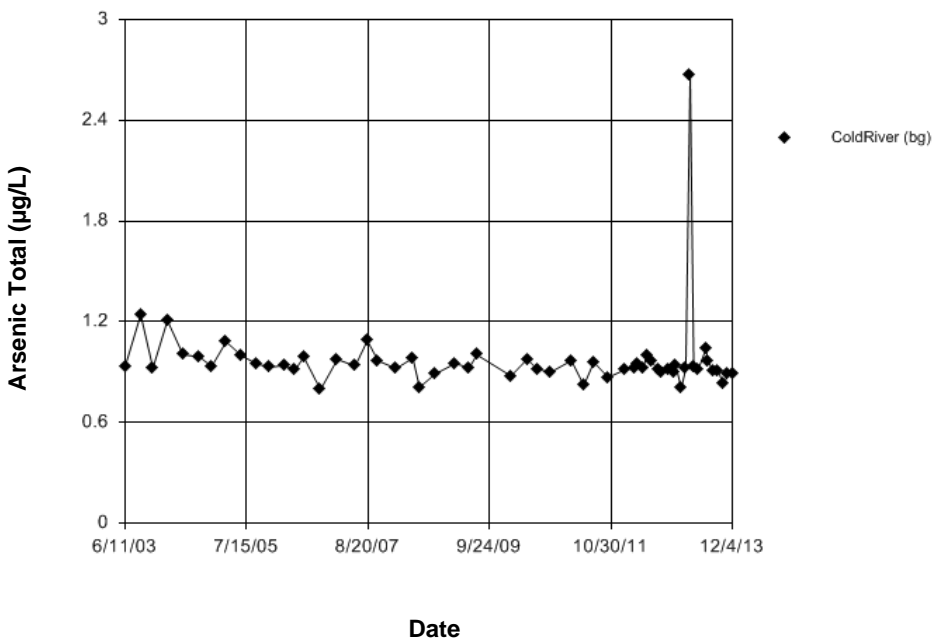
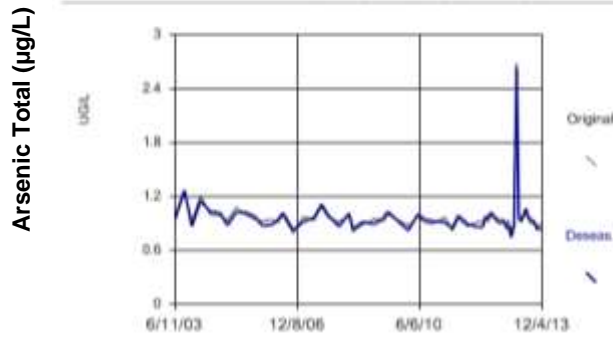


Figure E259 Cold River: Arsenic Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-Squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.04026
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 0.04026
 Adjusted Kruskal-Wallis statistic (H') = 0.04026



Date

Figure E260 Cold River: Arsenic Total

Sen's Slope Estimator

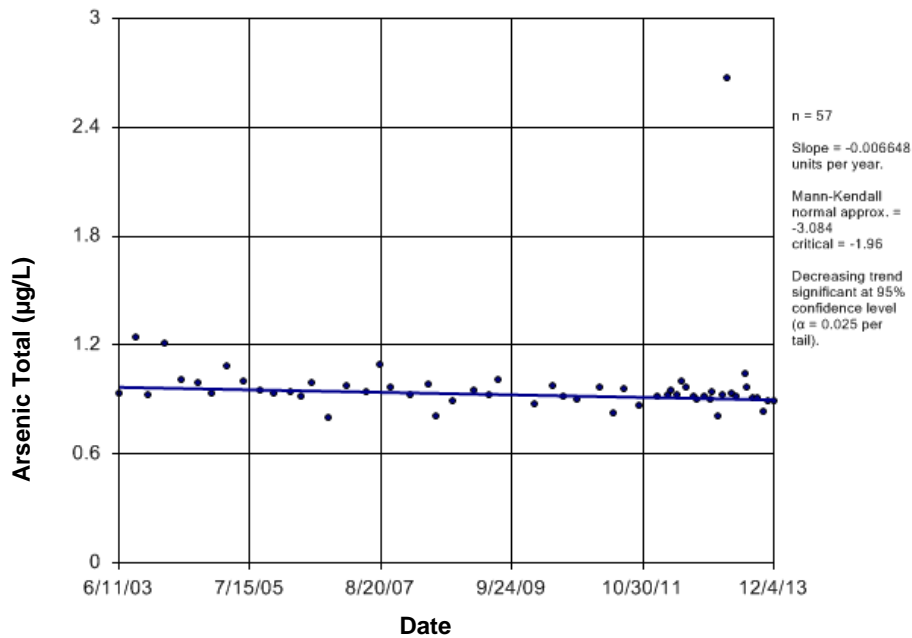
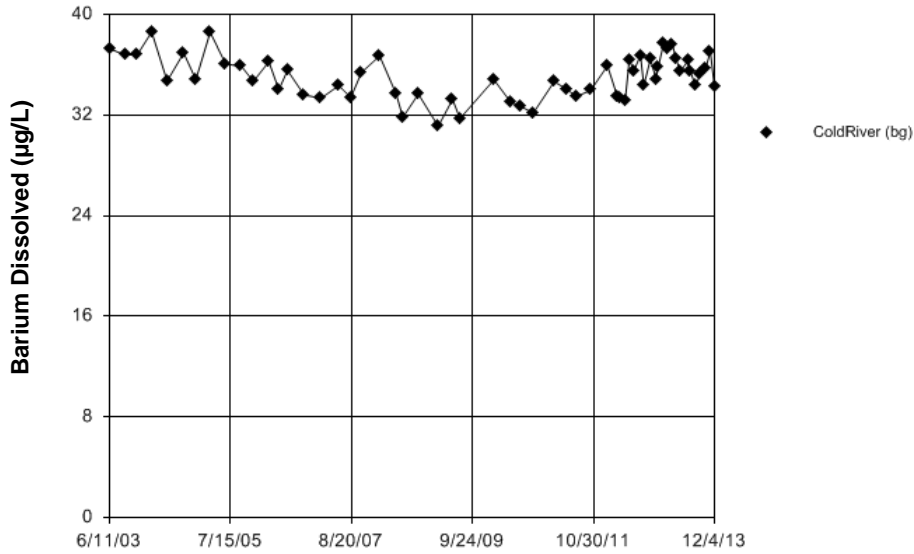


Figure E261 Cold River: Arsenic Total

Time Series

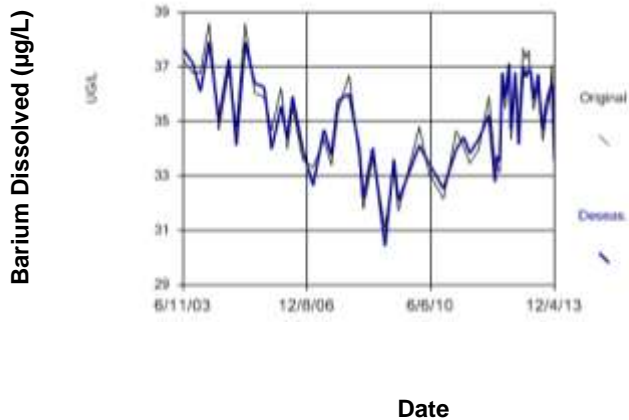


Date

Figure E262 Cold River: Barium Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 3.021
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 3.02
 Adjusted Kruskal-Wallis statistic (H') = 3.021



Date

Figure E263 Cold River: Barium Dissolved

Seasonal Kendall

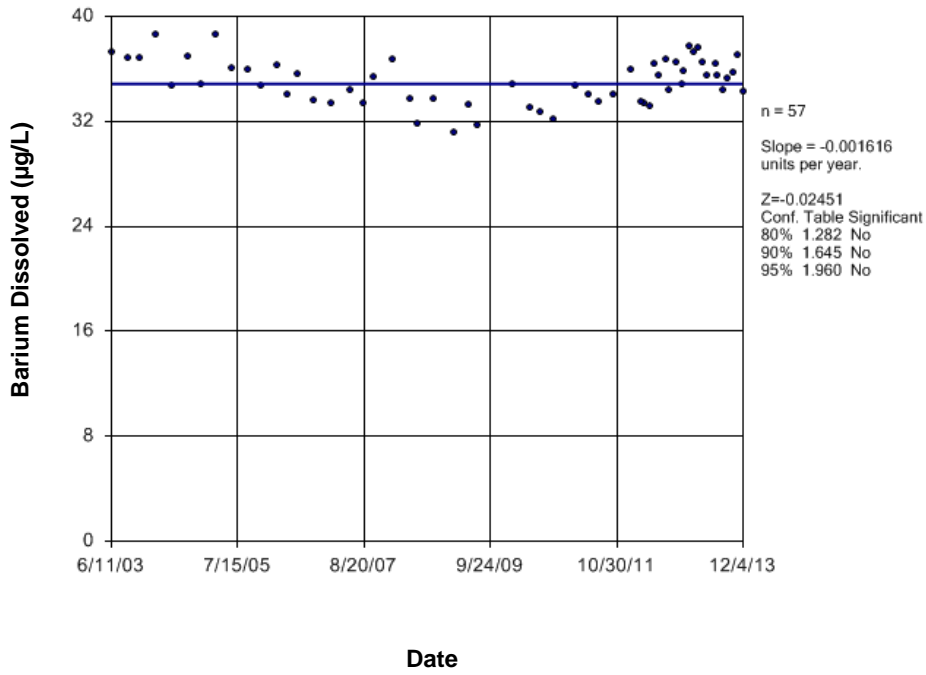


Figure E264 Cold River: Barium Dissolved

Time Series

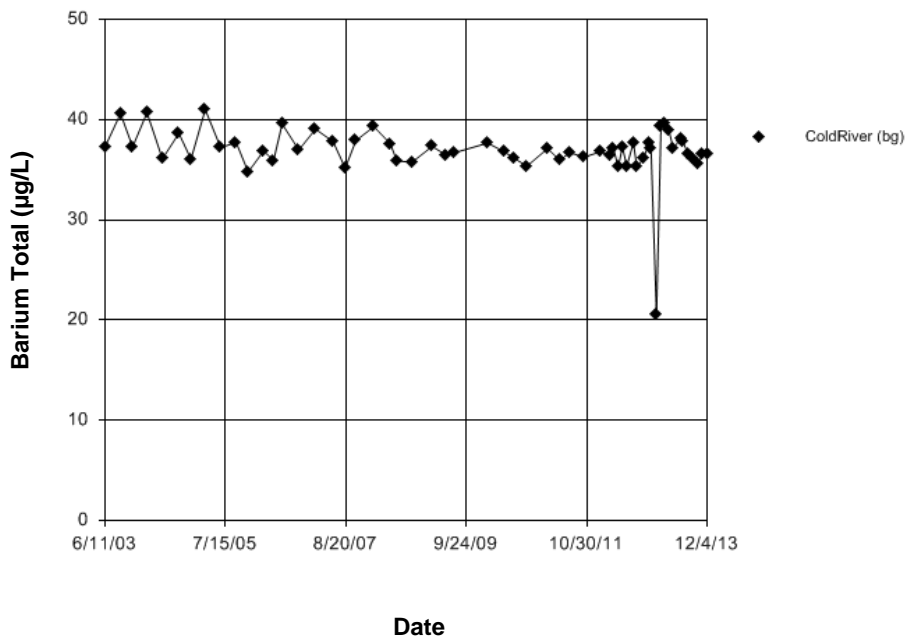
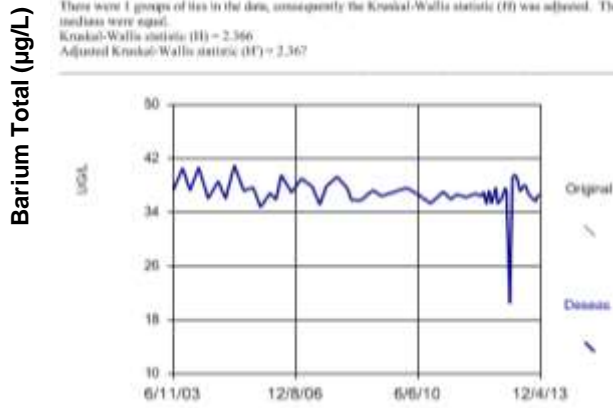


Figure E265 Cold River: Barium Total

Seasonality

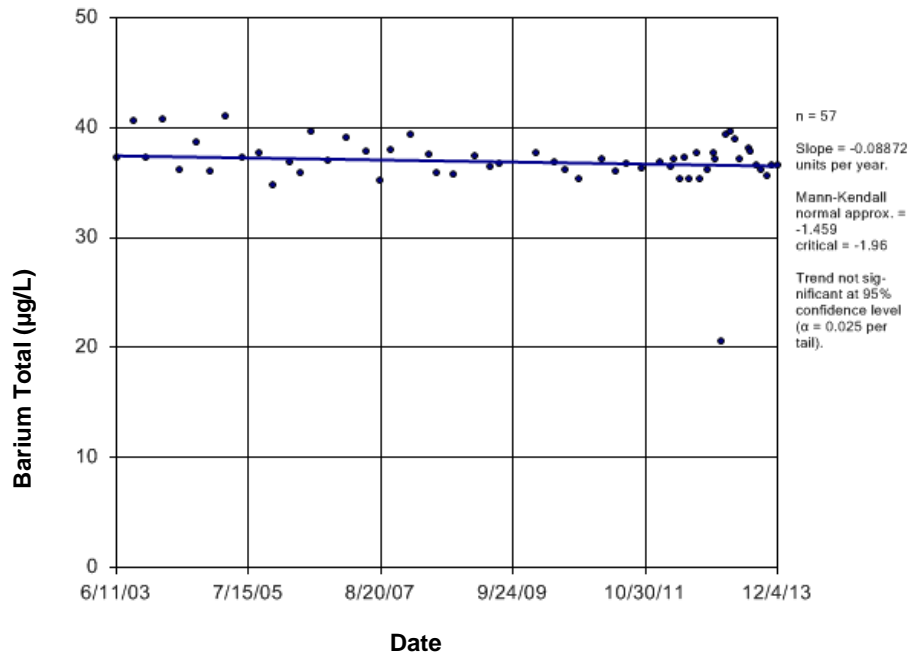
For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 2.367
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 4 groups of data in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 2.366
 Adjusted Kruskal-Wallis statistic (H') = 2.367



Date

Figure E266 Cold River: Barium Total

Sen's Slope Estimator



Date

Figure E267 Cold River: Barium Total

Time Series

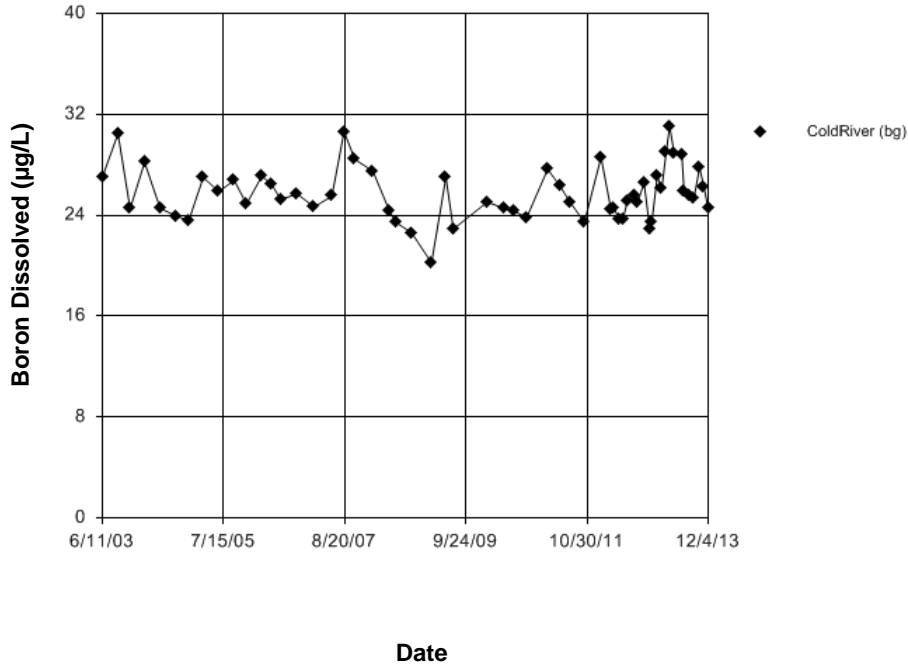


Figure E268 Cold River: Boron Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates **NO SEASONALITY** at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.002517
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 3 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 0.002516
 Adjusted Kruskal-Wallis statistic (H') = 0.002517

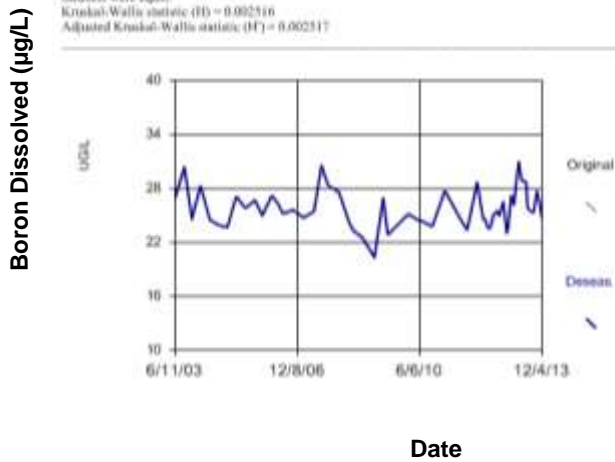


Figure E269 Cold River: Boron Dissolved

Sen's Slope Estimator

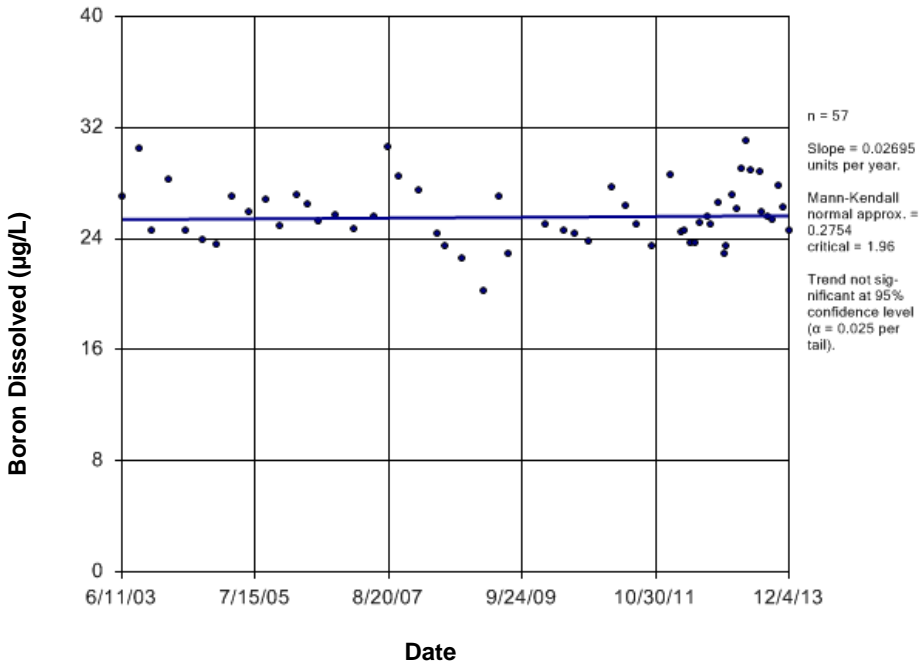


Figure E270 Cold River: Boron Dissolved

Time Series

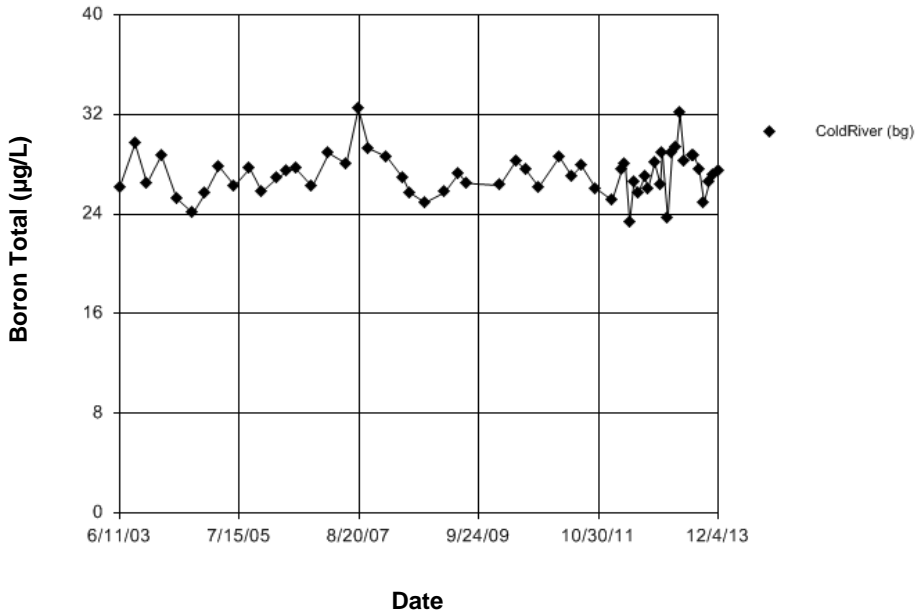


Figure E271 Cold River: Boron Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.1544. Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level. There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal. Kruskal-Wallis statistic (H) = 0.1544. Adjusted Kruskal-Wallis statistic (H') = 0.1544.

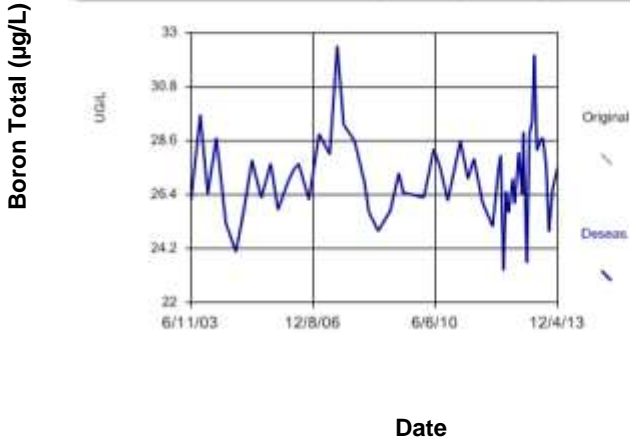


Figure E272 Cold River: Boron Total

Sen's Slope Estimator

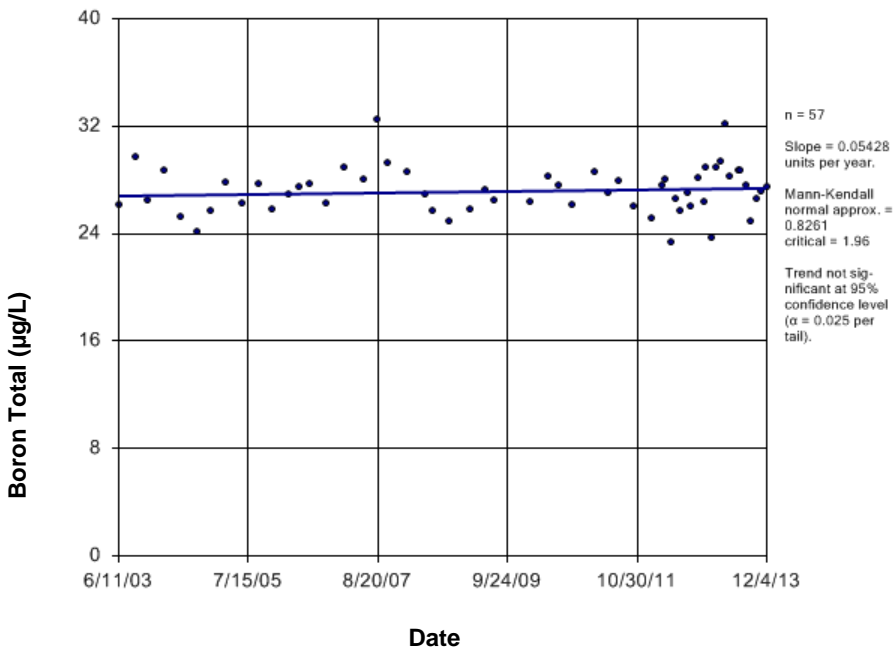


Figure E273 Cold River: Boron Total

Time Series

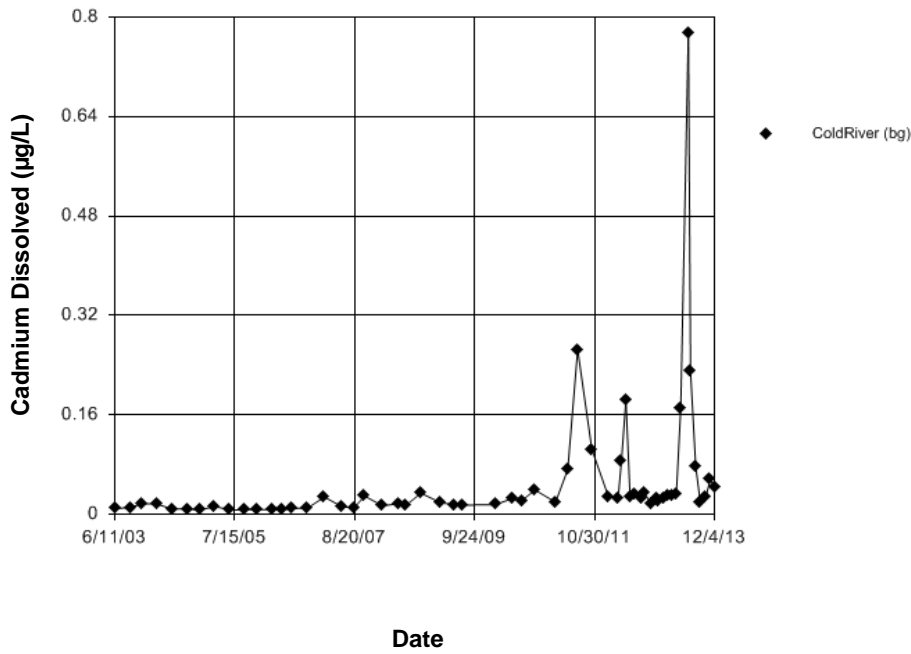


Figure E274 Cold River: Cadmium Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates **NO SEASONALITY** at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.6442. Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level. There were 4 groups of two in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

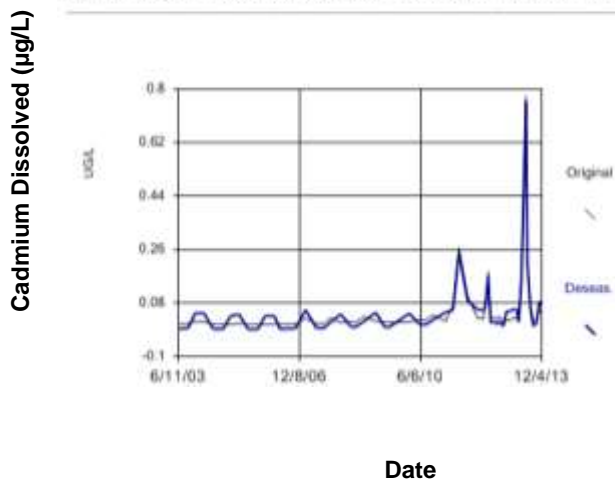


Figure E275 Cold River: Cadmium Dissolved

Sen's Slope Estimator

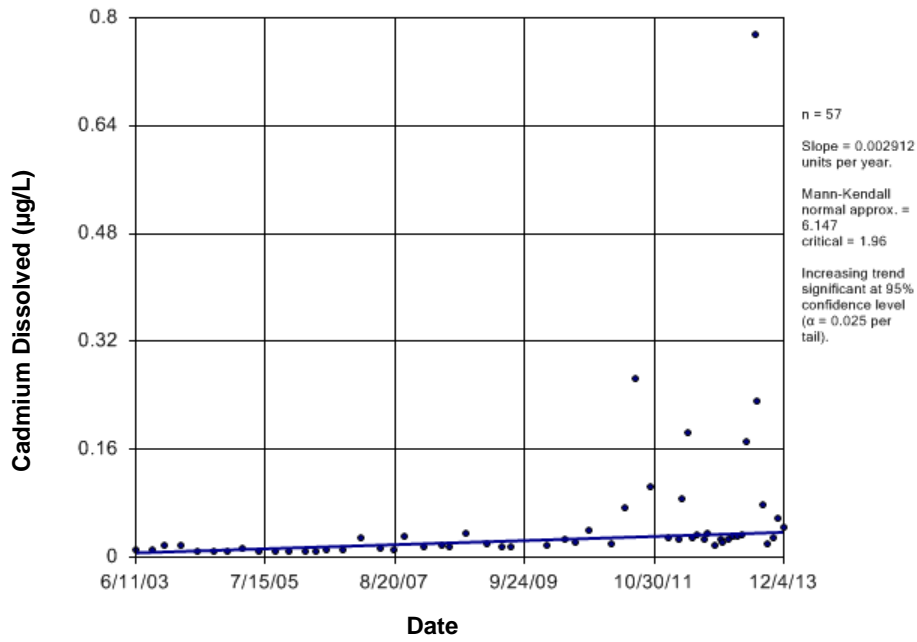


Figure E276 Cold River: Cadmium Dissolved

Time Series

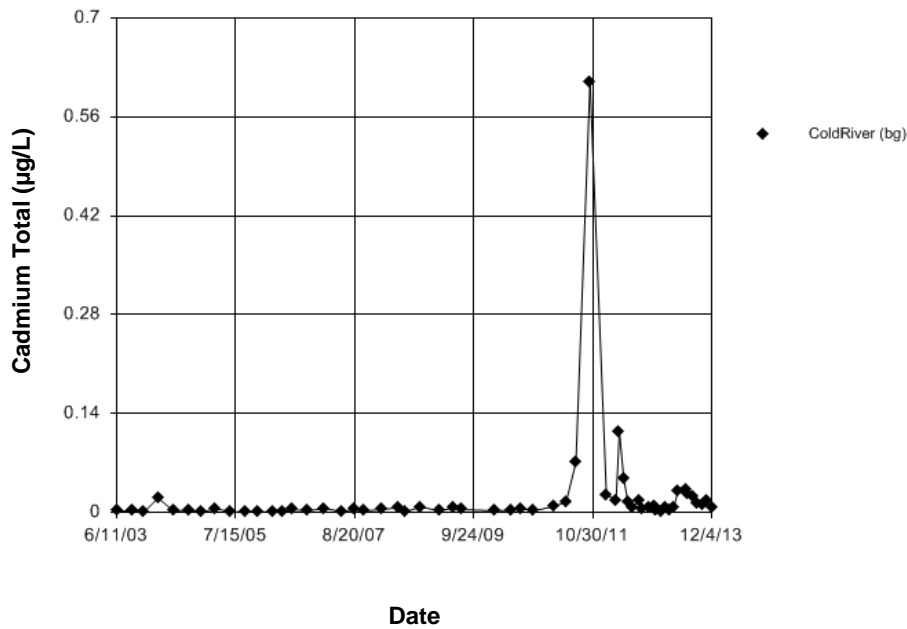
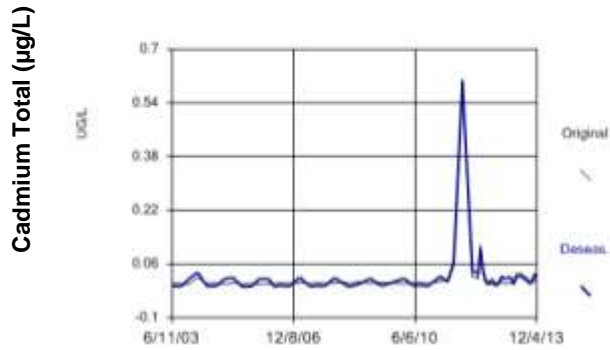


Figure E277 Cold River: Cadmium Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-Squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.6442
Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.



Date

Figure E278 Cold River: Cadmium Total

Sen's Slope Estimator

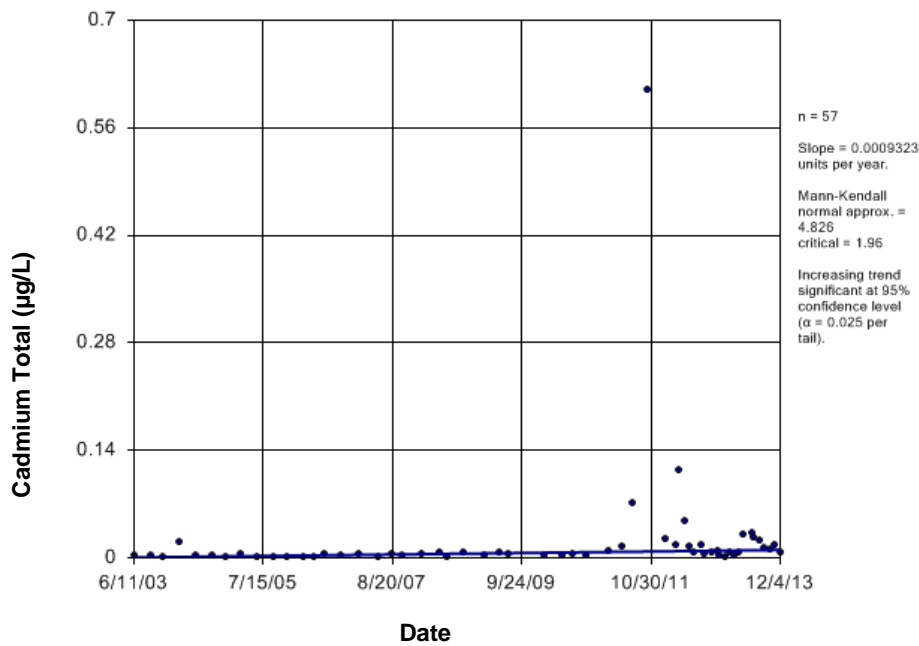


Figure E279 Cold River: Cadmium Total

Time Series

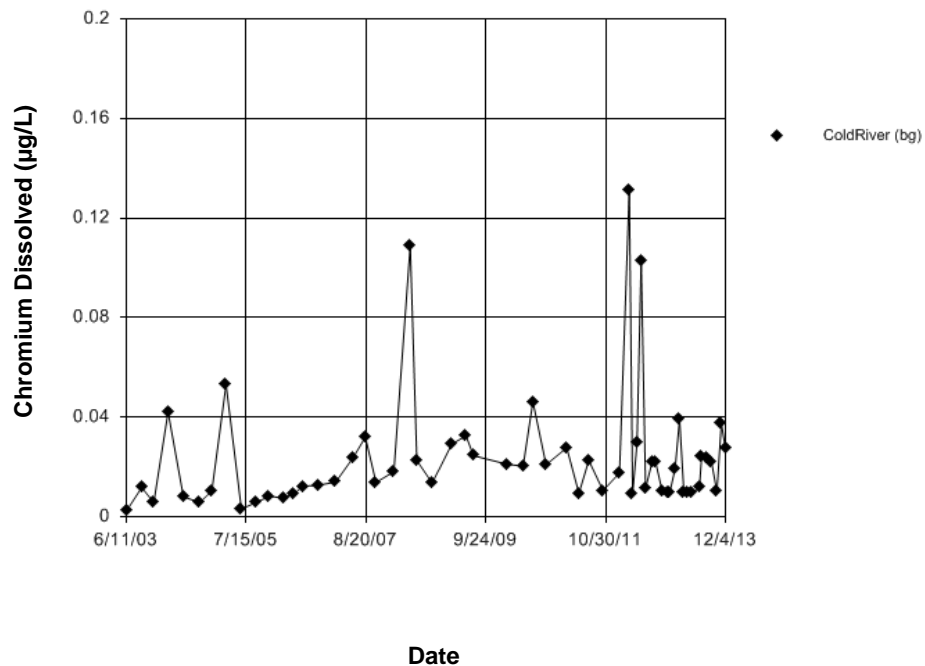


Figure E280 Cold River: Chromium Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.7272
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

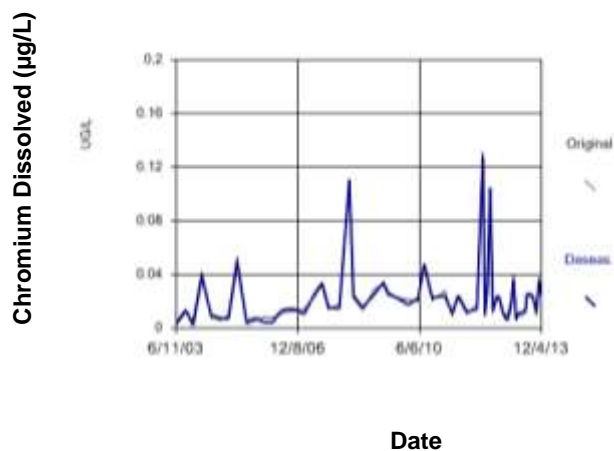


Figure E281 Cold River: Chromium Dissolved

Sen's Slope Estimator

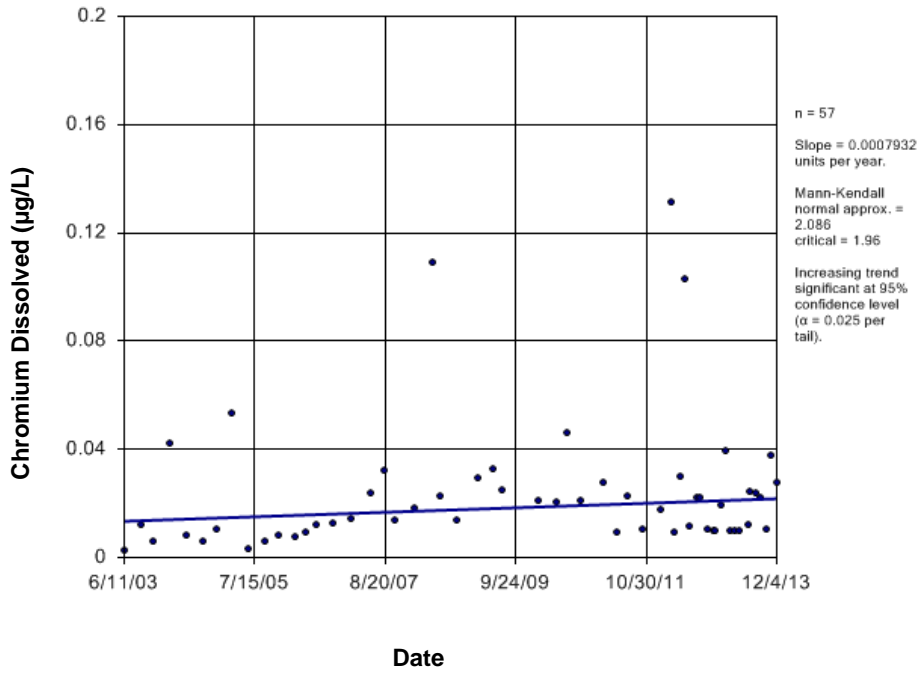


Figure E282 Cold River: Chromium Dissolved

Time Series

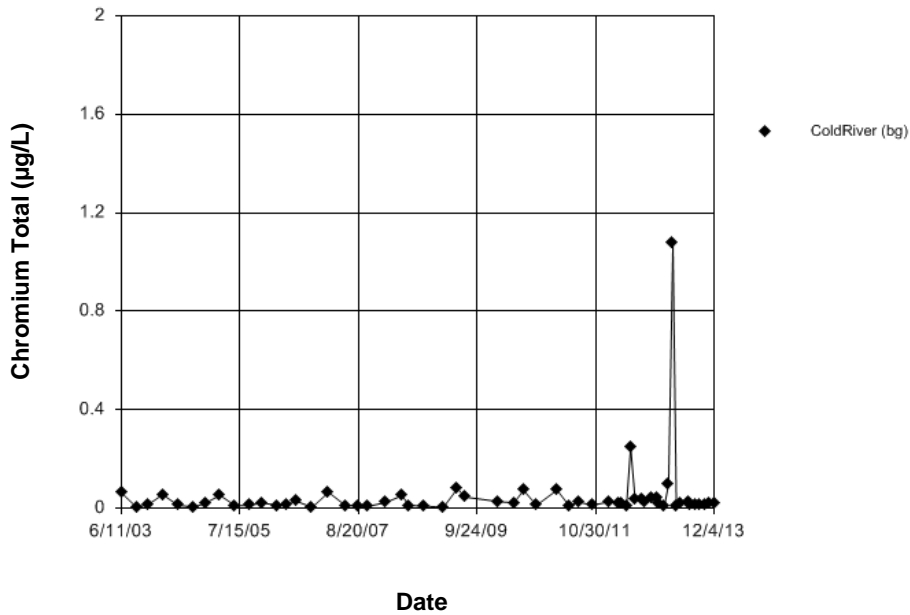
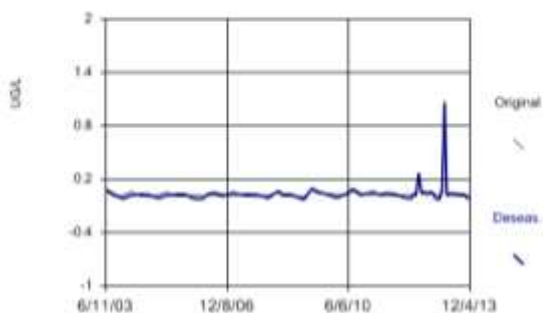


Figure E283 Cold River: Chromium Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates **NO SEASONALITY** at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-Squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 3.795
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 3.795
 Adjusted Kruskal-Wallis statistic (H') = 3.795

Chromium Total ($\mu\text{g/L}$)

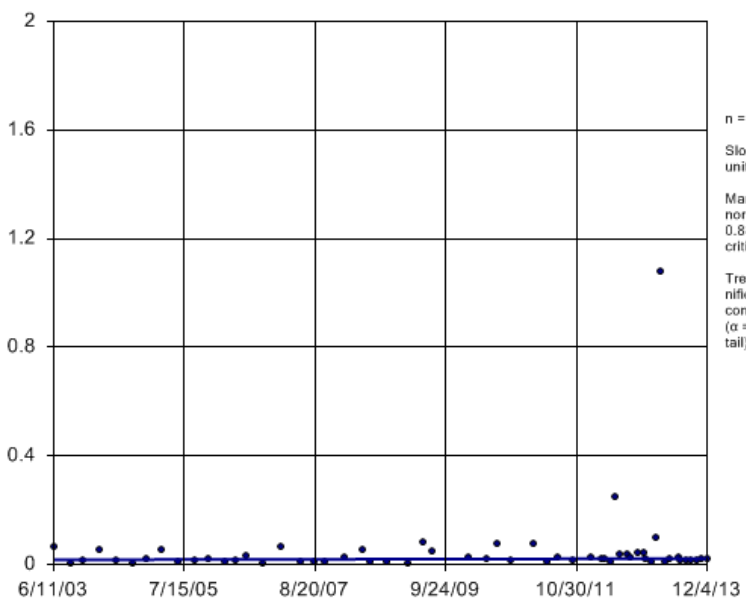


Date

Figure E284 Cold River: Chromium Total

Sen's Slope Estimator

Chromium Total ($\mu\text{g/L}$)



Date

n = 57
 Slope = 0.0004123
 units per year.
 Mann-Kendall
 normal approx. =
 0.8881
 critical = 1.96
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Figure E285 Cold River: Chromium Total

Time Series

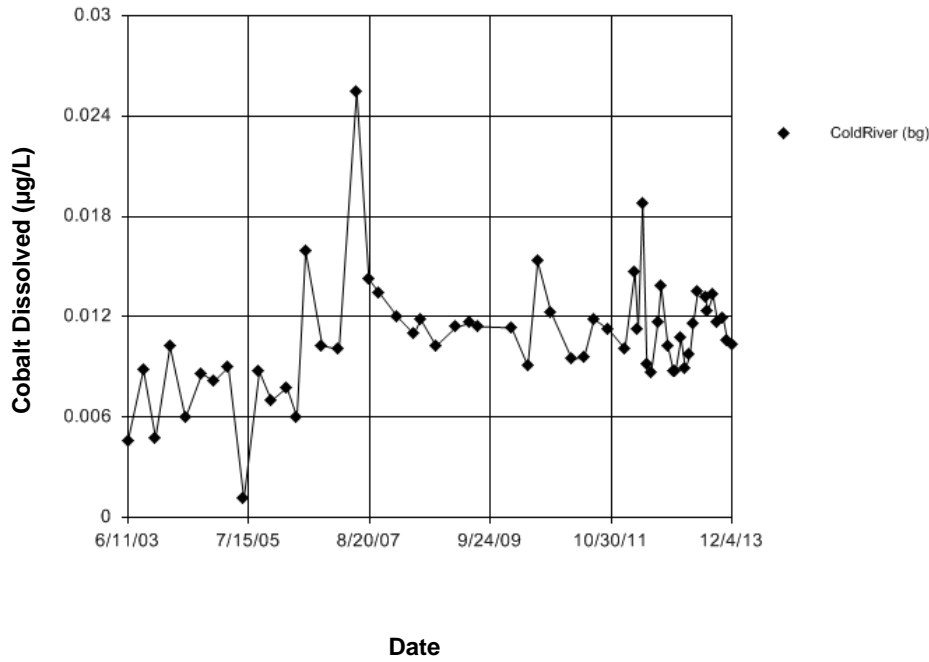


Figure E286 Cold River: Cobalt Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
 Calculated Kruskal-Wallis statistic = 3.402
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 3.402
 Adjusted Kruskal-Wallis statistic (H') = 3.402

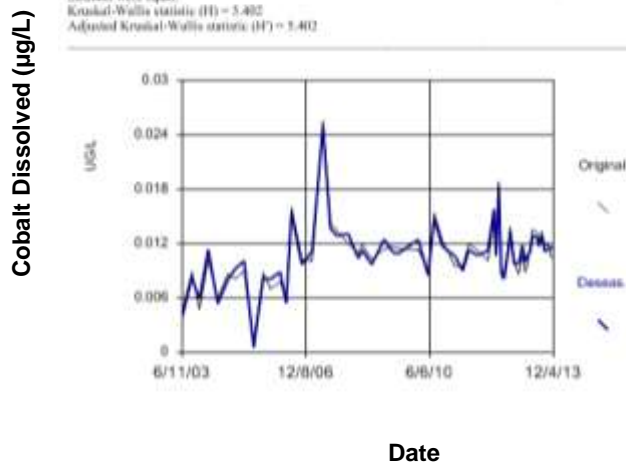


Figure E287 Cold River: Cobalt Dissolved

Seasonal Kendall

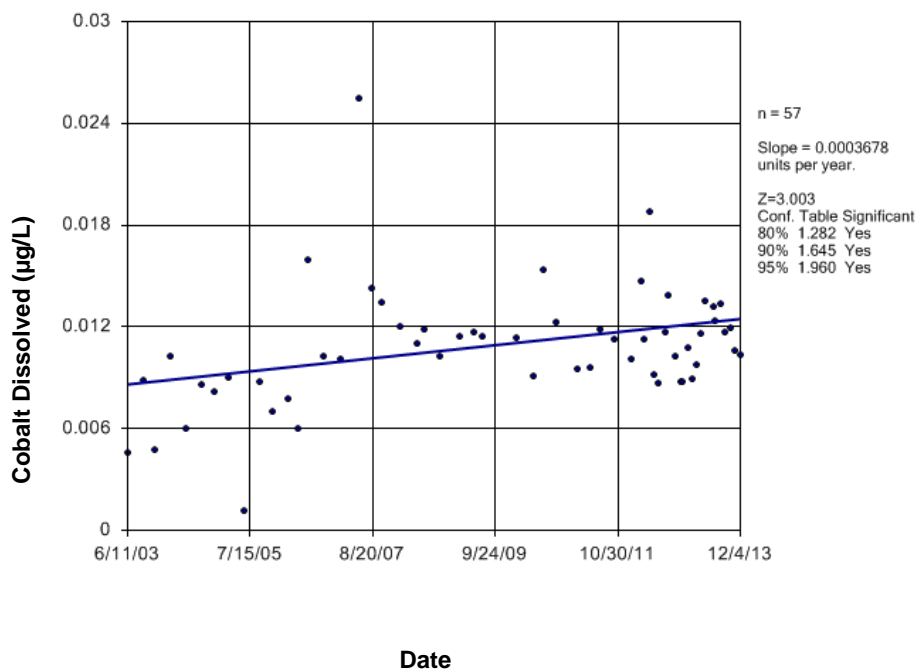


Figure E288 Cold River: Cobalt Dissolved

Time Series

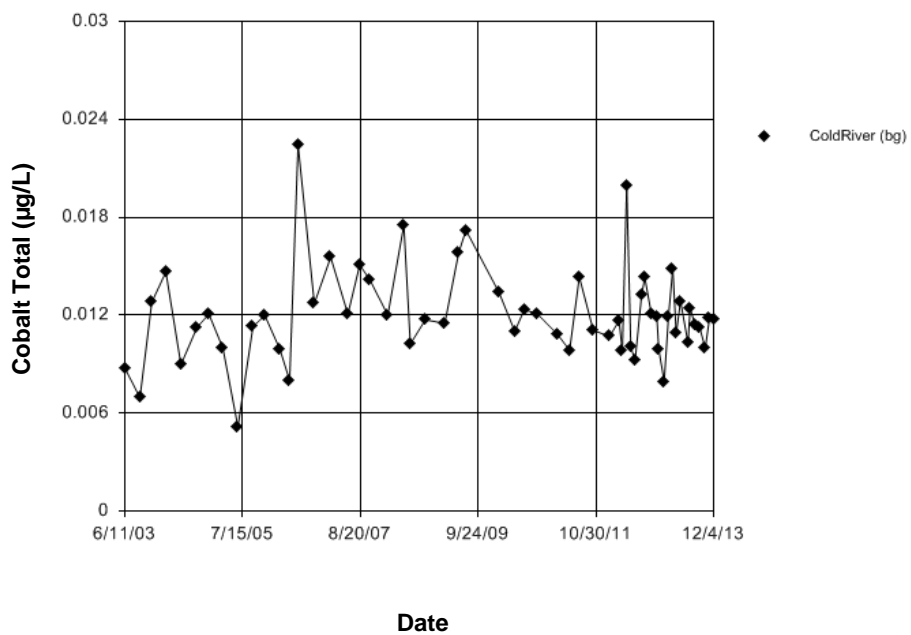


Figure E289 Cold River: Cobalt Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.01573
Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 0.01573
Adjusted Kruskal-Wallis statistic (H') = 0.01373

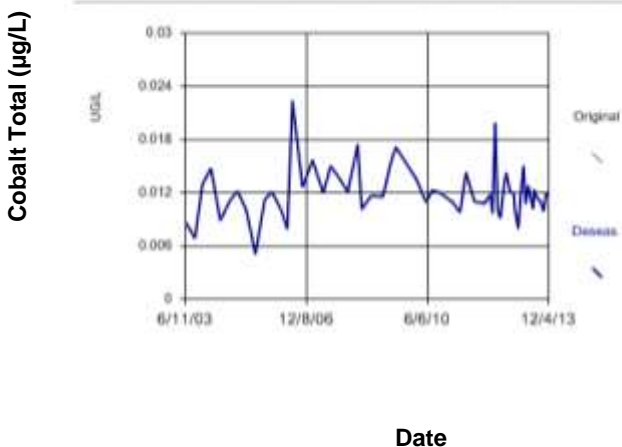


Figure E290 Cold River: Cobalt Total

Sen's Slope Estimator

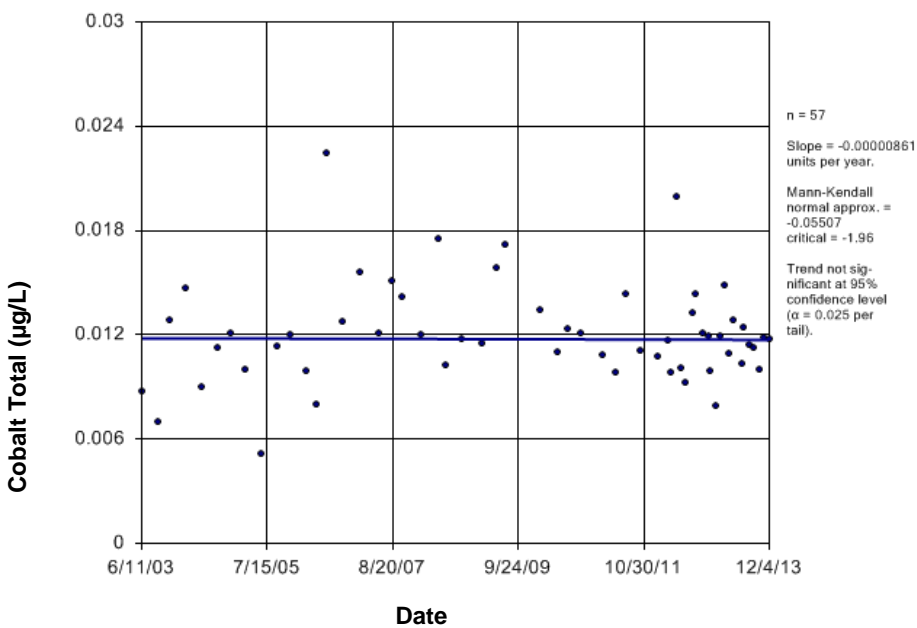


Figure E291 Cold River: Cobalt Total

Time Series

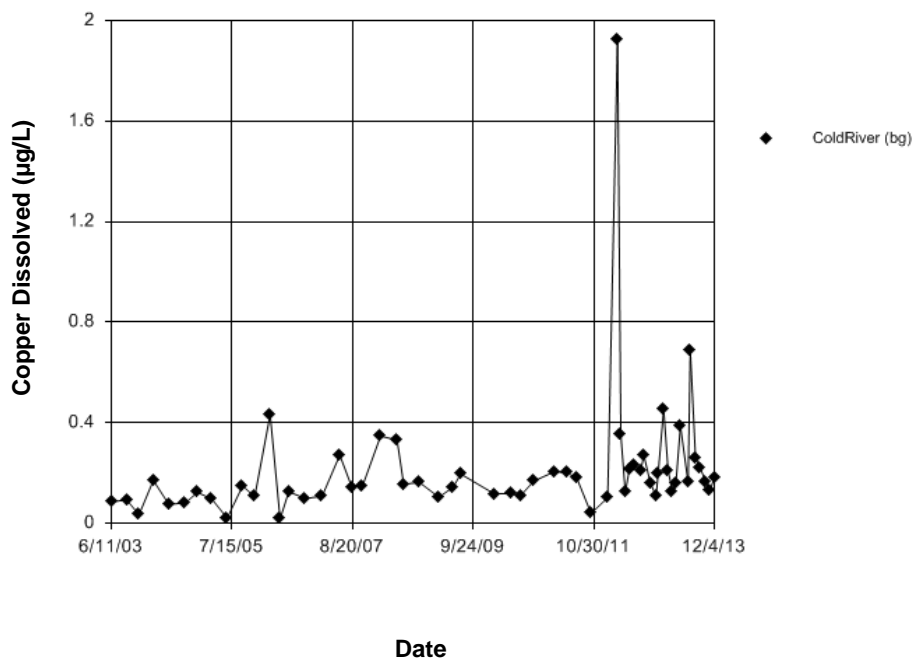


Figure E292 Cold River: Copper Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates **NO SEASONALITY** at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-Squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.02796. Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level. There were 4 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

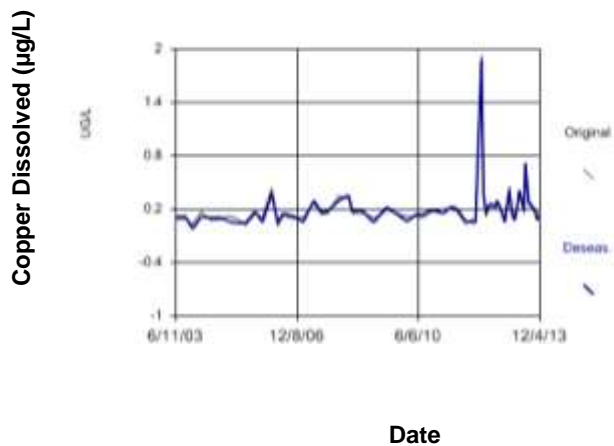


Figure E293 Cold River: Copper Dissolved

Sen's Slope Estimator

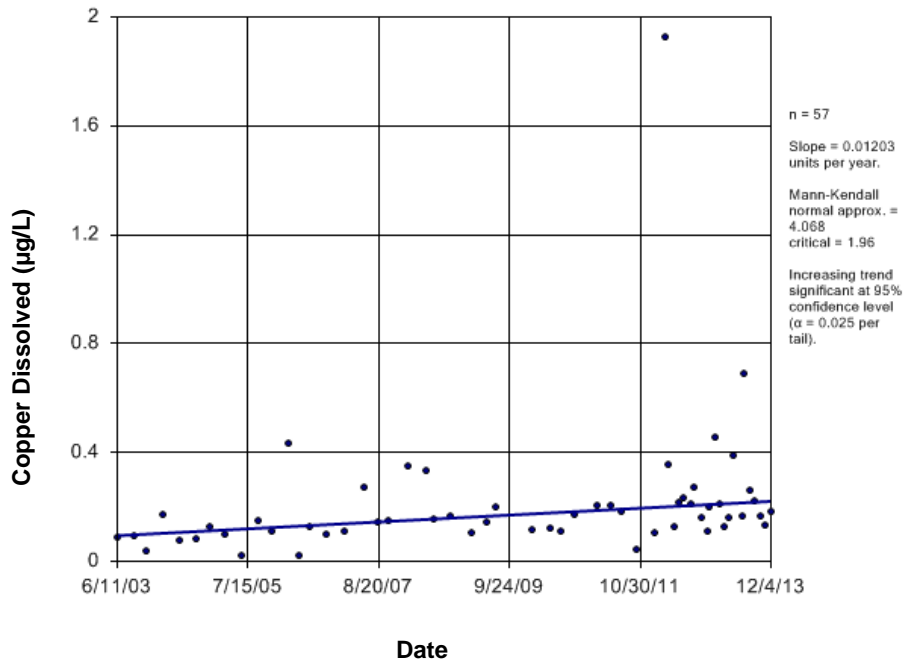


Figure E294 Cold River: Copper Dissolved

Time Series

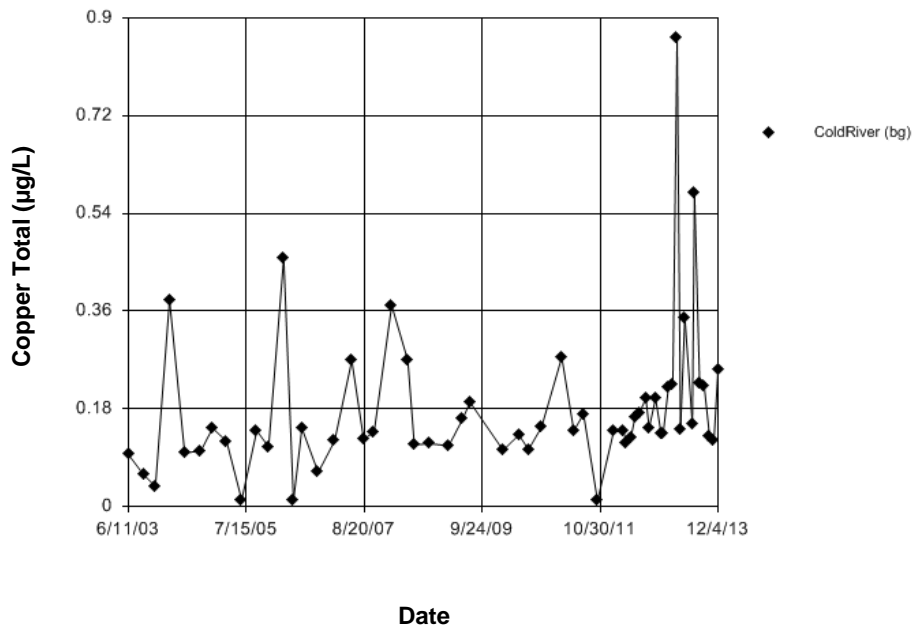


Figure E295 Cold River: Copper Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-Squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.9425
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 6 groups of ties in the data, so an adjustment to the Kruskal-Wallis statistic (H) was necessary.

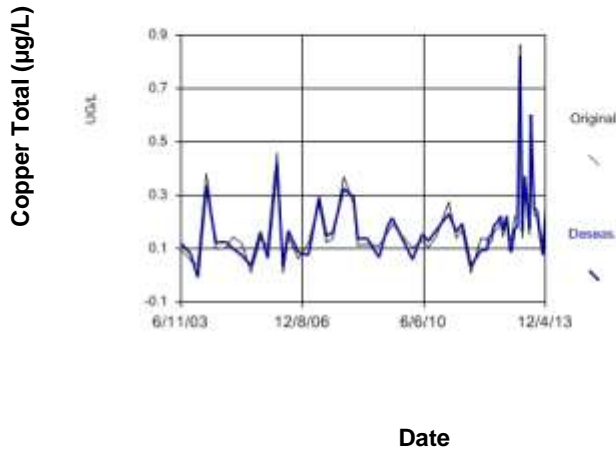


Figure E296 Cold River: Copper Total

Sen's Slope Estimator

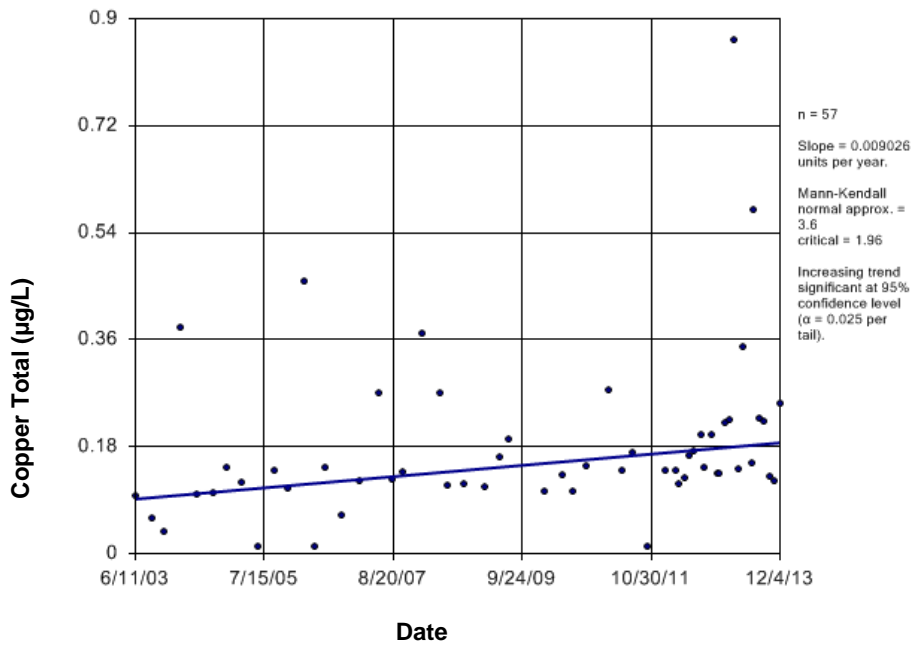


Figure E297 Cold River: Copper Total

Time Series

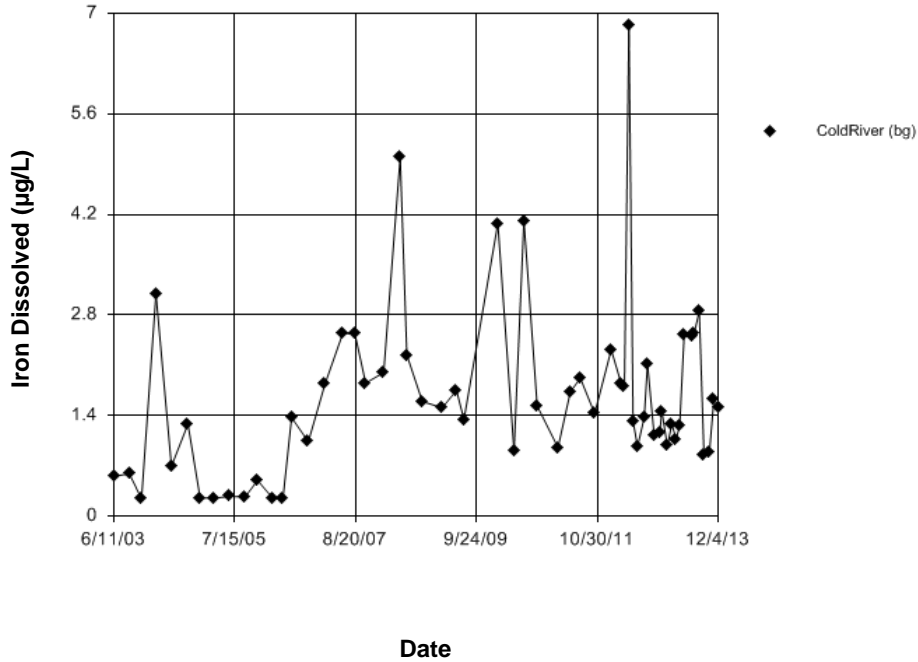


Figure E298 Cold River: Iron Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates **NO SEASONALITY** at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 1.073
Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 1.073
Adjusted Kruskal-Wallis statistic (H') = 1.073

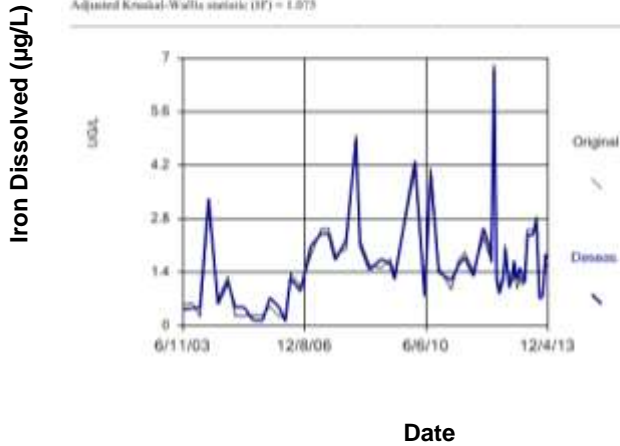


Figure E299 Cold River: Iron Dissolved

Sen's Slope Estimator

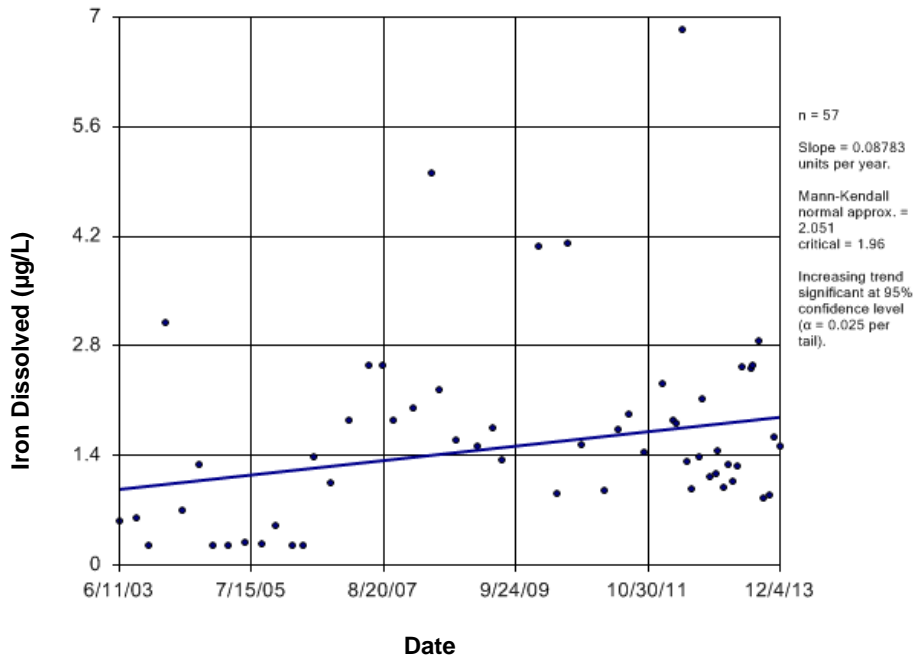


Figure E300 Cold River: Iron Dissolved

Time Series

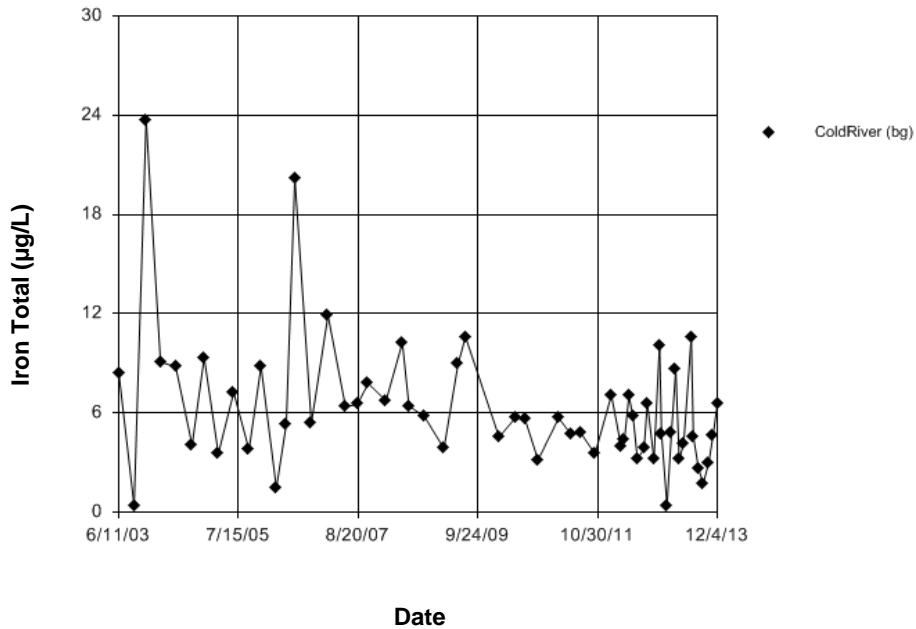
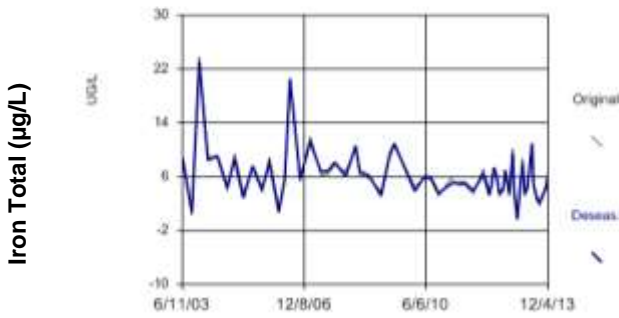


Figure E301 Cold River: Iron Total

Seasonality

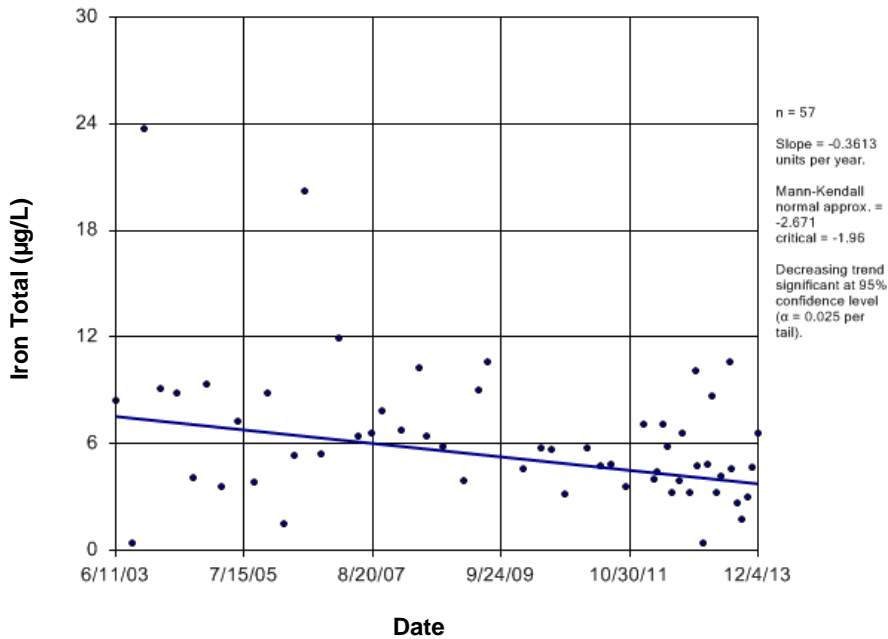
For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-Squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 1.021
Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 1.021
Adjusted Kruskal-Wallis statistic (H') = 1.021



Date

Figure E302 Cold River: Iron Total

Sen's Slope Estimator



Date

Figure E303 Cold River: Iron Total

Time Series

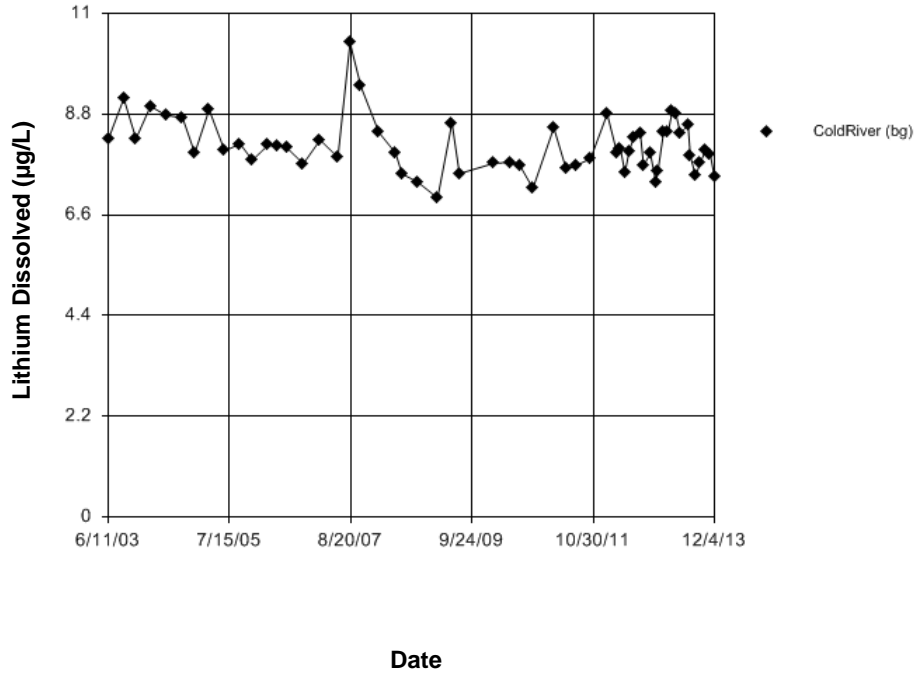


Figure E304 Cold River: Lithium Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates **NO SEASONALITY** at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.4473. Tabulated Chi-Squared value = 3.841 with 3 degrees of freedom at the 5% significance level. There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

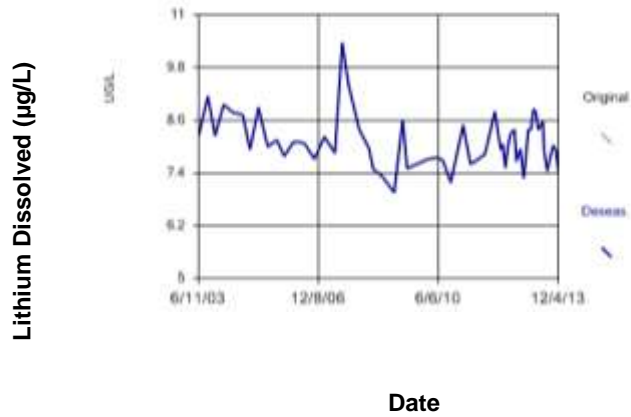


Figure E305 Cold River: Lithium Dissolved

Sen's Slope Estimator

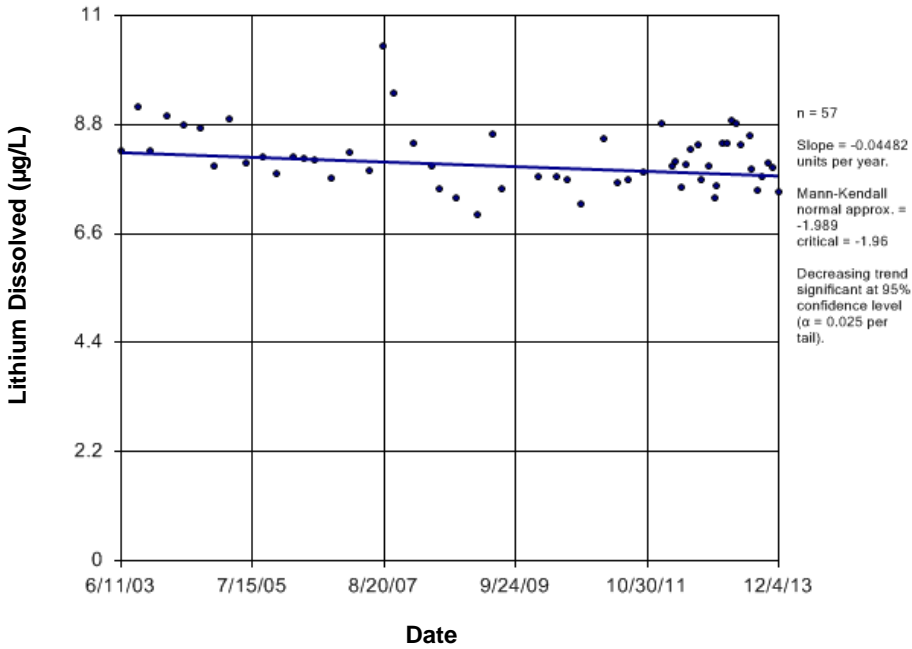


Figure E306 Cold River: Lithium Dissolved

Time Series

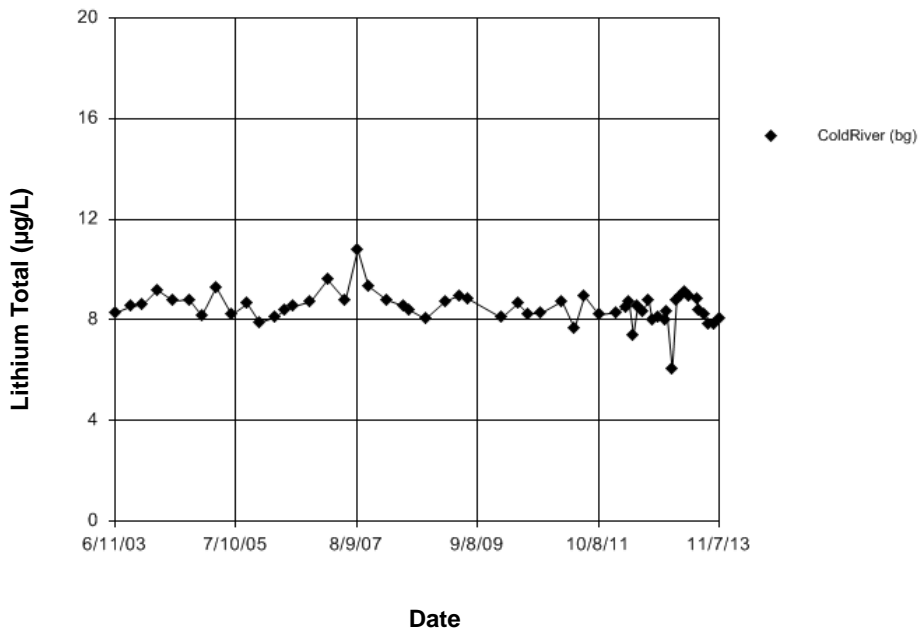
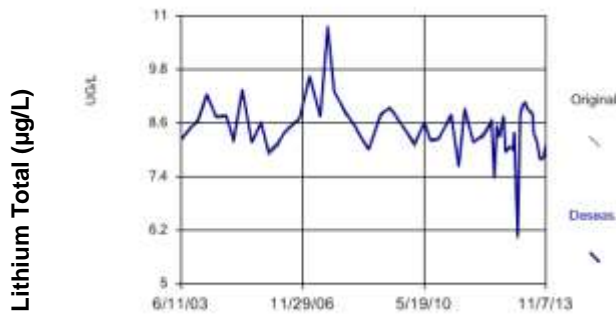


Figure E307 Cold River: Lithium Total

Seasonality

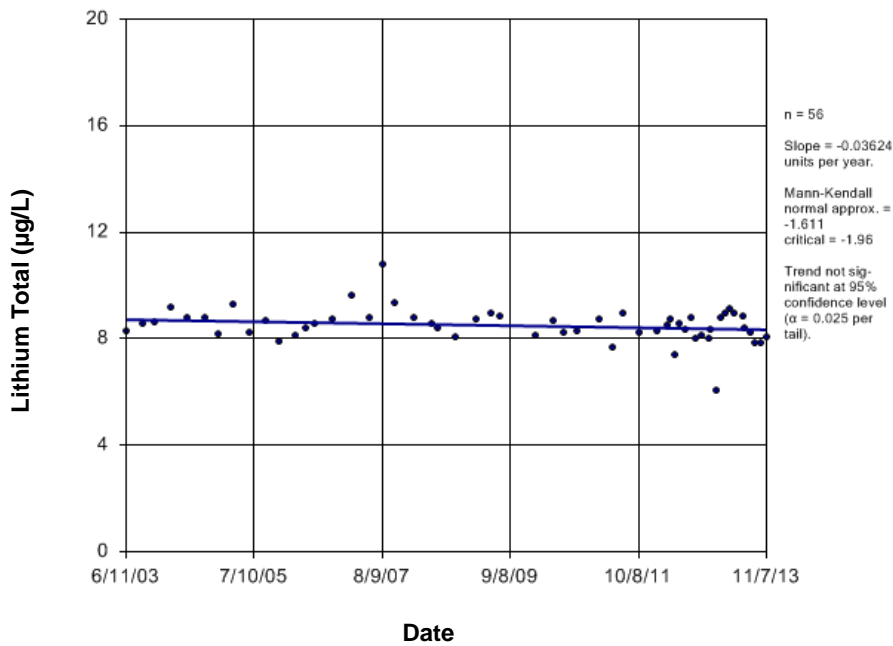
For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-Squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.01265.
Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 0.01265
Adjusted Kruskal-Wallis statistic (H') = 0.01265



Date

Figure E308 Cold River: Lithium Total

Sen's Slope Estimator



Date

Figure E309 Cold River: Lithium Total

Time Series

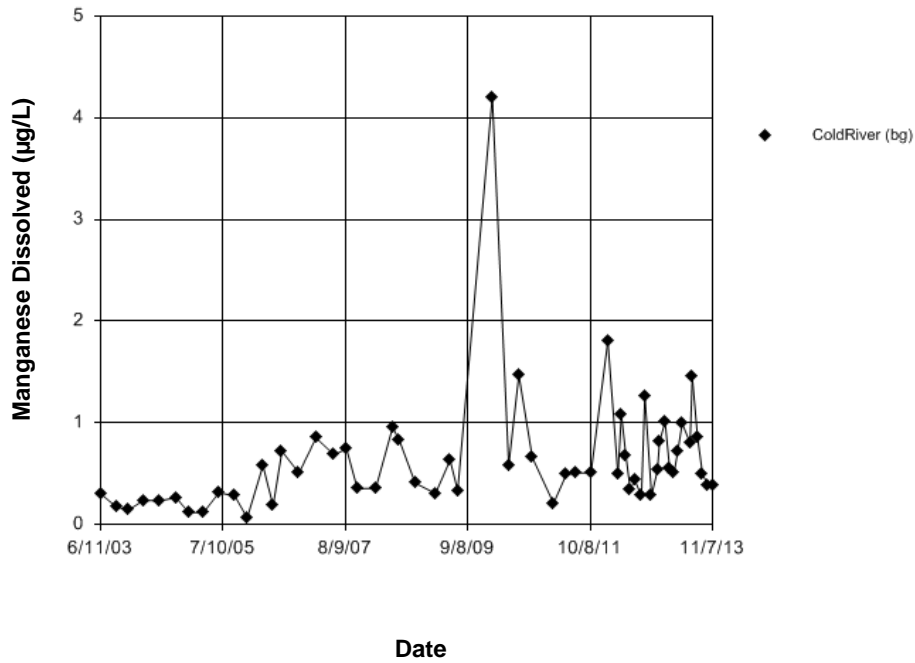


Figure E310 Cold River: Manganese Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.8372. Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level. There were 8 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

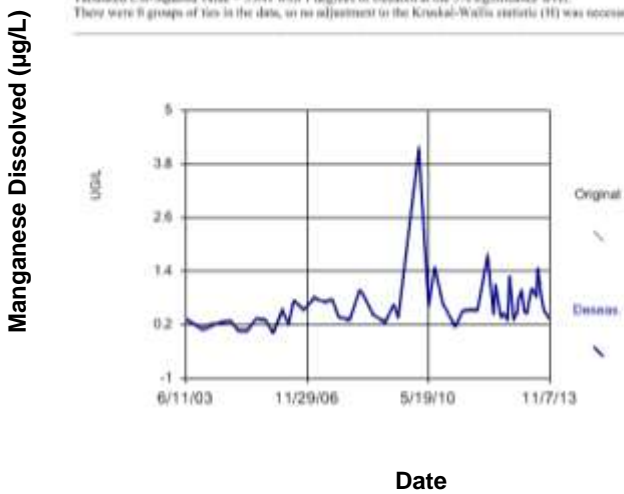


Figure E311 Cold River: Manganese Dissolved

Sen's Slope Estimator

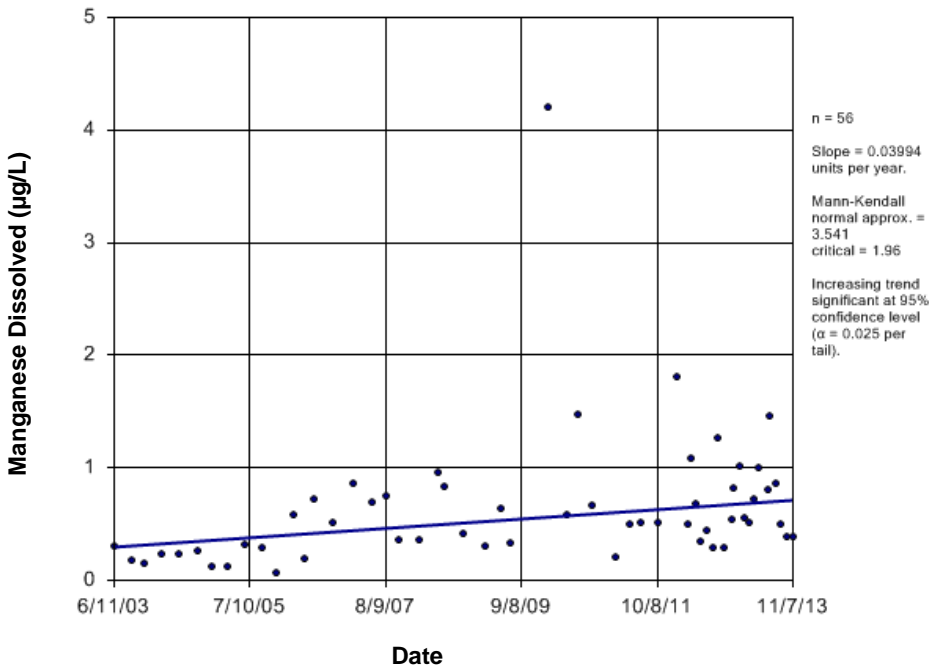


Figure E312 Cold River: Manganese Dissolved

Time Series

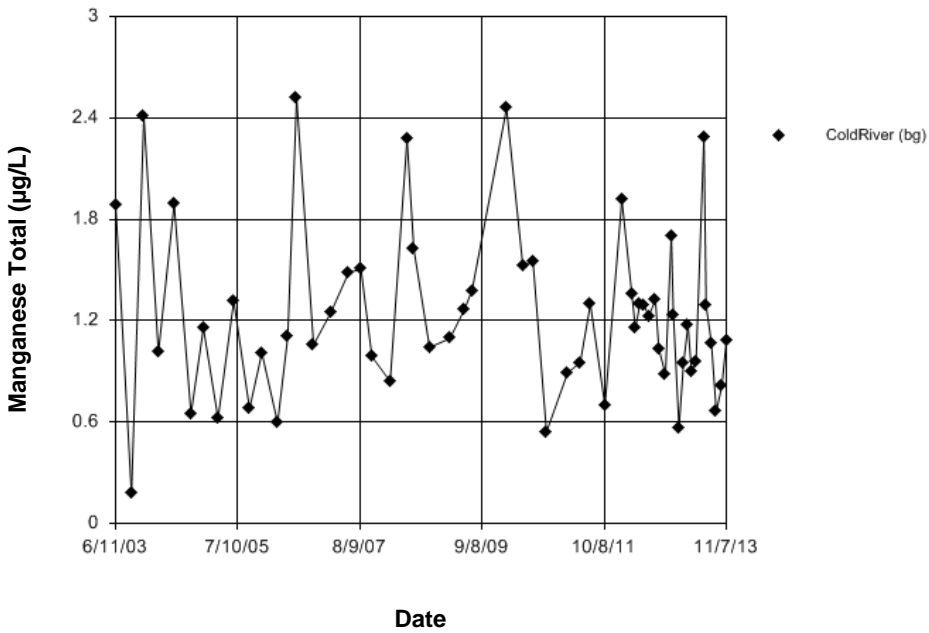


Figure E313 Cold River: Manganese Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates **NO SEASONALITY** at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.2265. Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level. There were 0 groups of ties in the data, so an adjustment to the Kruskal-Wallis statistic (H) was necessary.

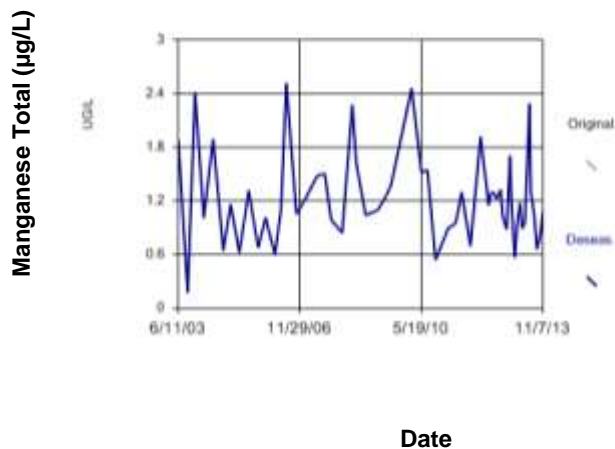


Figure E314 Cold River: Manganese Total

Sen's Slope Estimator

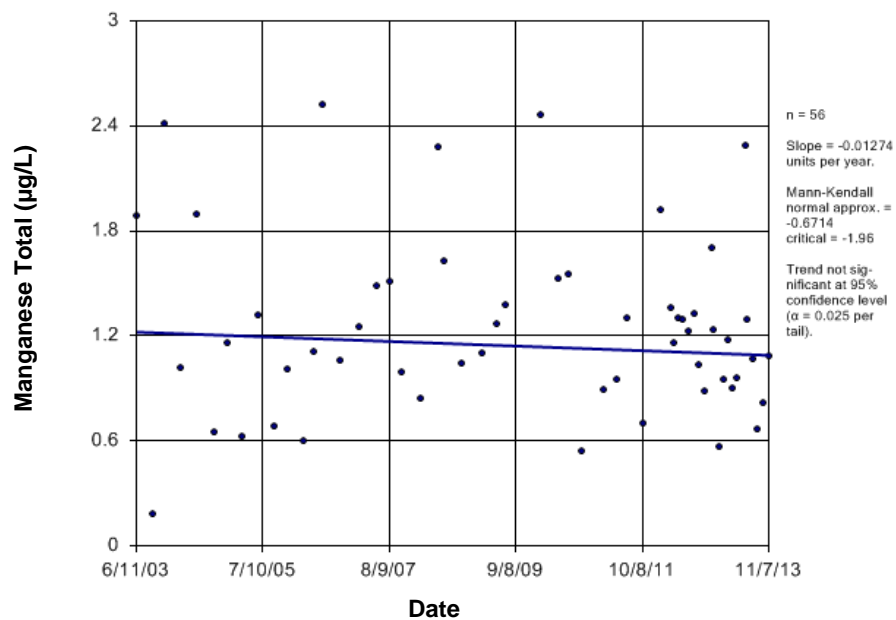


Figure E315 Cold River: Manganese Total

Time Series

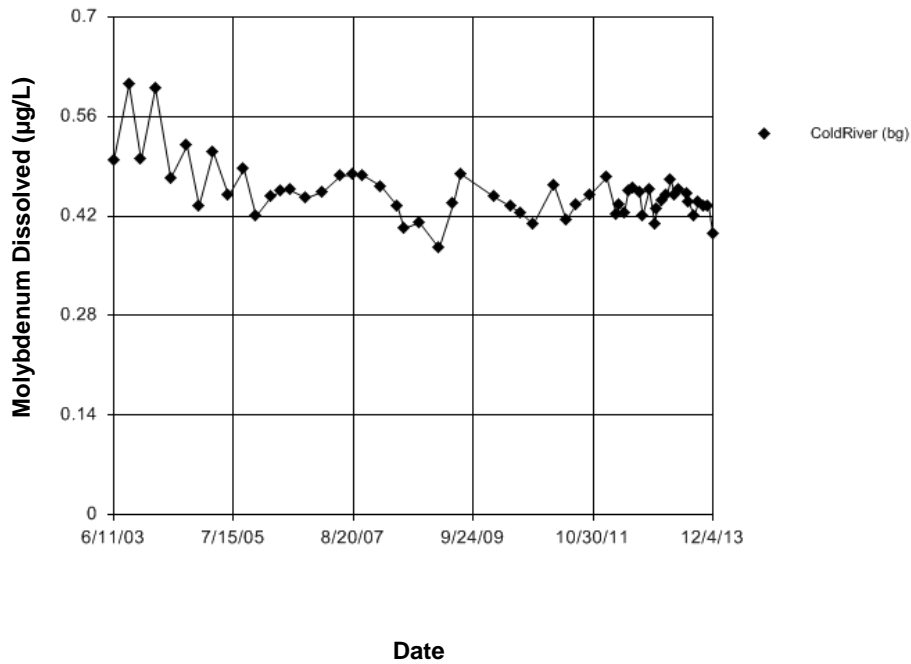


Figure E316 Cold River: Molybdenum Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates **NO SEASONALITY** at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.09059. Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level. There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.



Figure E317 Cold River: Molybdenum Dissolved

Sen's Slope Estimator

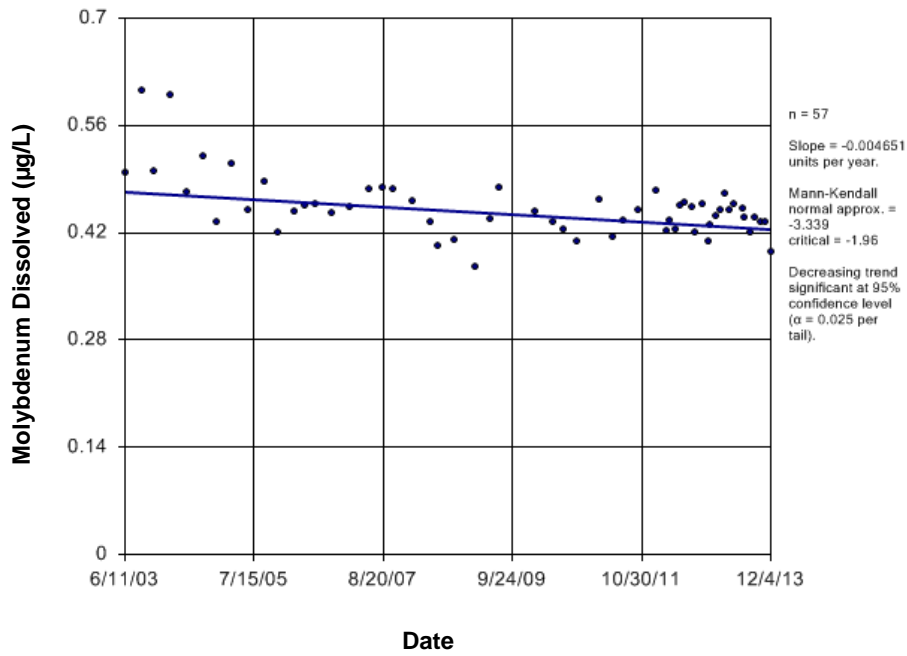


Figure E318 Cold River: Molybdenum Dissolved

Time Series

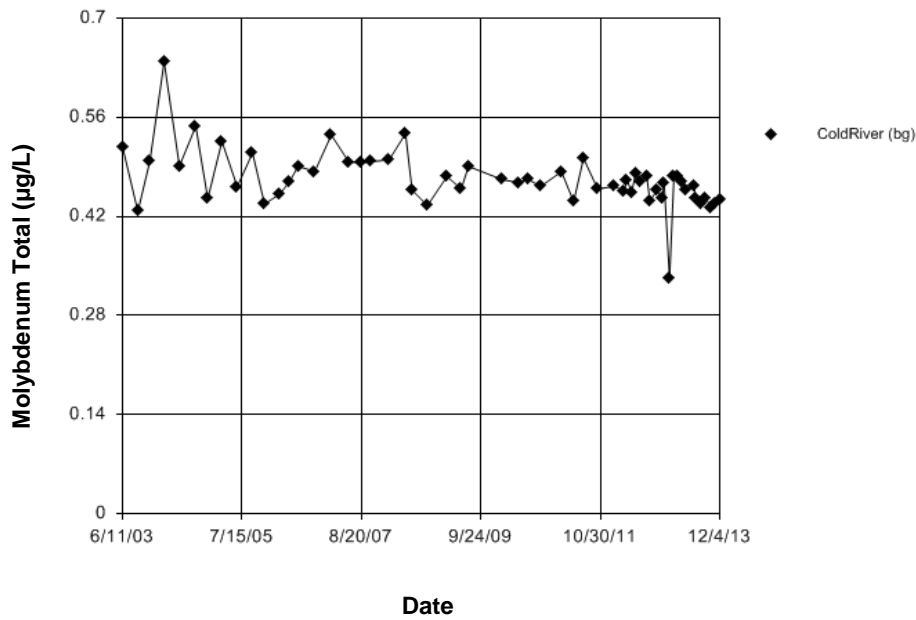


Figure E319 Cold River: Molybdenum Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates **NO SEASONALITY** at the 5% significance level. Because the obtained Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.01181
 Tabulated Chi-Squared value = 5.841 with 1 degree of freedom at the 5% significance level.
 There were 3 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 0.01181
 Adjusted Kruskal-Wallis statistic (H') = 0.01181

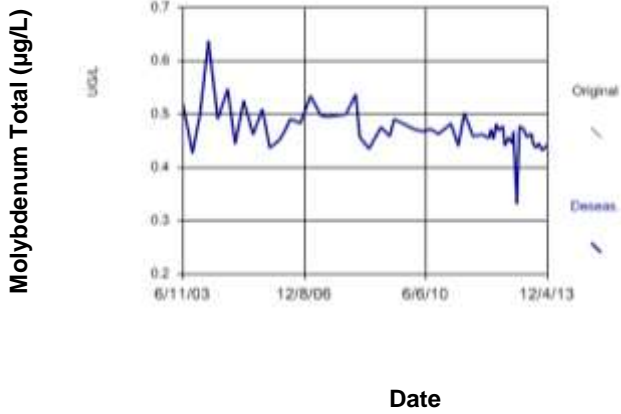


Figure E320 Cold River: Molybdenum Total

Sen's Slope Estimator

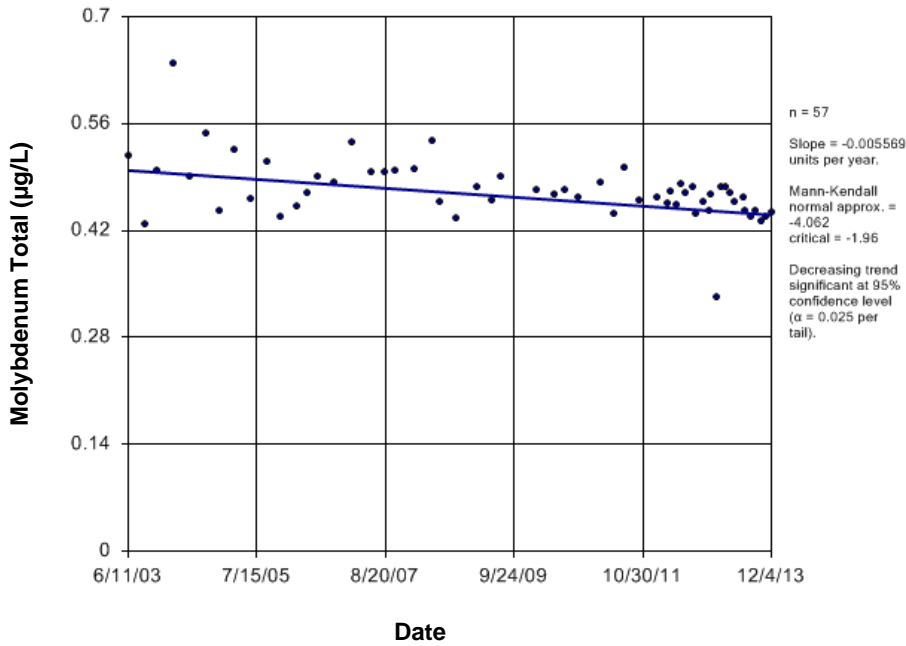


Figure E321 Cold River: Molybdenum Total

Time Series

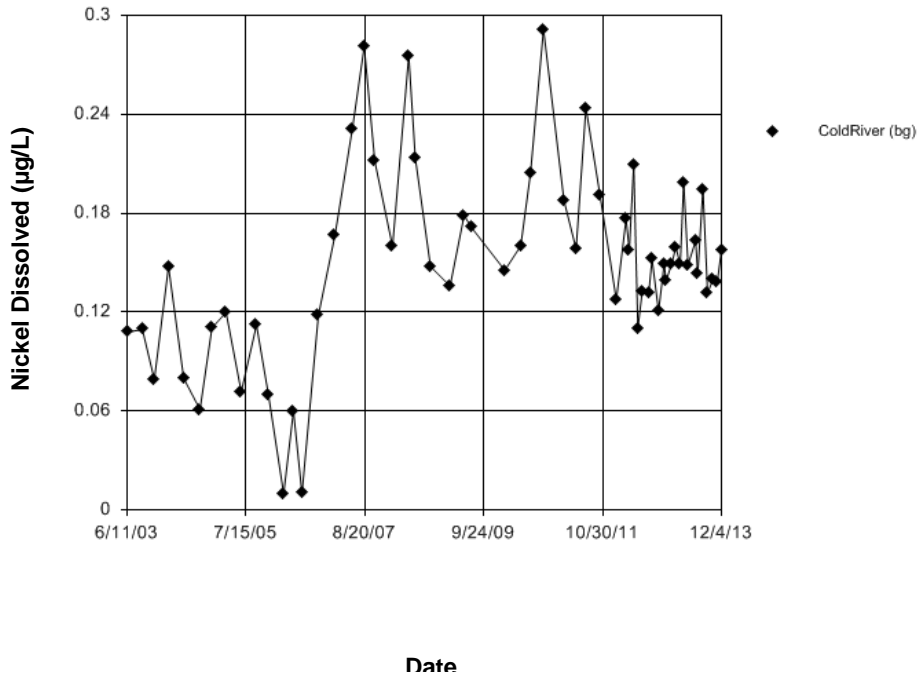


Figure E322 Cold River: Nickel Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 1.47
Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 1.47
Adjusted Kruskal-Wallis statistic (H') = 1.47

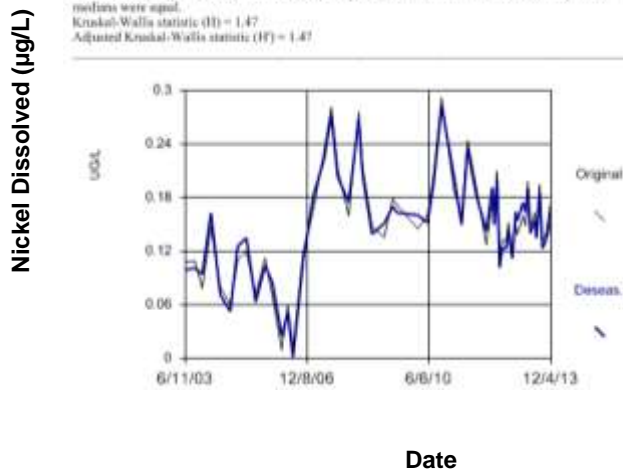


Figure E323 Cold River: Nickel Dissolved

Sen's Slope Estimator

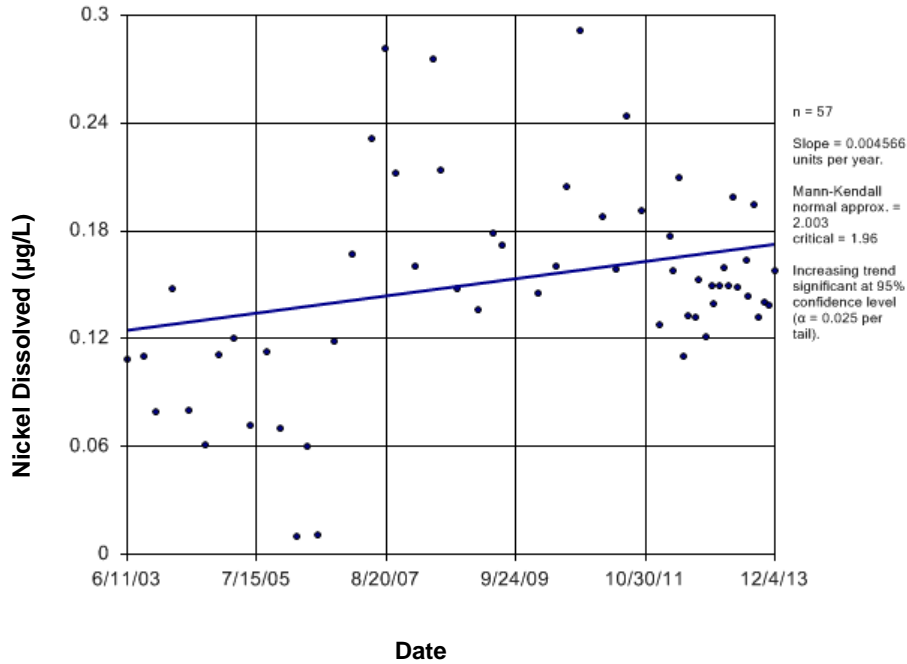


Figure E324 Cold River: Nickel Dissolved

Time Series

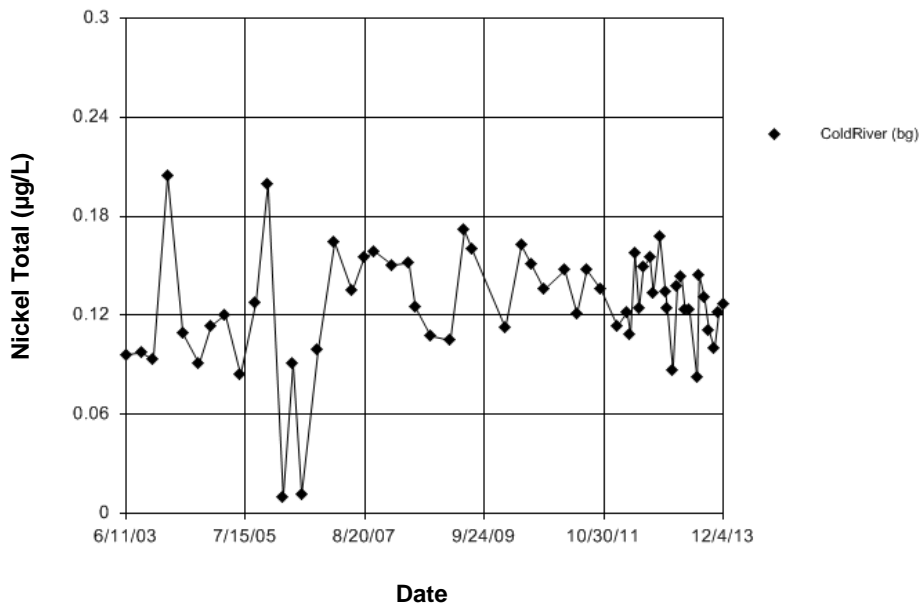
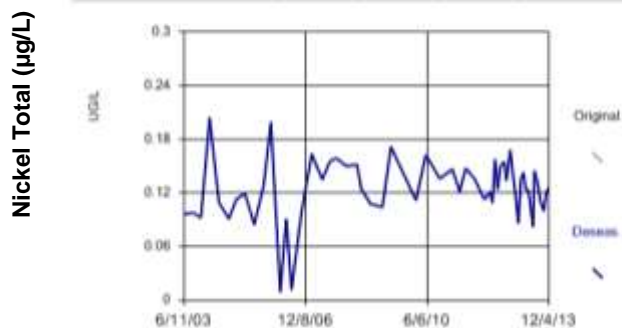


Figure E325 Cold River: Nickel Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-Squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.01789
Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 0.01789
Adjusted Kruskal-Wallis statistic (H') = 0.01789



Date

Figure E326 Cold River: Nickel Total

Sen's Slope Estimator

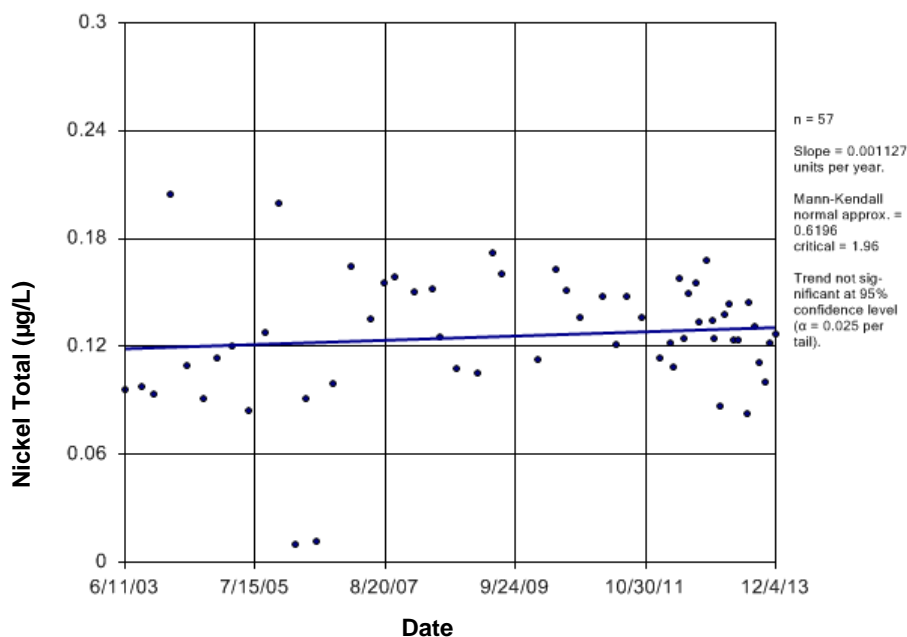


Figure E327 Cold River: Nickel Total

Time Series

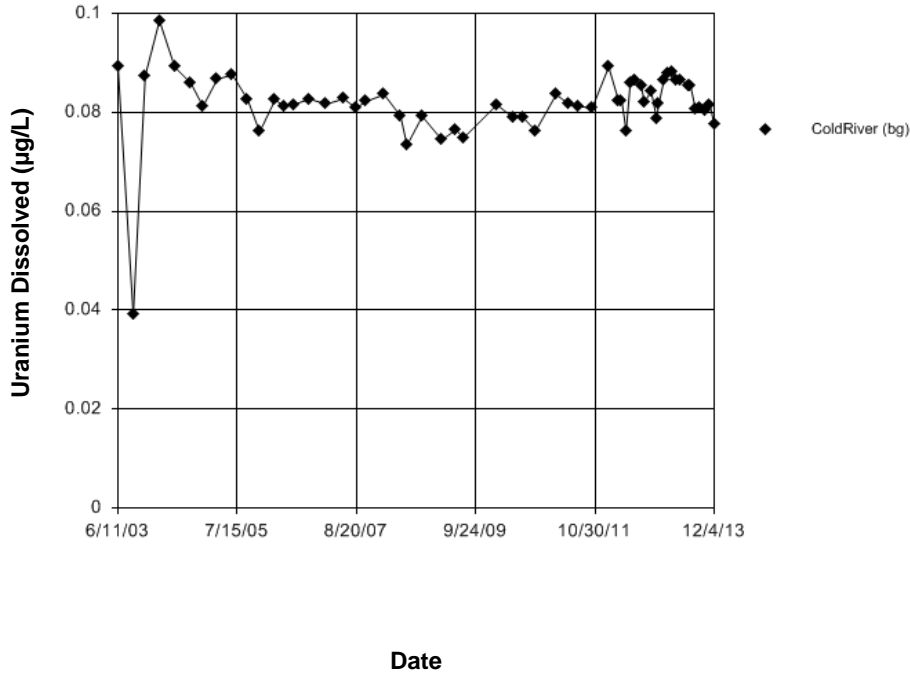


Figure E328 Cold River: Uranium Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 1.43. Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level. There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal. Kruskal-Wallis statistic (H) = 1.429. Adjusted Kruskal-Wallis statistic (H') = 1.43.

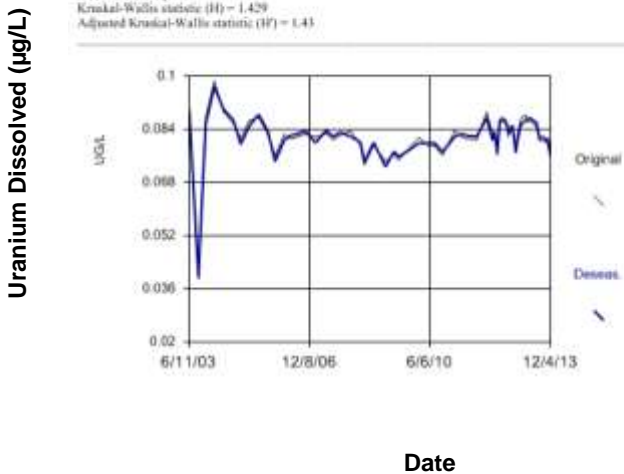


Figure E329 Cold River: Uranium Dissolved

Sen's Slope Estimator

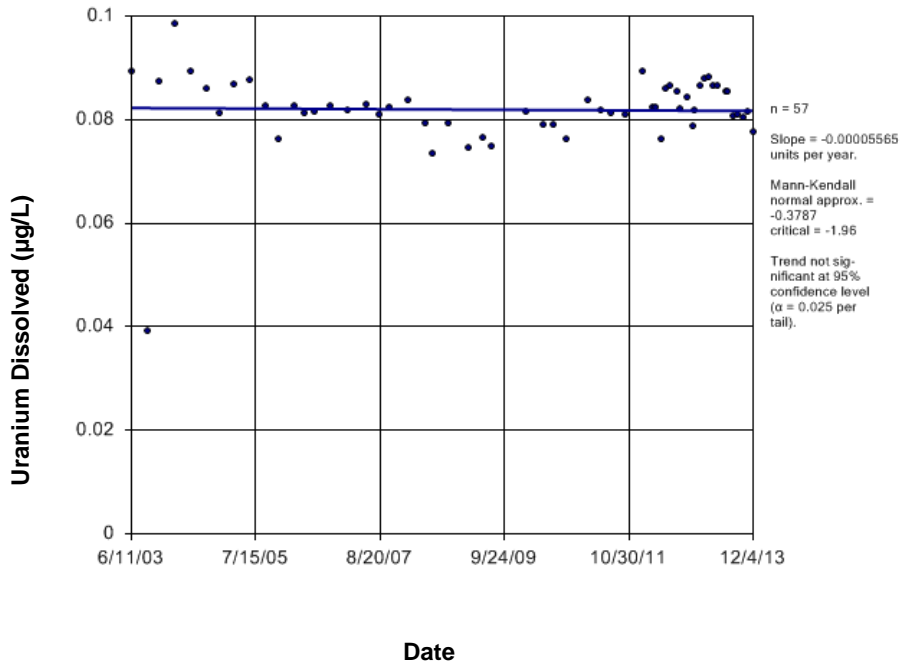


Figure E330 Cold River: Uranium Dissolved

Time Series

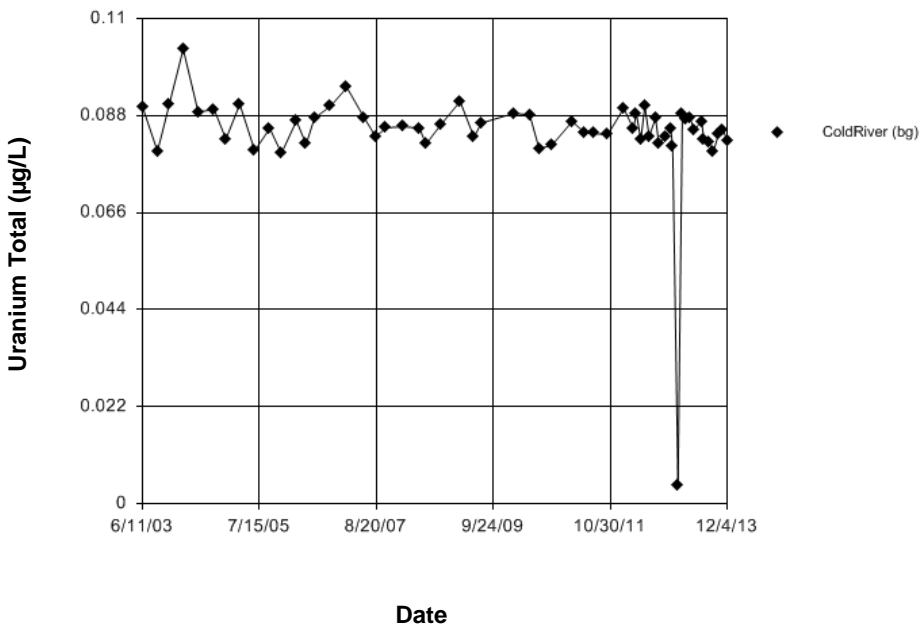


Figure E331 Cold River: Uranium Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 2.497
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 2.497
 Adjusted Kruskal-Wallis statistic (H') = 2.497

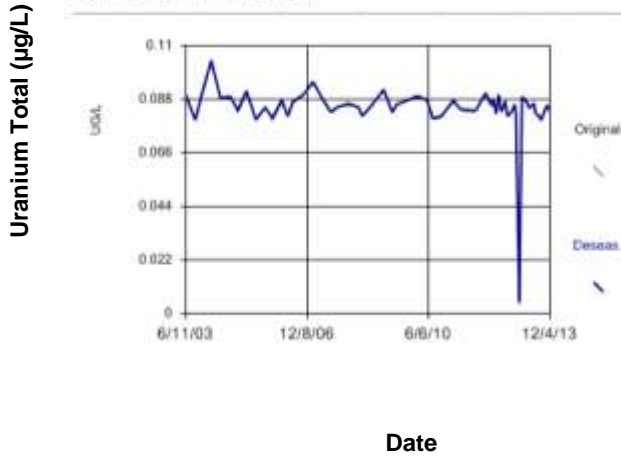


Figure E332 Cold River: Uranium Total

Sen's Slope Estimator

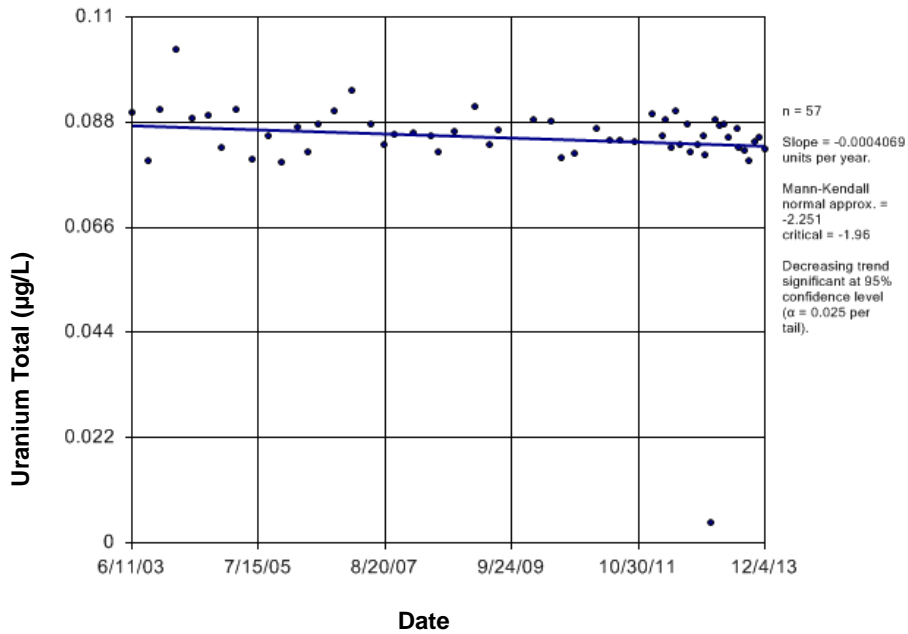


Figure E333 Cold River: Uranium Total

Time Series

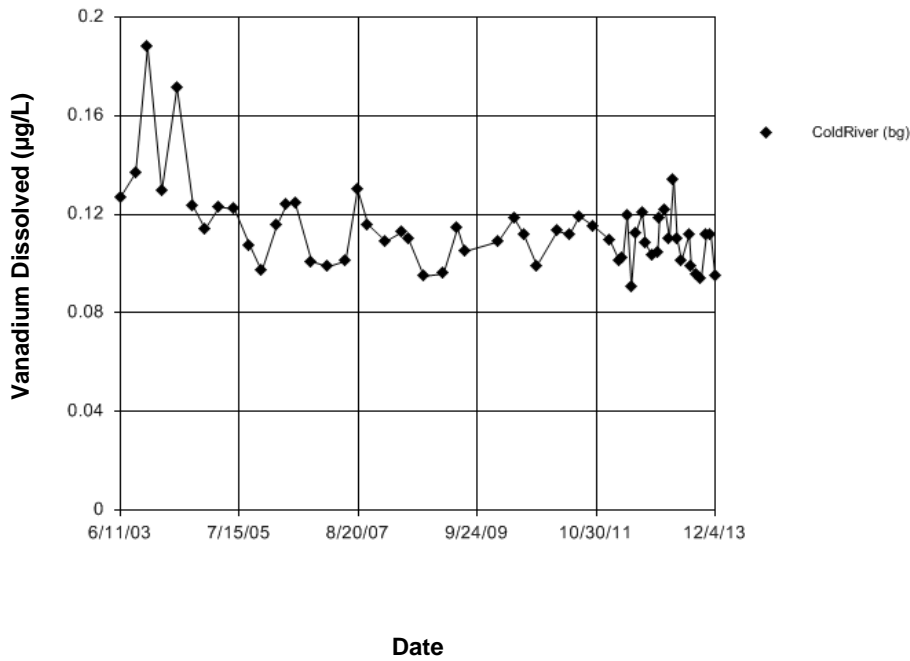


Figure E334 Cold River: Vanadium Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.091119.
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 0.091118
 Adjusted Kruskal-Wallis statistic (H') = 0.091119

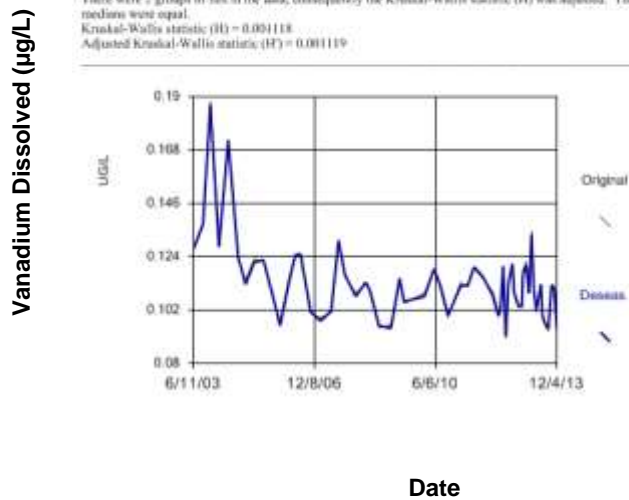


Figure E335 Cold River: Vanadium Dissolved

Sen's Slope Estimator

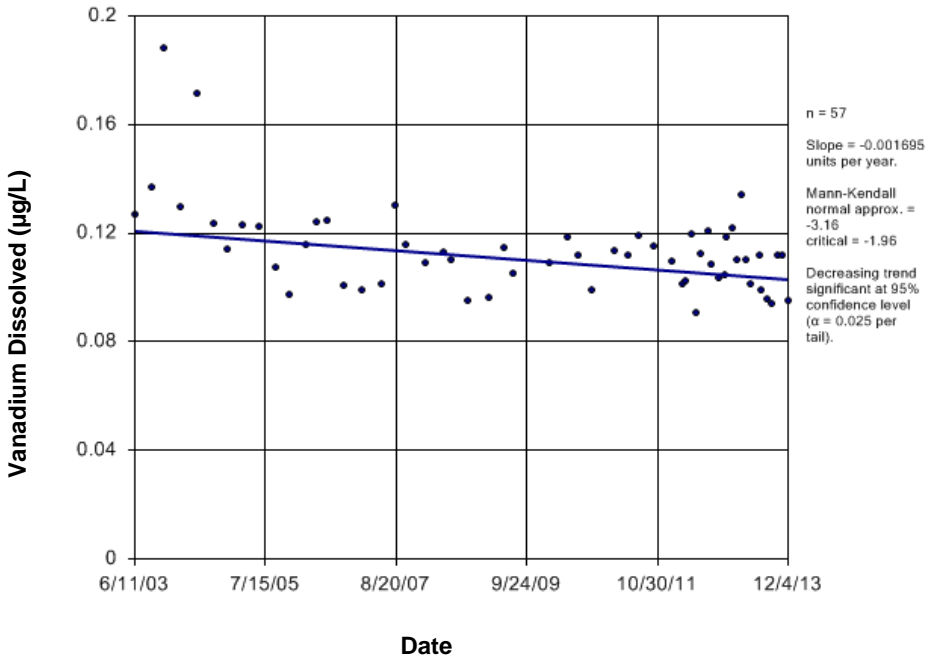


Figure 336 Cold River: Vanadium Dissolved

Time Series

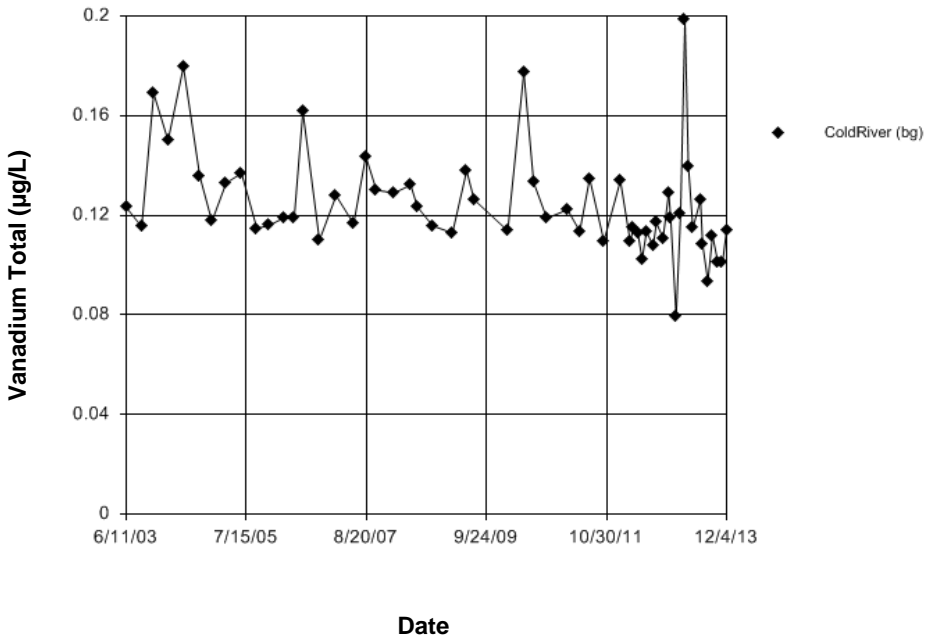
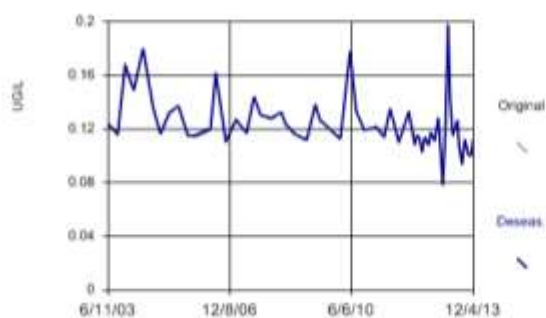


Figure E337 Cold River: Vanadium Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.1748
Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
There were 3 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to decrease if the medians were equal.
Kruskal-Wallis statistic (H) = 0.1747
Adjusted Kruskal-Wallis statistic (H') = 0.1748

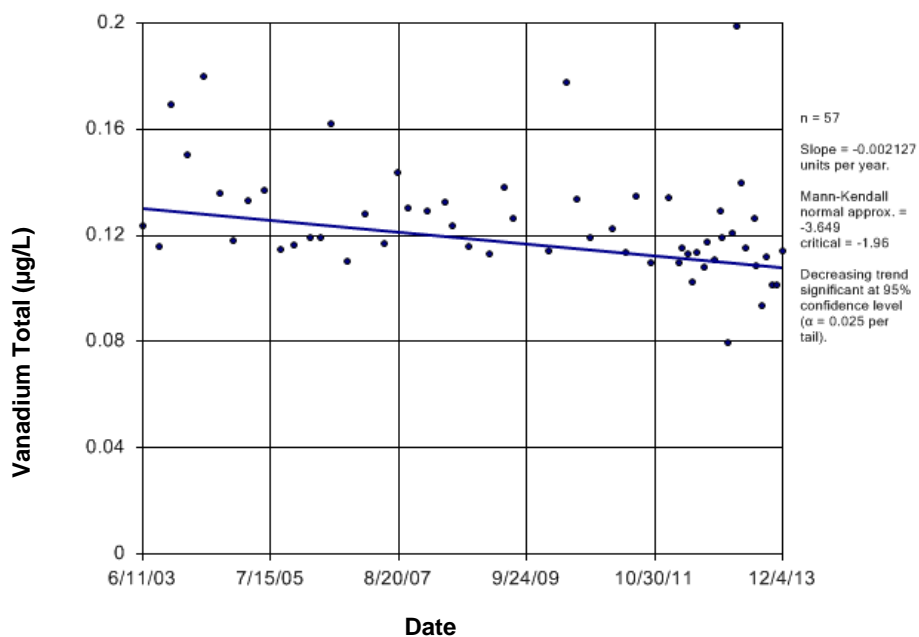
Vanadium Total ($\mu\text{g/L}$)



Date

Figure E338 Cold River: Vanadium Total

Sen's Slope Estimator



Date

Figure E339 Cold River: Vanadium Total

Time Series

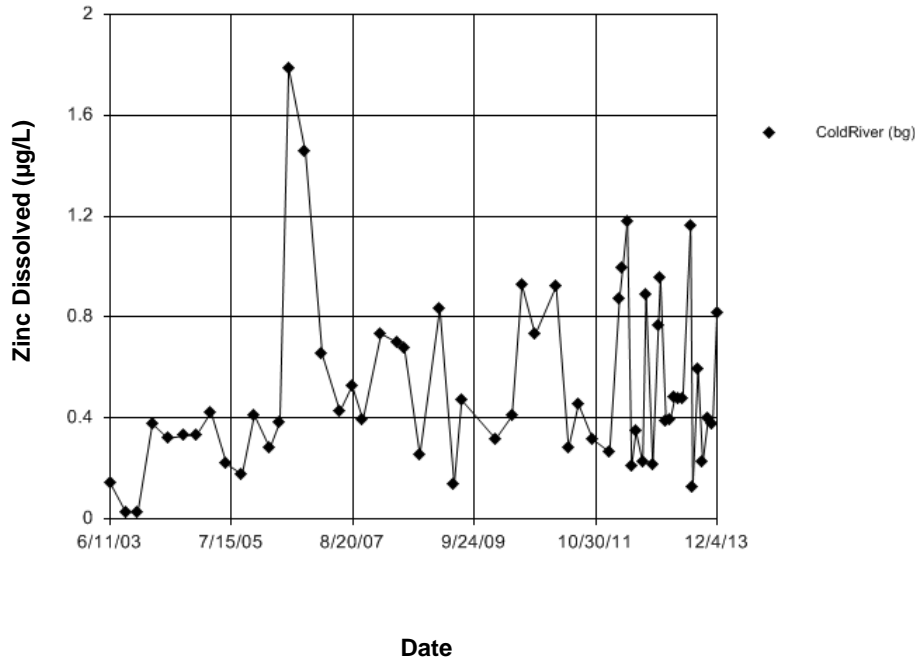


Figure E340 Cold River: Zinc Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.756. Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level. There were 4 groups of five in the data, so an adjustment to the Kruskal-Wallis statistic (3D) was necessary.

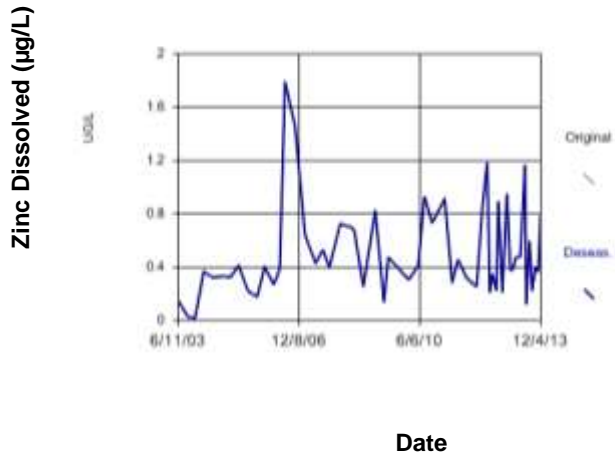


Figure E341 Cold River: Zinc Dissolved

Time Series

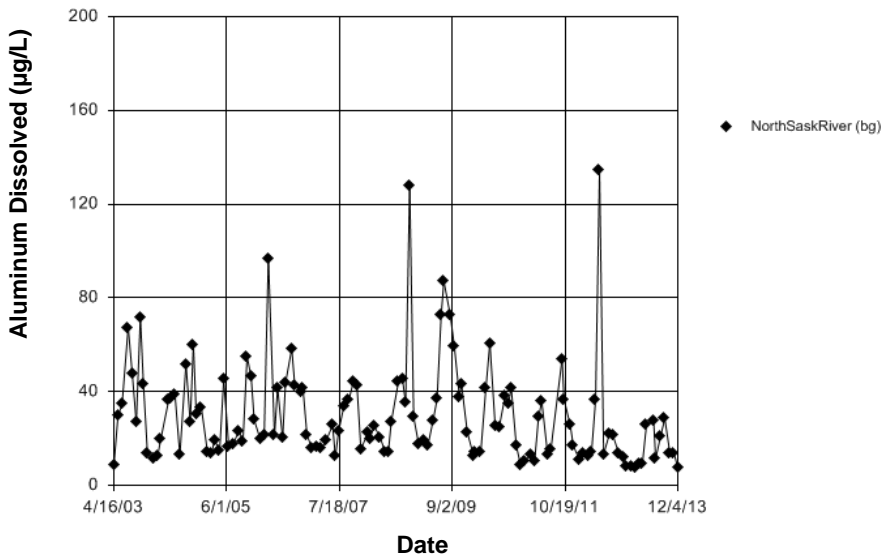


Figure E343 North Saskatchewan River: Aluminum Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 21.06
Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 21.06
Adjusted Kruskal-Wallis statistic (H') = 21.06

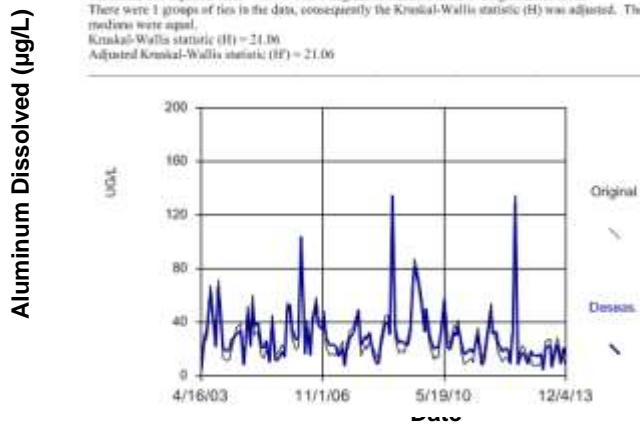


Figure E344 North Saskatchewan River: Aluminum Dissolved

Seasonal Kendall

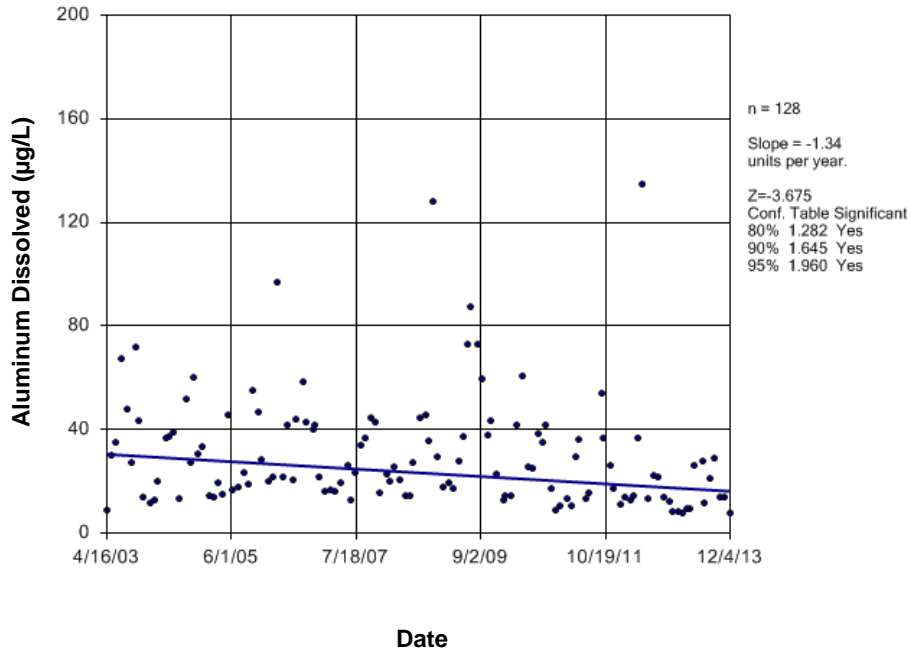


Figure E345 North Saskatchewan River: Aluminum Dissolved

Time Series

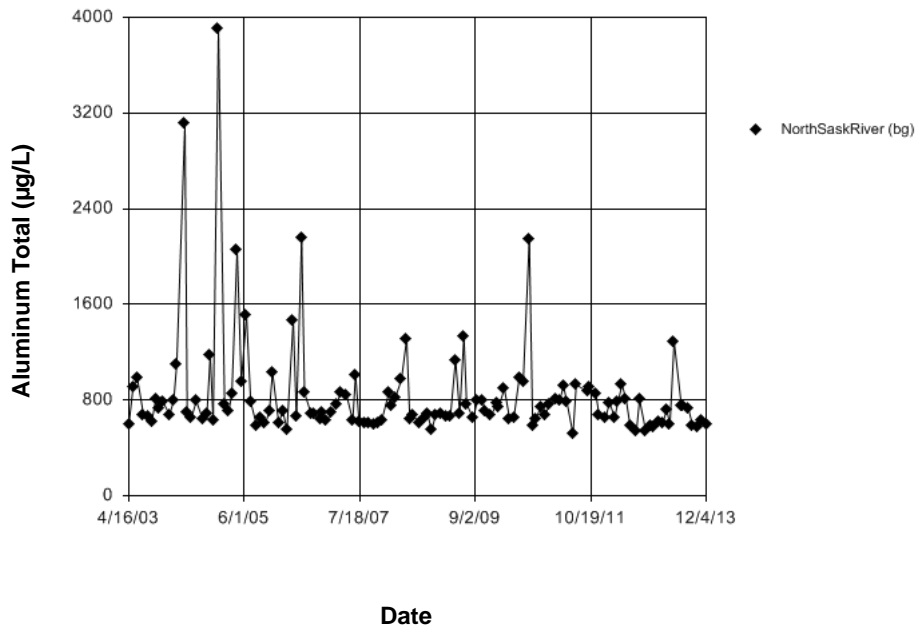
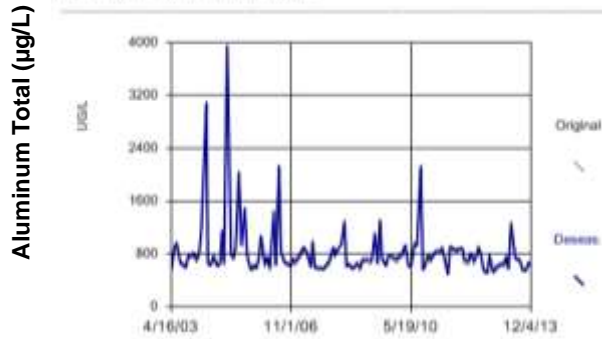


Figure E346 North Saskatchewan River: Aluminum Total

Seasonality

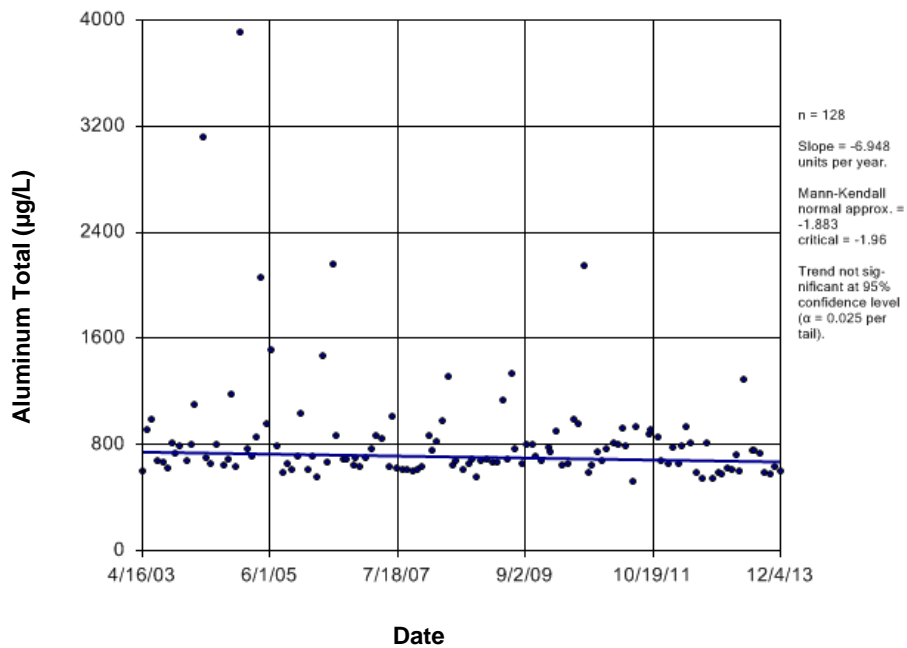
For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-Squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.9228
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 0.9228
 Adjusted Kruskal-Wallis statistic (H') = 0.9228



Date

Figure E347 North Saskatchewan River: Aluminum Total

Sen's Slope Estimator



Date

Figure E348 North Saskatchewan River: Aluminum Total

Time Series

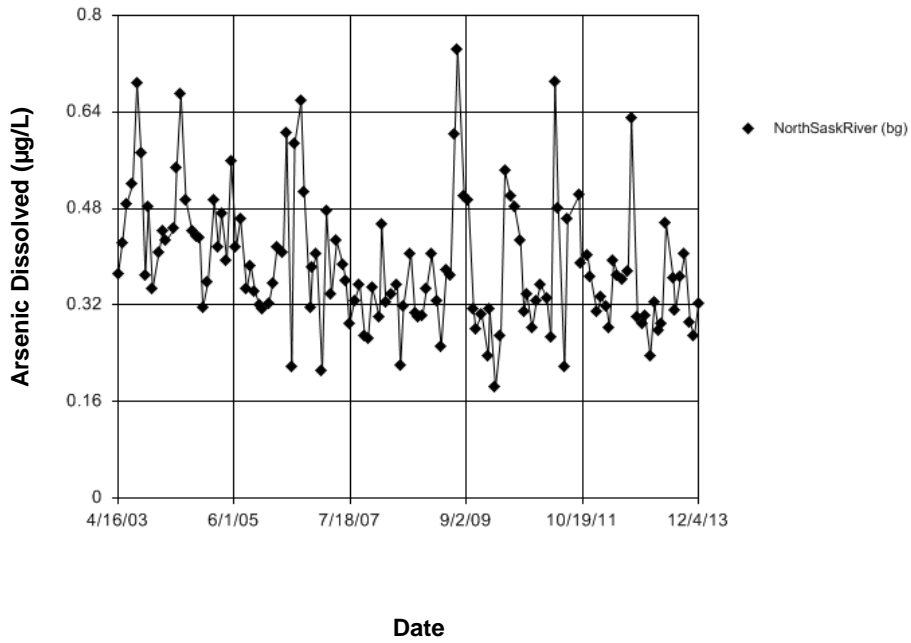


Figure E349 North Saskatchewan River: Arsenic Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
 Calculated Kruskal-Wallis statistic = 16.53
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 4 groups of data in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 16.53
 Adjusted Kruskal-Wallis statistic (H') = 16.57

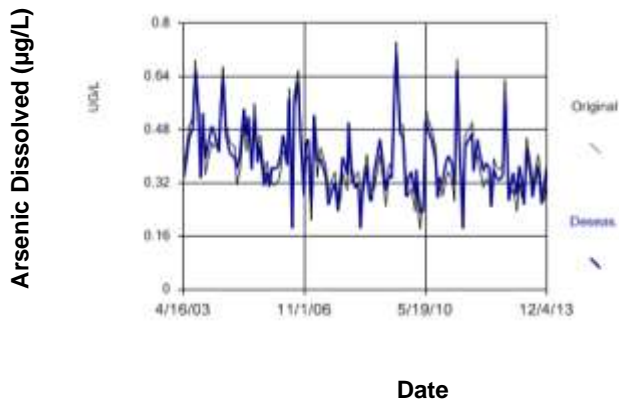


Figure E350 North Saskatchewan River: Arsenic Dissolved

Seasonal Kendall

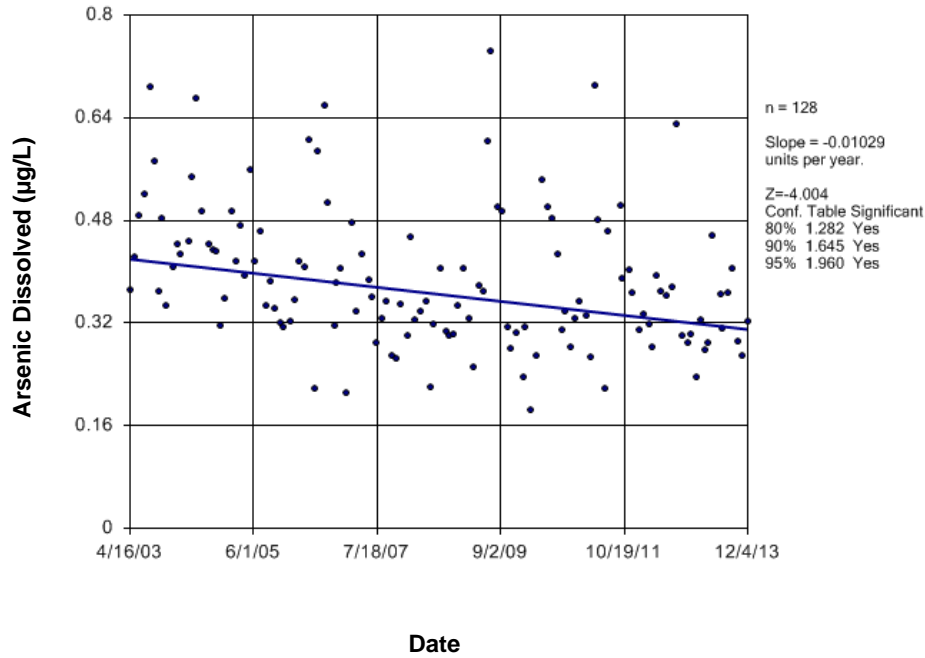


Figure E351 North Saskatchewan River: Arsenic Dissolved

Time Series

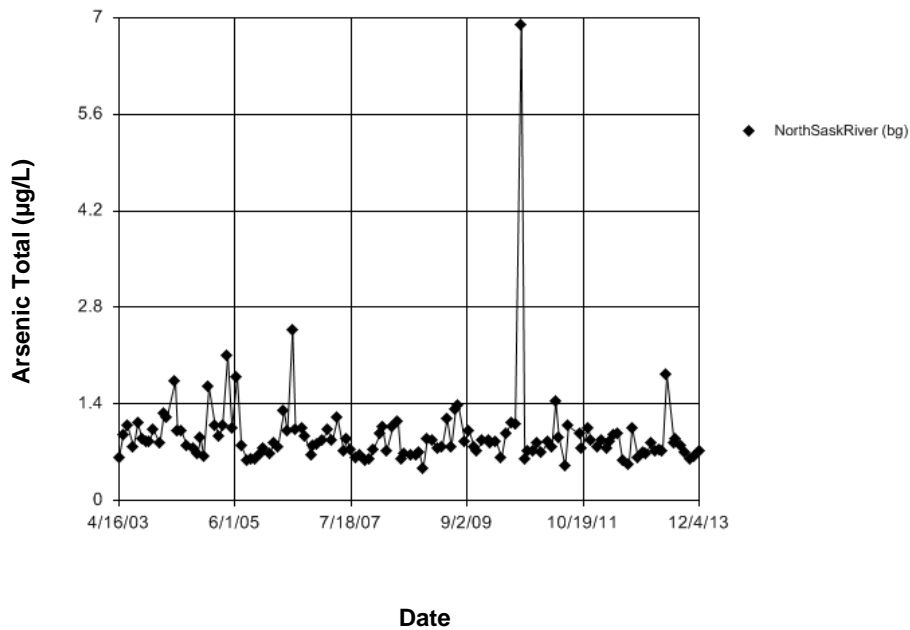


Figure E352 North Saskatchewan River: Arsenic Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.951
 Tabulated Chi-squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

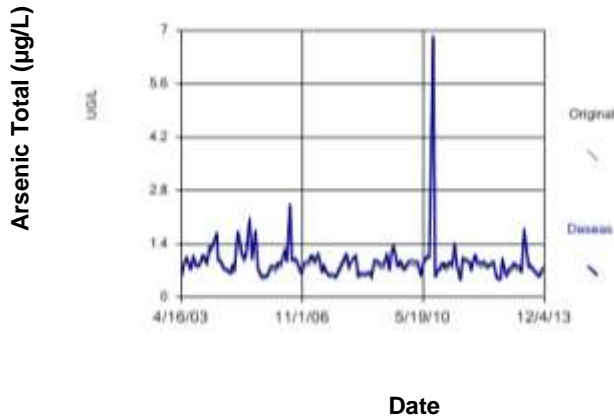


Figure E353 North Saskatchewan River: Arsenic Total

Sen's Slope Estimator

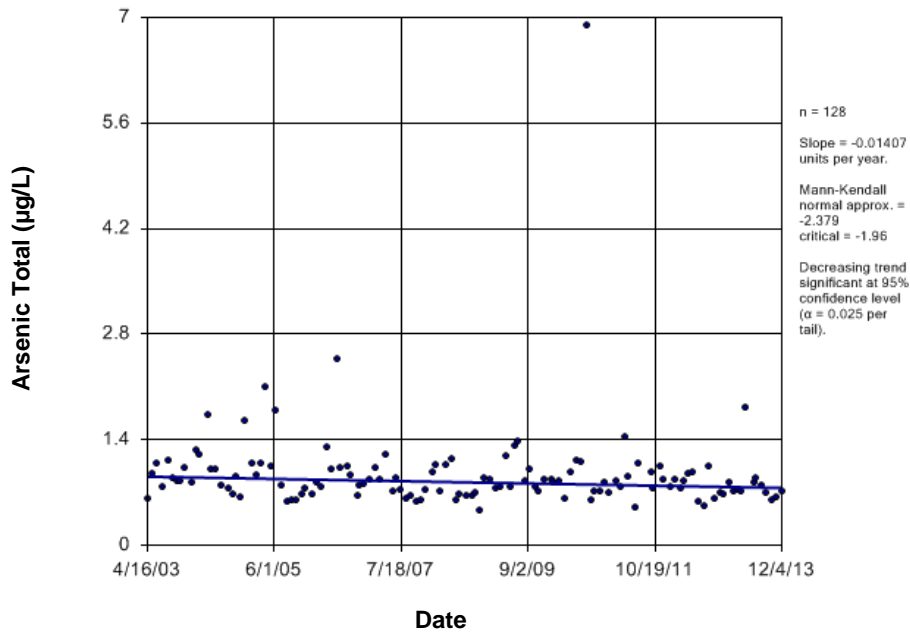


Figure E354 North Saskatchewan River: Arsenic Total

Time Series

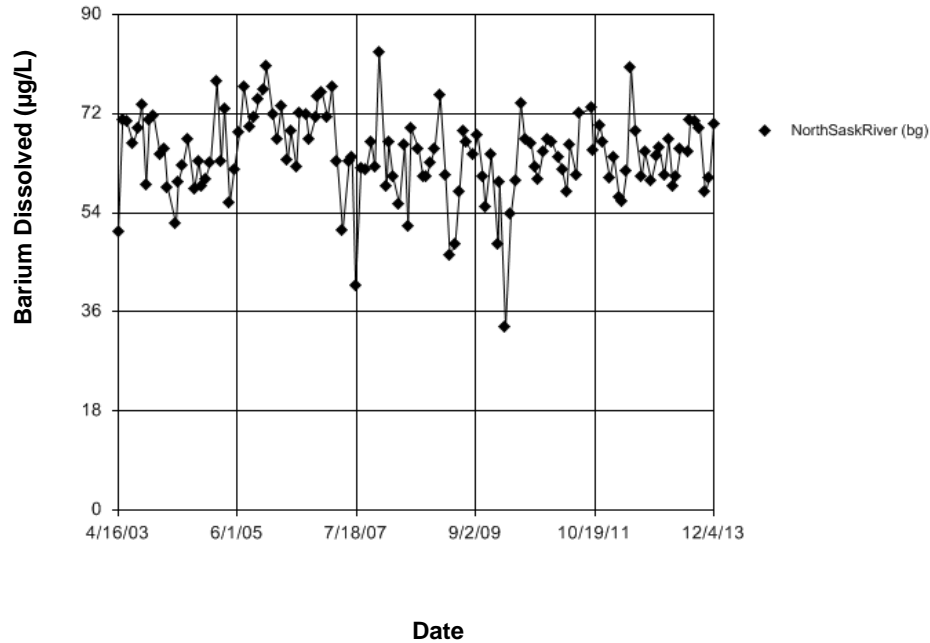


Figure E355 North Saskatchewan River: Barium Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.97
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 4 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H*) was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 0.97
 Adjusted Kruskal-Wallis statistic (H*) = 0.97

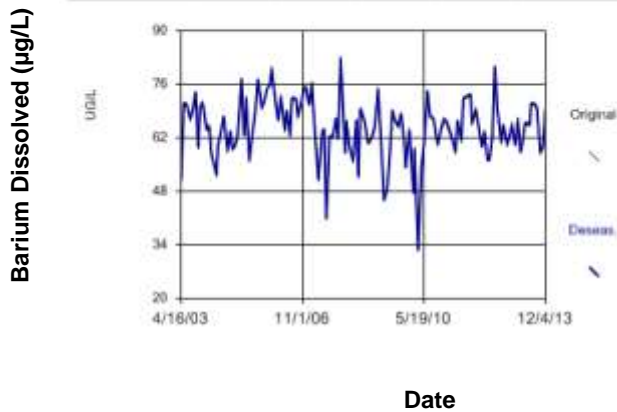


Figure E356 North Saskatchewan River: Barium Dissolved

Sen's Slope Estimator

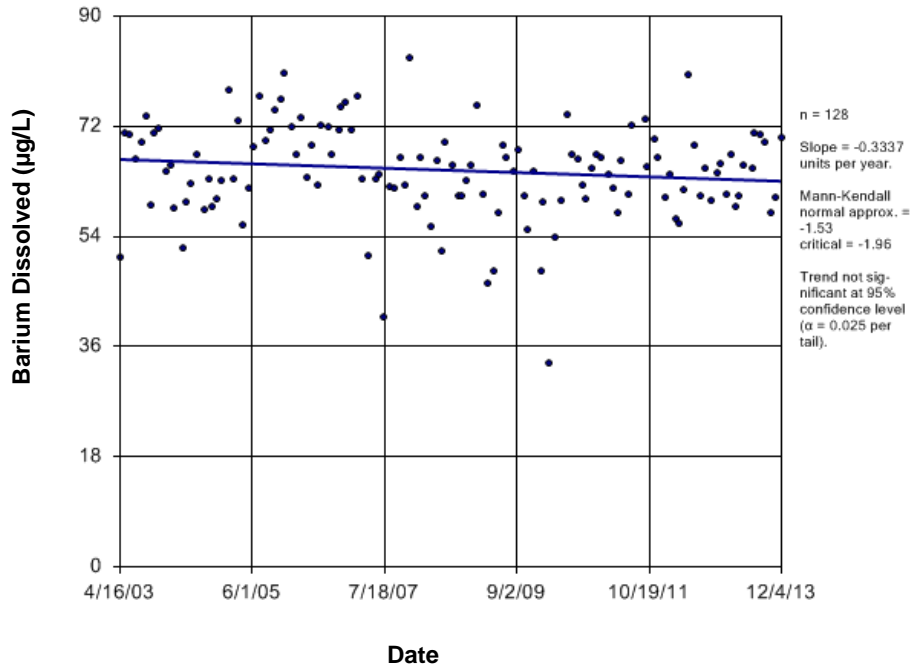


Figure E357 North Saskatchewan River: Barium Dissolved

Time Series

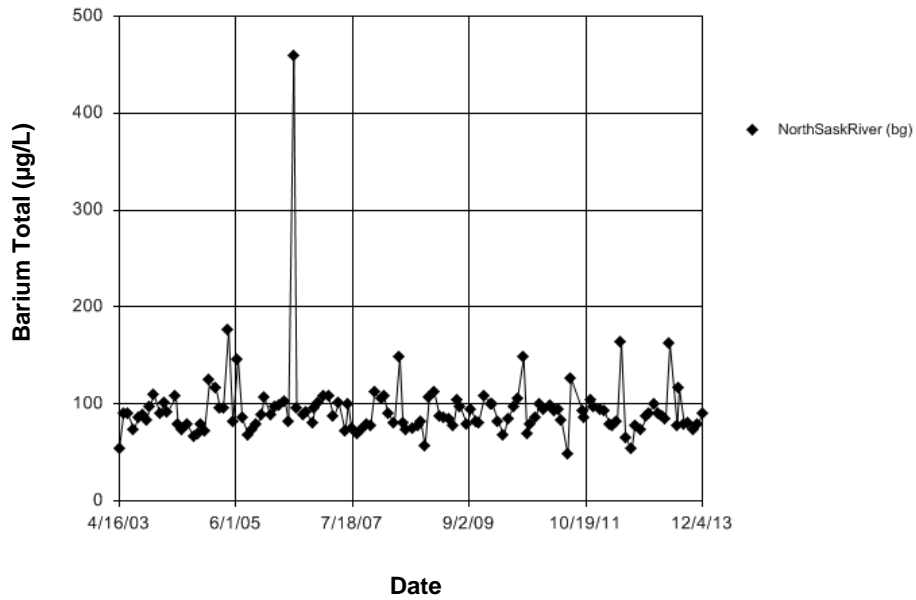
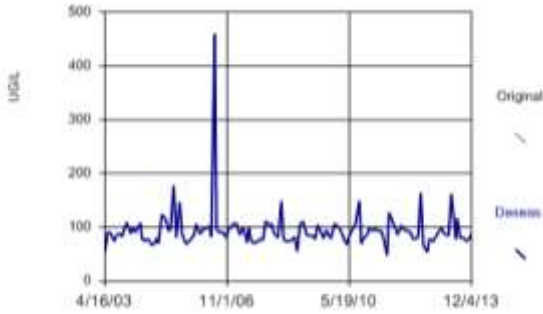


Figure E358 North Saskatchewan River: Barium Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 16.95
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 16.95
 Adjusted Kruskal-Wallis statistic (H') = 16.95

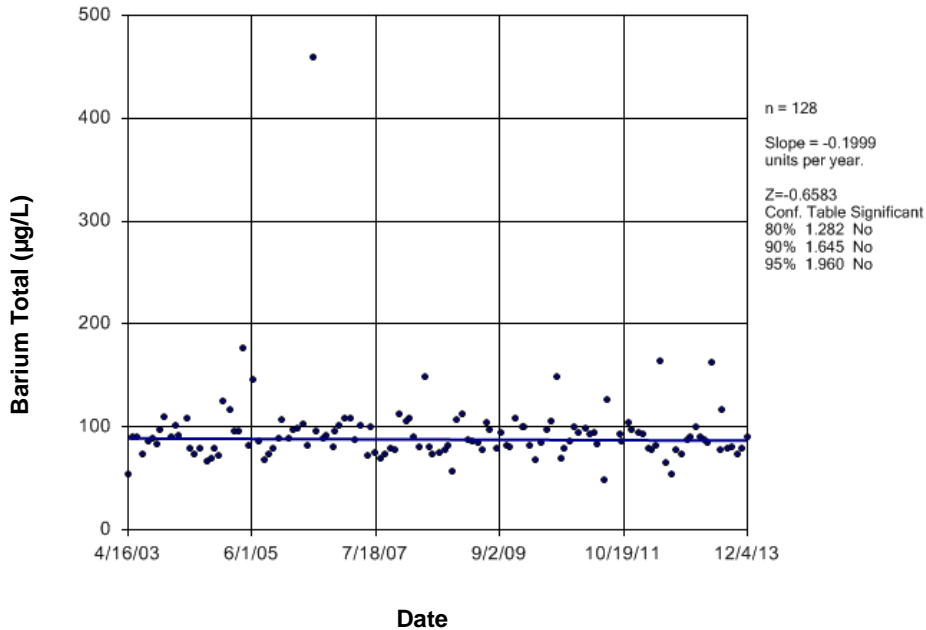
Barium Total (µg/L)



Date

Figure E359 North Saskatchewan River: Barium Total

Seasonal Kendall



Date

Figure E360 North Saskatchewan River: Barium Total

Time Series

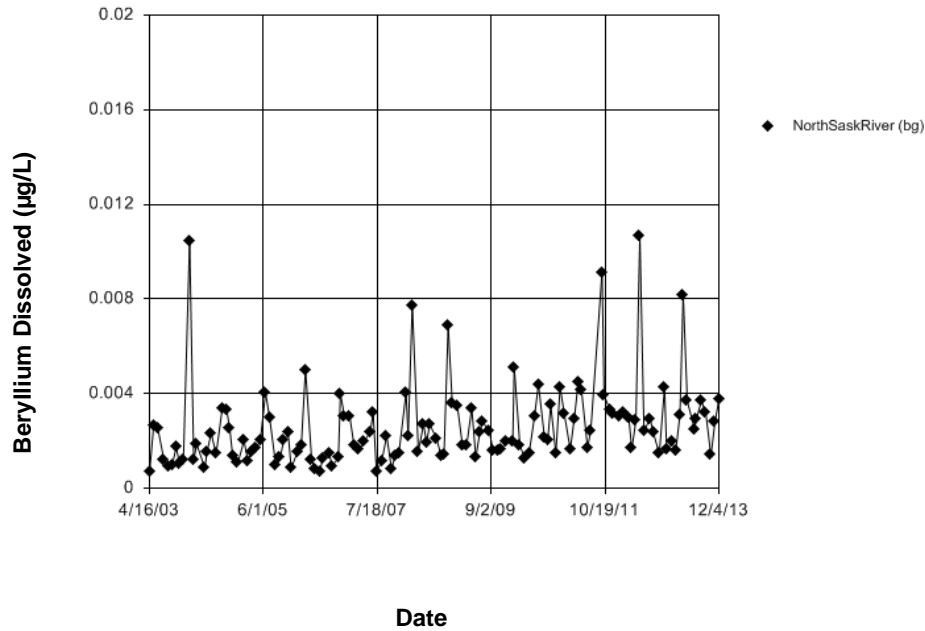


Figure E361 North Saskatchewan River: Beryllium Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 1.813. Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level. There were 6 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal. Kruskal-Wallis statistic (H) = 1.813. Adjusted Kruskal-Wallis statistic (H') = 1.813.

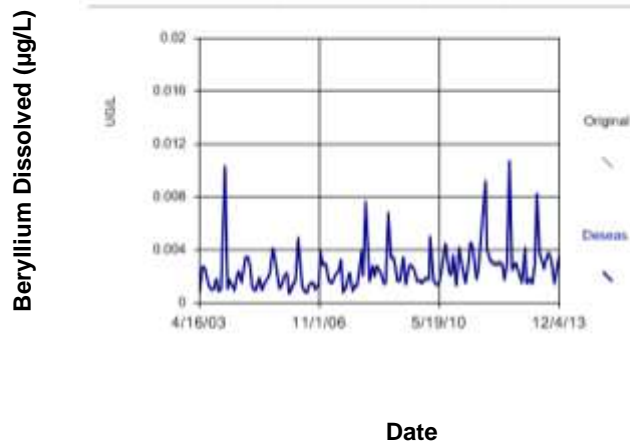


Figure E362 North Saskatchewan River: Beryllium Dissolved

Sen's Slope Estimator

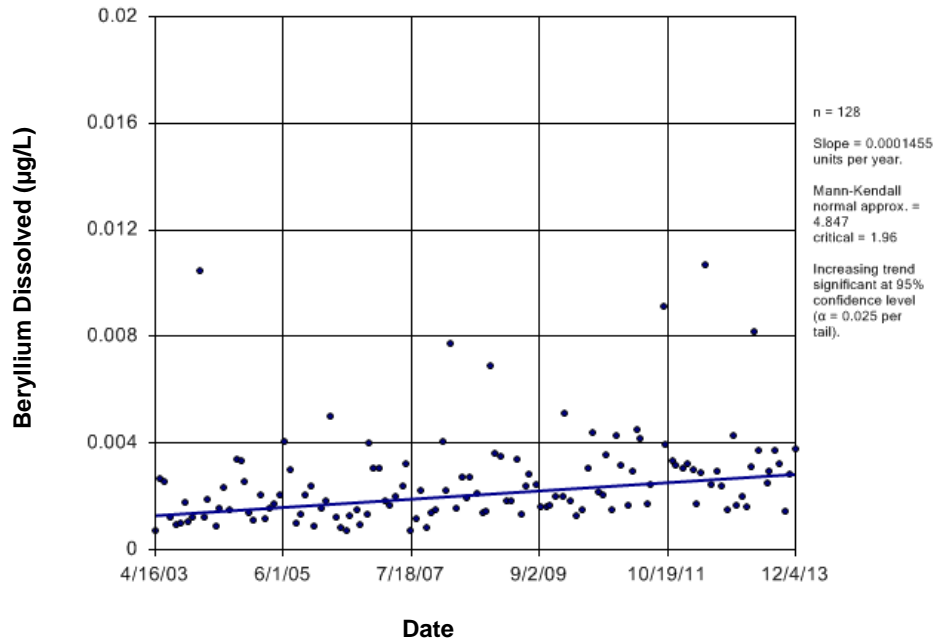


Figure E363 North Saskatchewan River: Beryllium Dissolved

Time Series

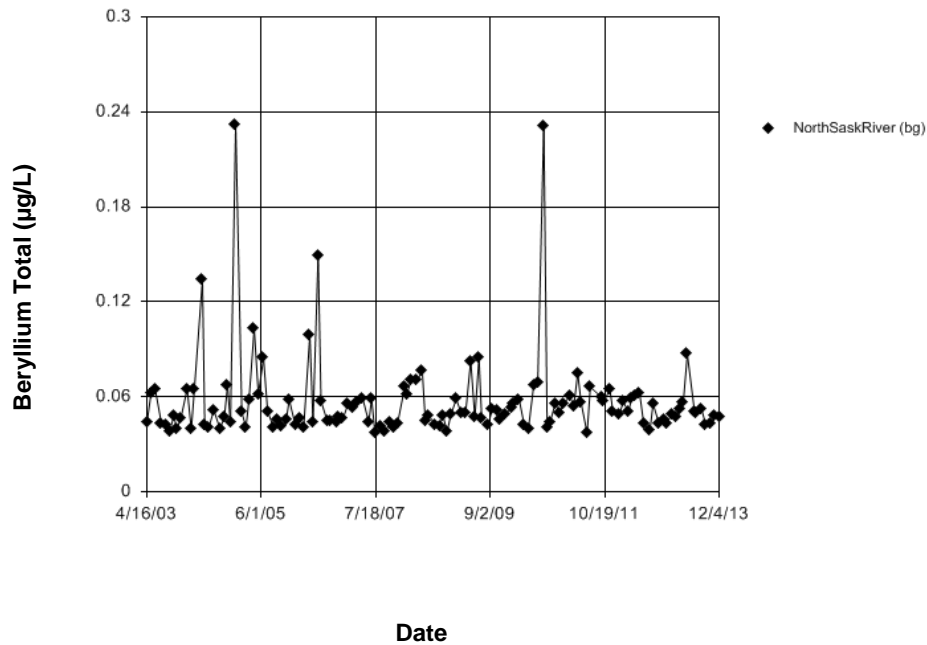


Figure E364 North Saskatchewan River: Beryllium Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.0358
Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 0.0358
Adjusted Kruskal-Wallis statistic (H') = 0.0358

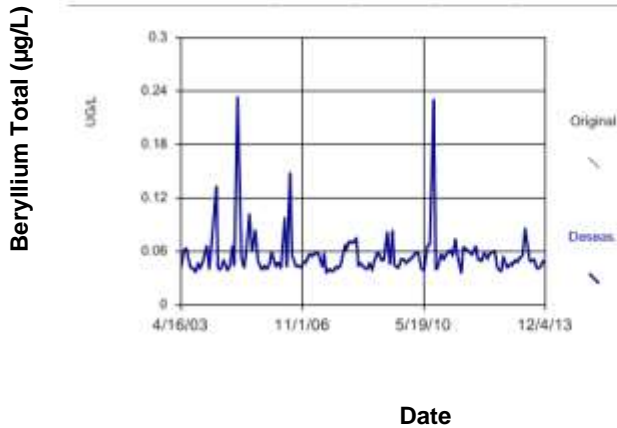


Figure E365 North Saskatchewan River: Beryllium Total

Sen's Slope Estimator

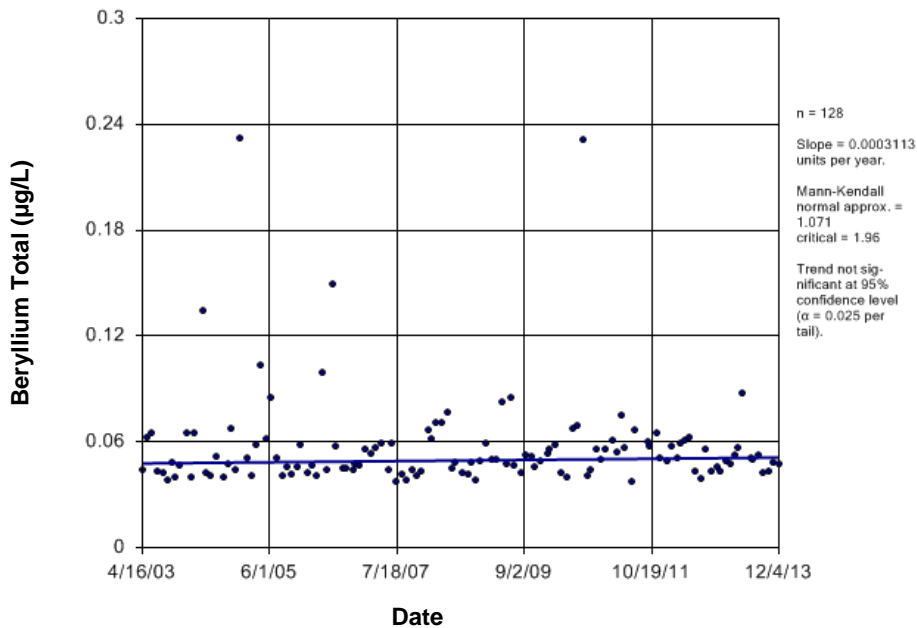
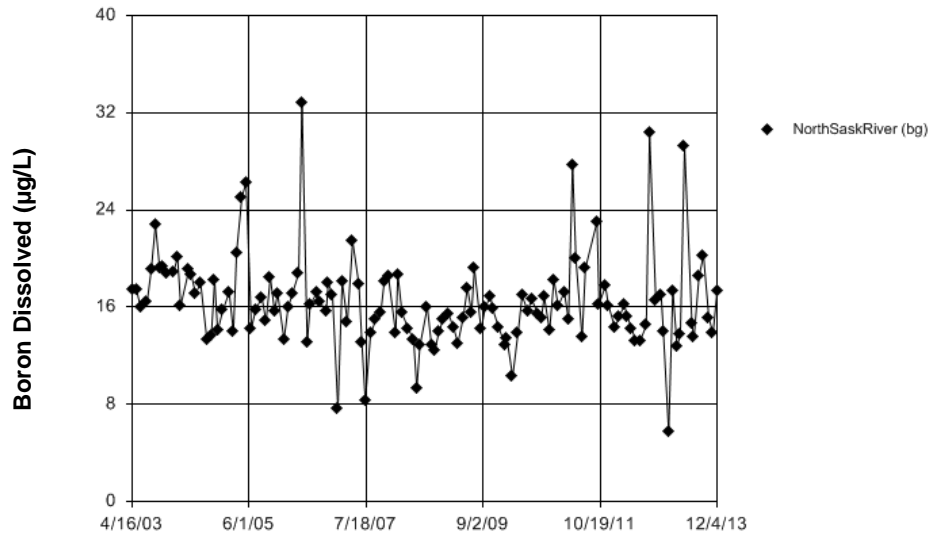


Figure E366 North Saskatchewan River: Beryllium Total

Time Series

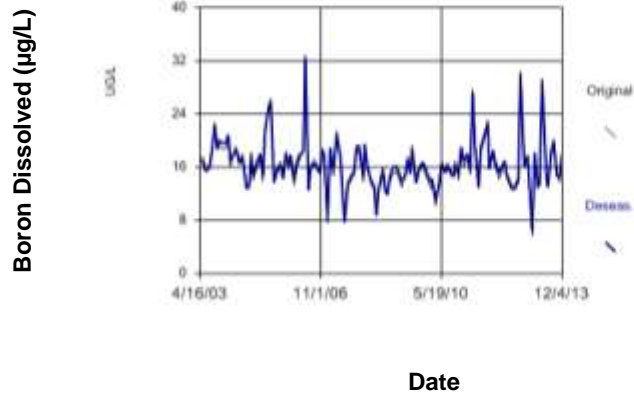


Date

Figure E367 North Saskatchewan River: Boron Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.9959
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 8 groups of data in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 0.9959
 Adjusted Kruskal-Wallis statistic (H') = 0.9980



Date

Figure E368 North Saskatchewan River: Boron Dissolved

Sen's Slope Estimator

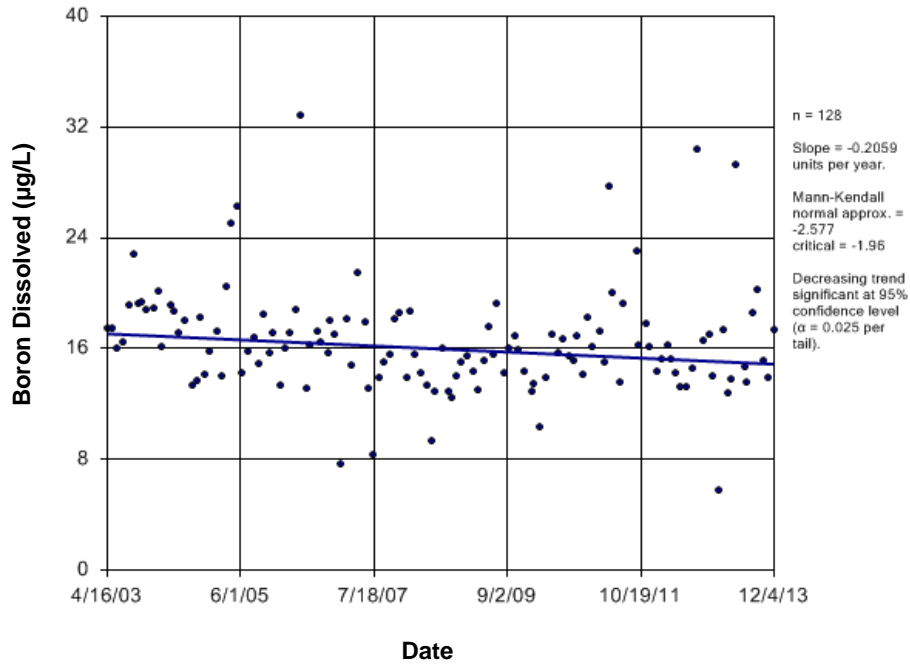


Figure E369 North Saskatchewan River: Boron Dissolved

Time Series

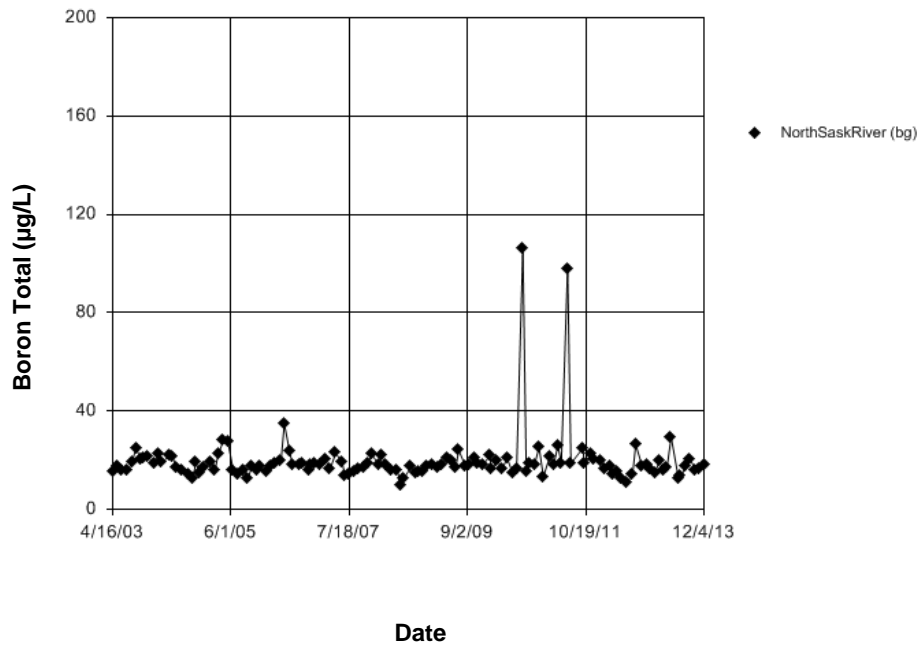


Figure E370 North Saskatchewan River: Boron Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 2.262. Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level. There were 7 groups of data in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal. Kruskal-Wallis statistic (H) = 2.262. Adjusted Kruskal-Wallis statistic (H') = 2.262.

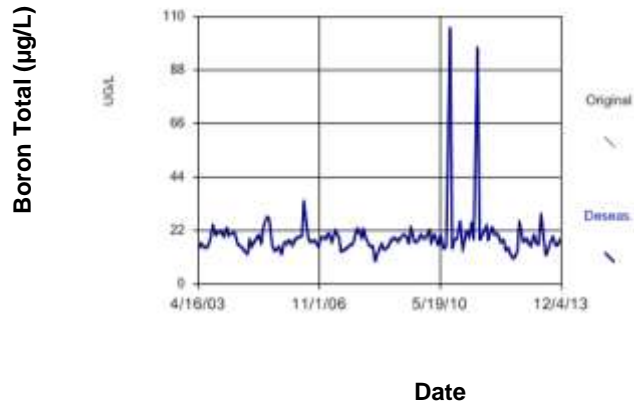


Figure E371 North Saskatchewan River: Boron Total

Sen's Slope Estimator

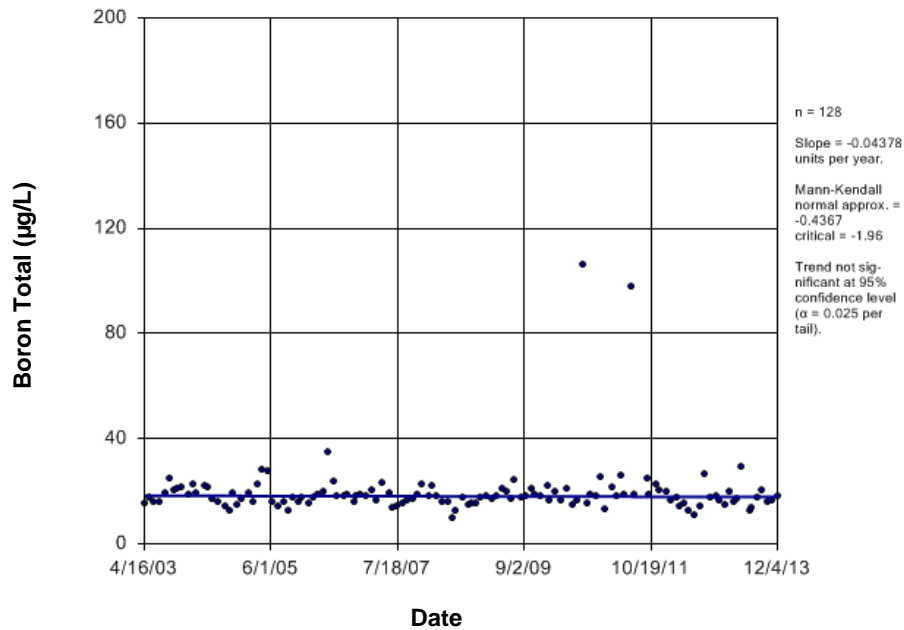


Figure E372 North Saskatchewan River: Boron Total

Time Series

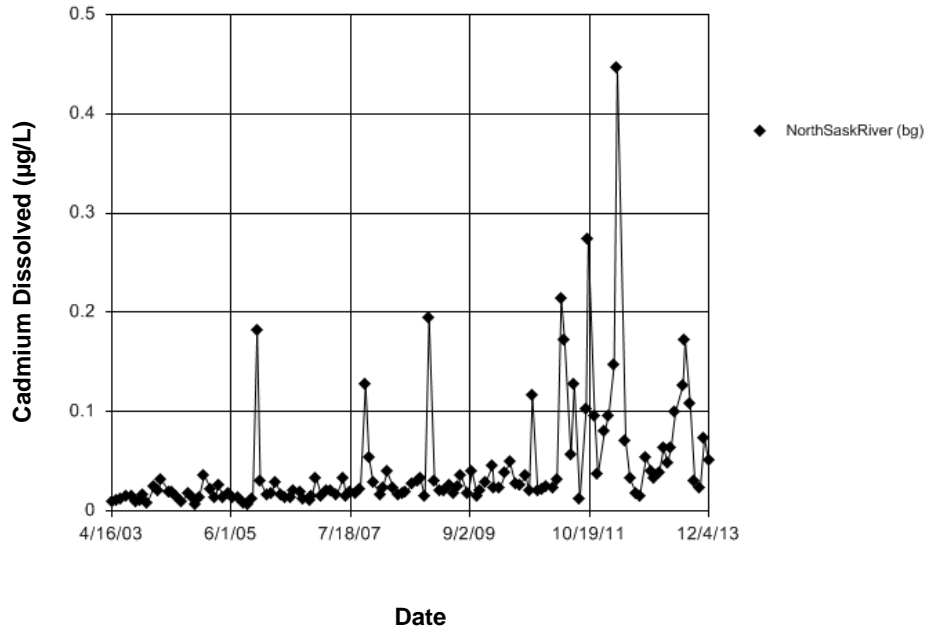


Figure E373 North Saskatchewan River: Cadmium Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 4.526
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 4.526
 Adjusted Kruskal-Wallis statistic (H') = 4.526

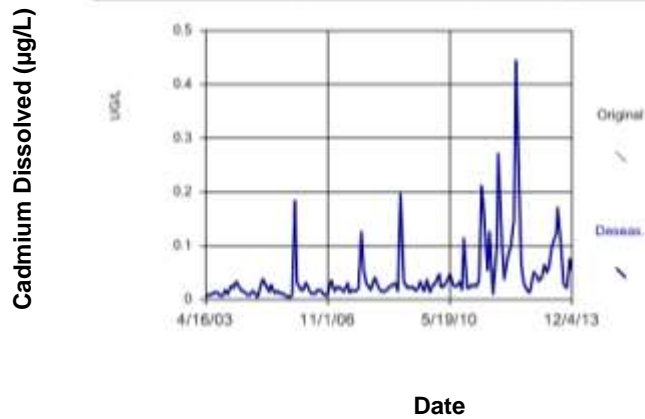


Figure E374 North Saskatchewan River: Cadmium Dissolved

Seasonal Kendall

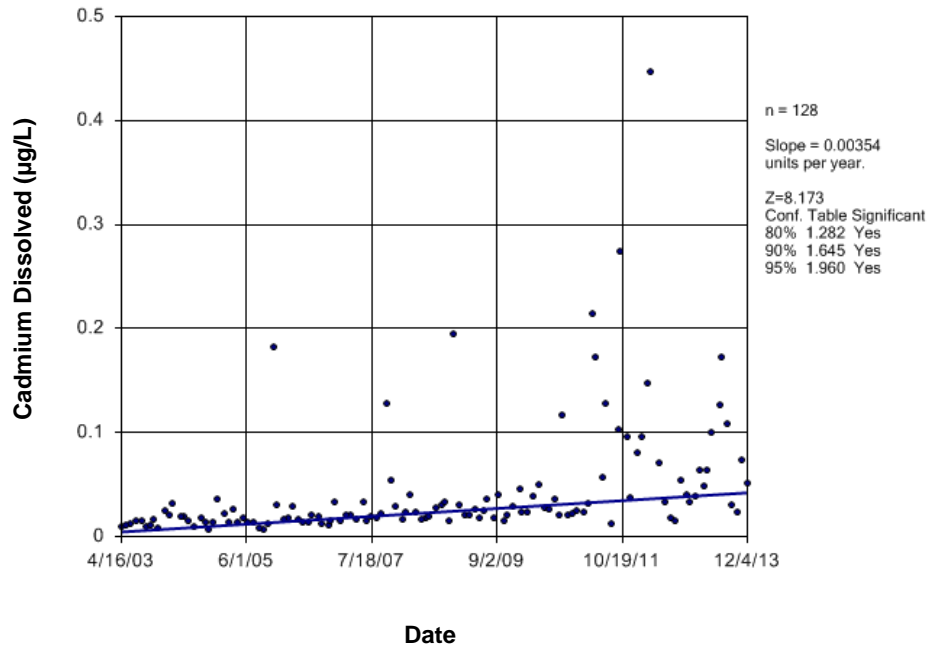


Figure E375 North Saskatchewan River: Cadmium Dissolved

Time Series

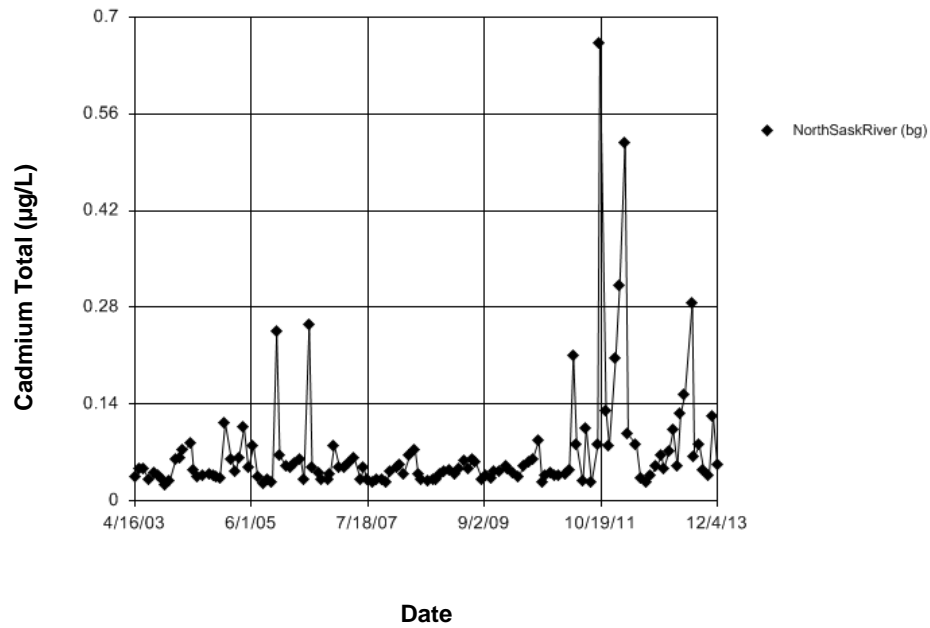


Figure E376 North Saskatchewan River: Cadmium Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 5.744
Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 5.744
Adjusted Kruskal-Wallis statistic (H') = 5.744

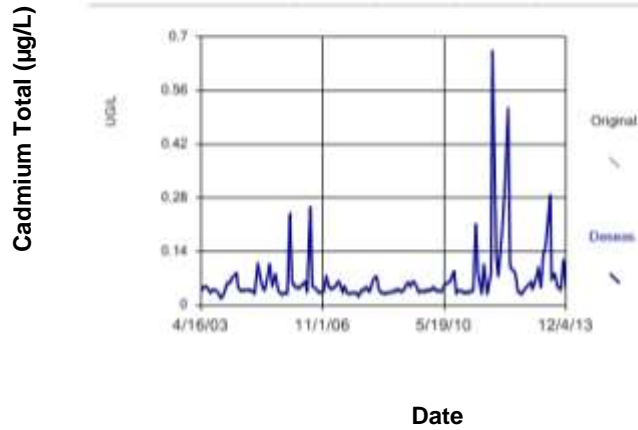


Figure E377 North Saskatchewan River: Cadmium Total

Seasonal Kendall

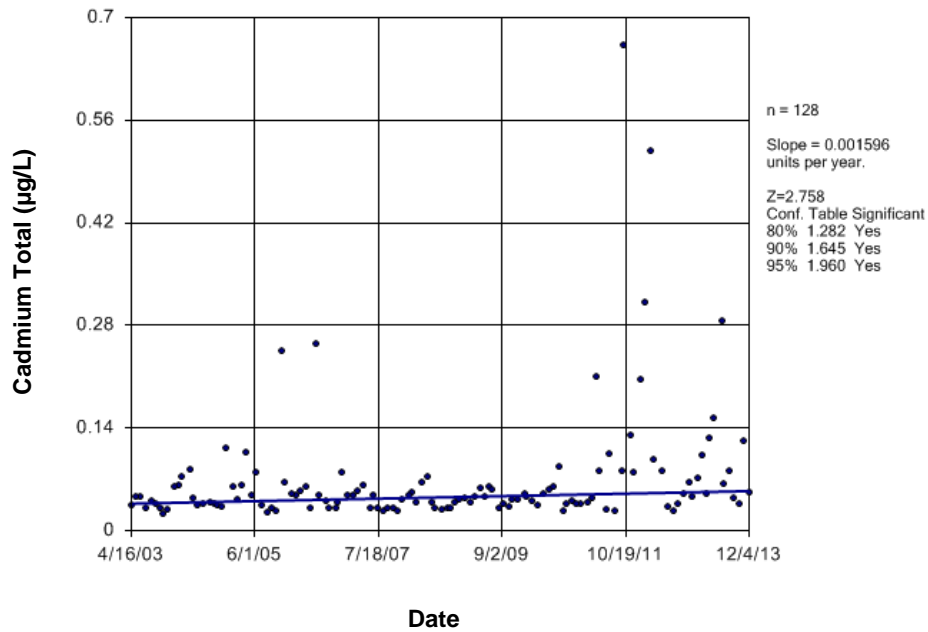


Figure E378 North Saskatchewan River: Cadmium Total

Time Series

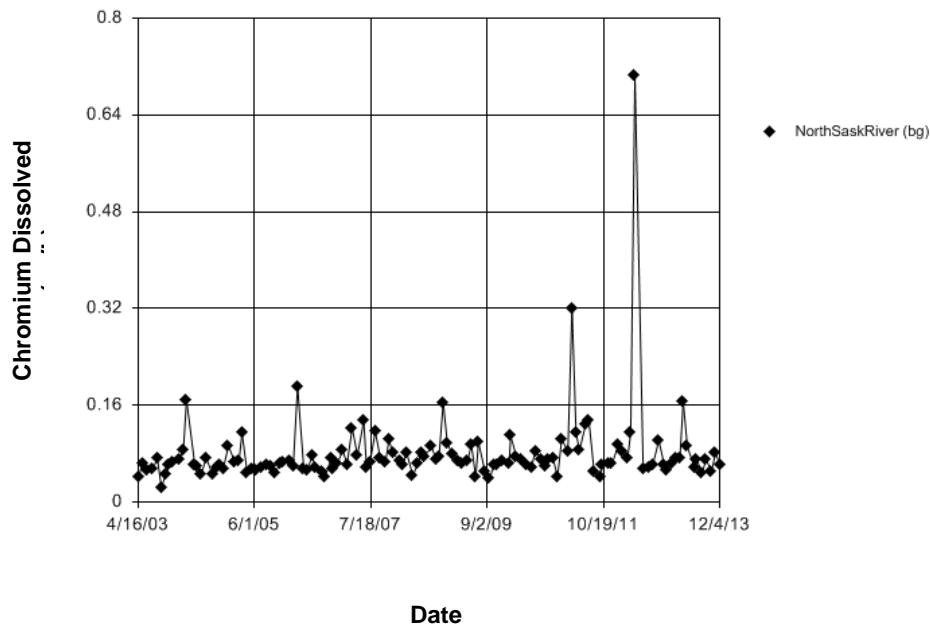


Figure E379 North Saskatchewan River: Chromium Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 10.5. Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level. There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

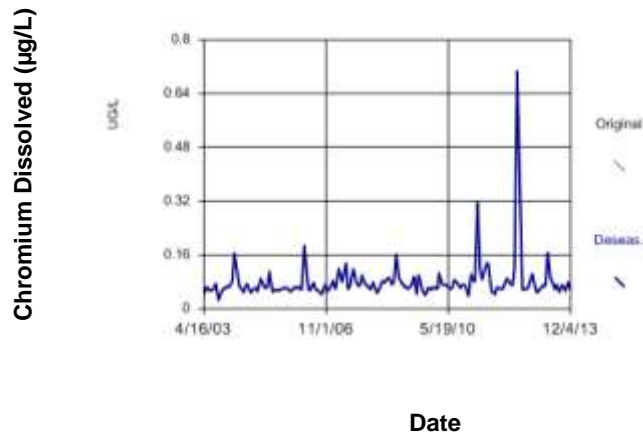


Figure E380 North Saskatchewan River: Chromium Dissolved

Seasonal Kendall

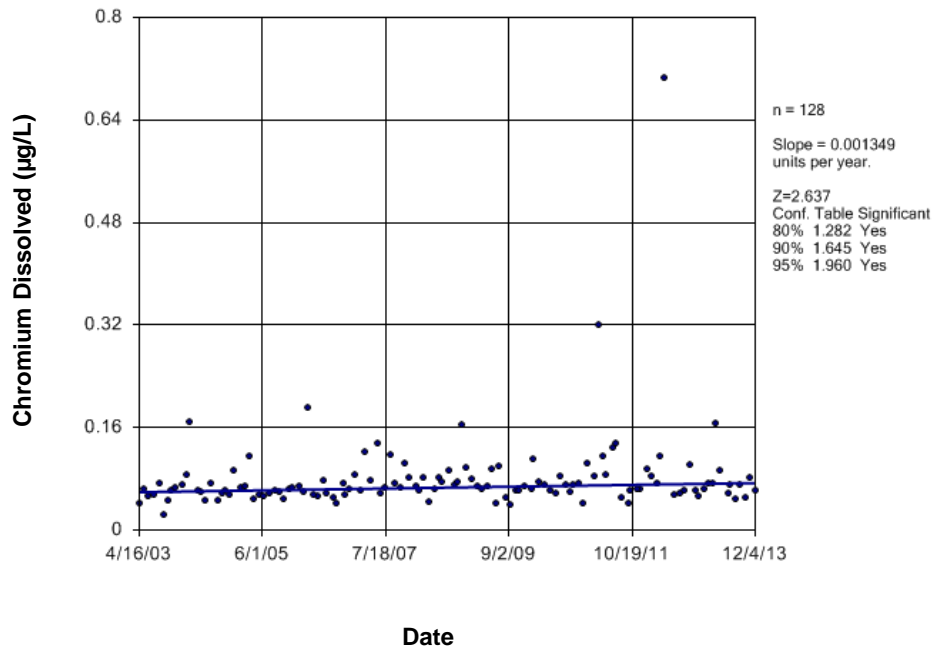


Figure E381 North Saskatchewan River: Chromium Dissolved

Time Series

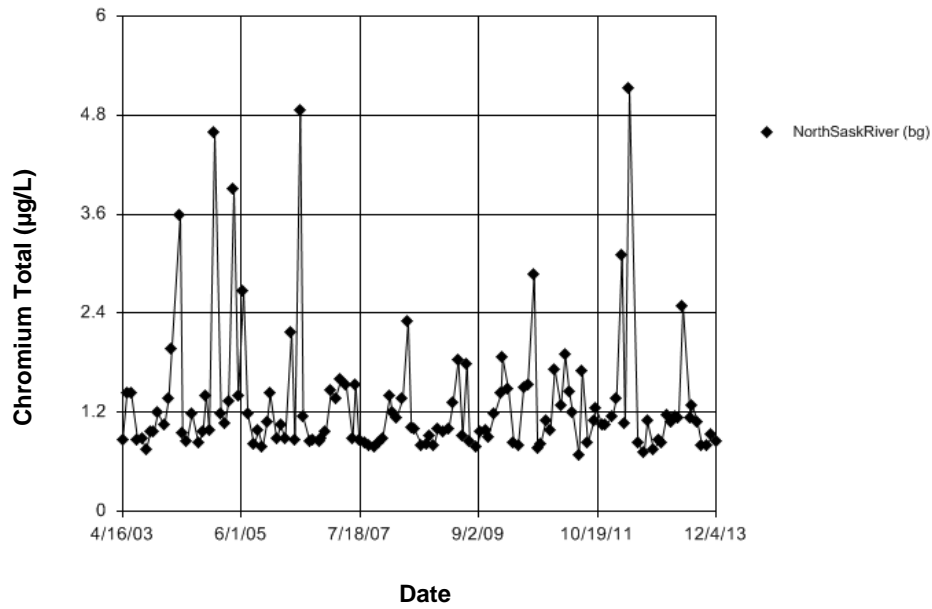


Figure E382 North Saskatchewan River: Chromium Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 3% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-Squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 3.861
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 4 groups of this in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 3.861
 Adjusted Kruskal-Wallis statistic (H') = 3.861

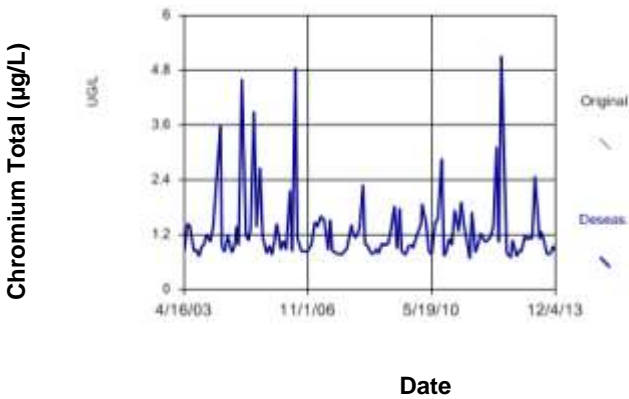


Figure E383 North Saskatchewan River: Chromium Total

Seasonal Kendall

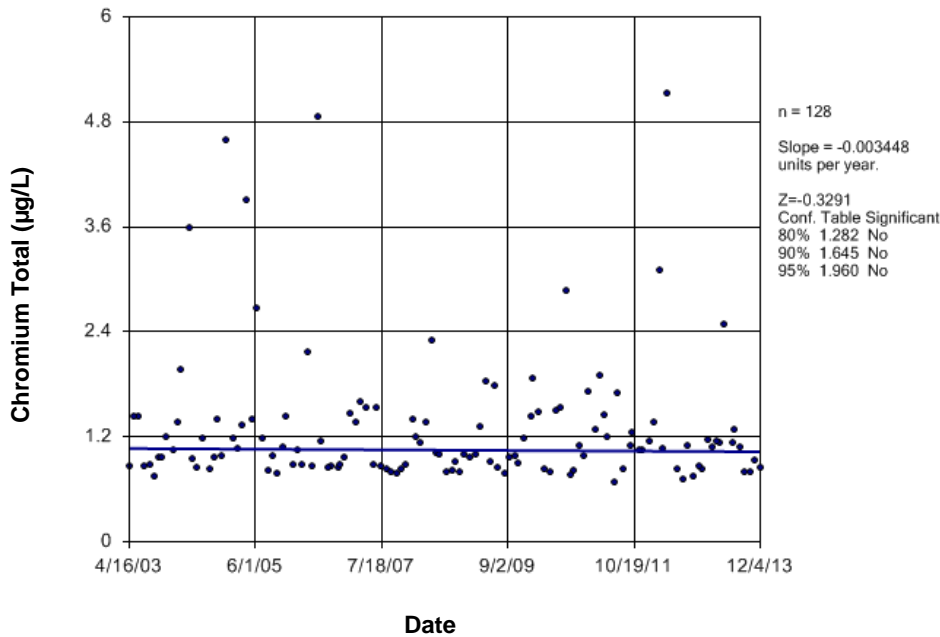


Figure E384 North Saskatchewan River: Chromium Total

Time Series

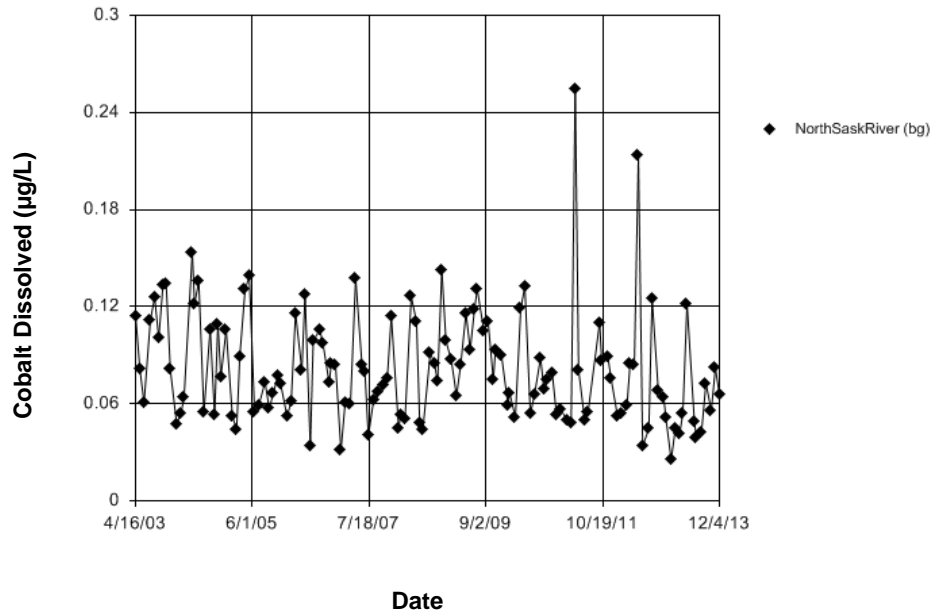


Figure E385 North Saskatchewan River: Cobalt Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 10.1
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 10.1
 Adjusted Kruskal-Wallis statistic (H') = 10.1

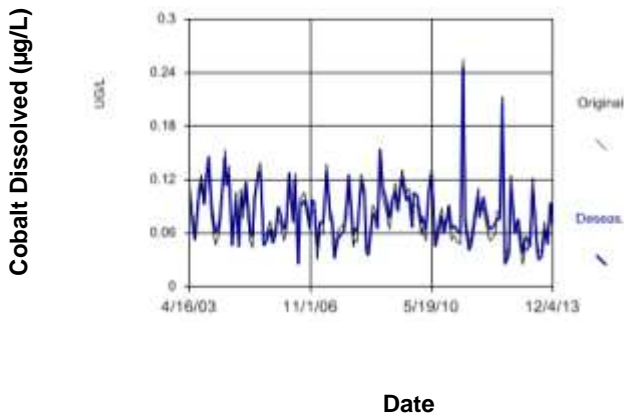


Figure E386 North Saskatchewan River: Cobalt Dissolved

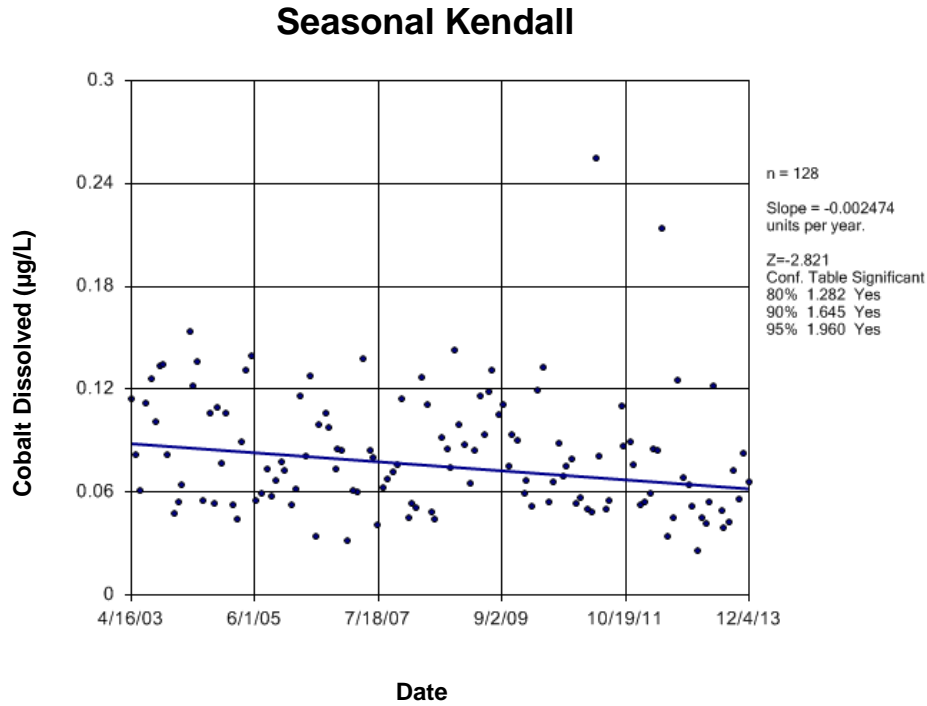


Figure E387 North Saskatchewan River: Cobalt Dissolved

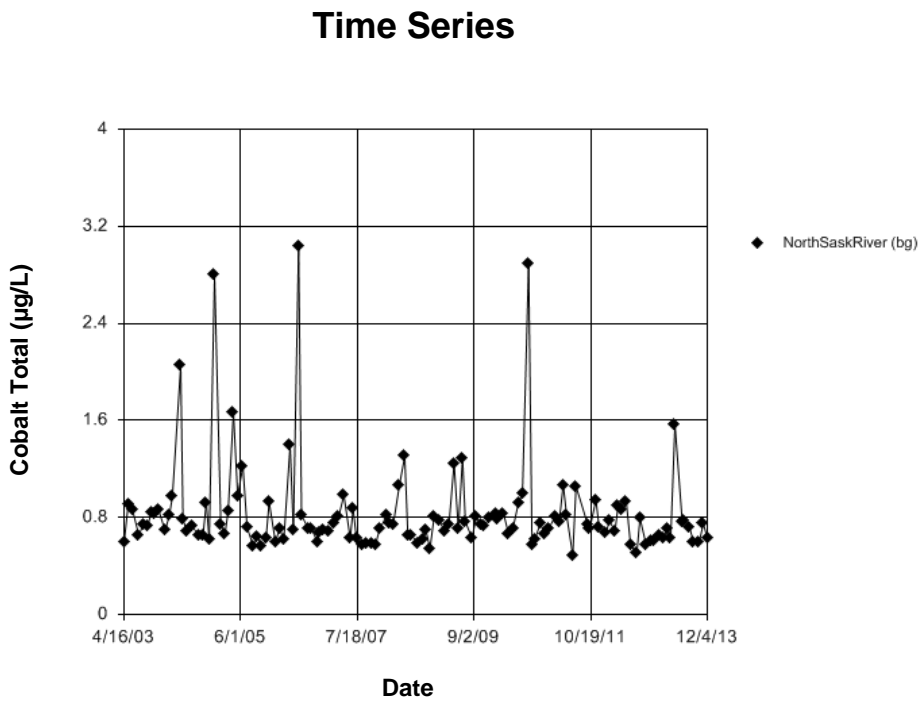


Figure E388 North Saskatchewan River: Cobalt Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.1155
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 0.1155
 Adjusted Kruskal-Wallis statistic (H') = 0.1155

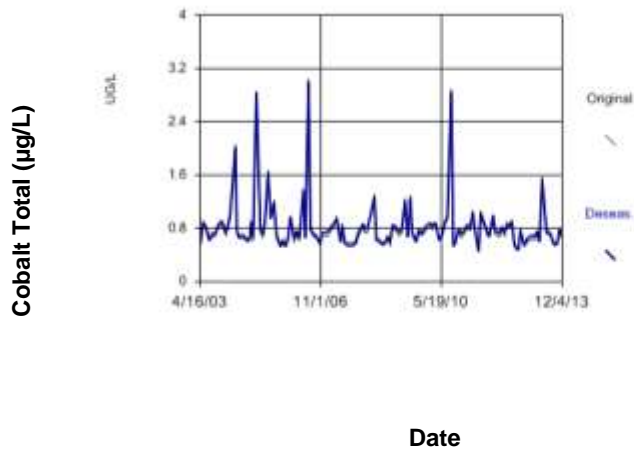


Figure 389 North Saskatchewan River: Cobalt Total

Sen's Slope Estimator

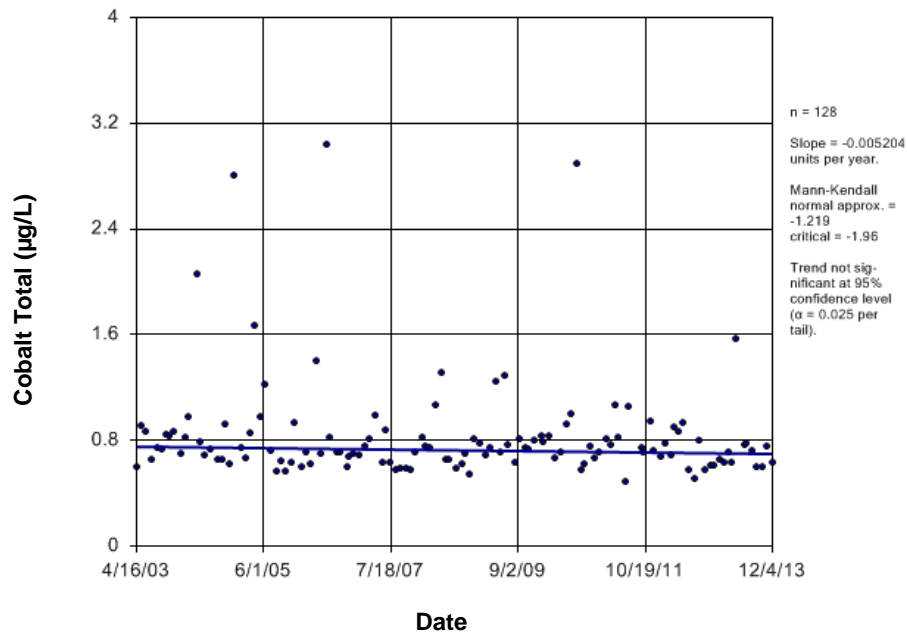


Figure E390 North Saskatchewan River: Cobalt Total

Time Series

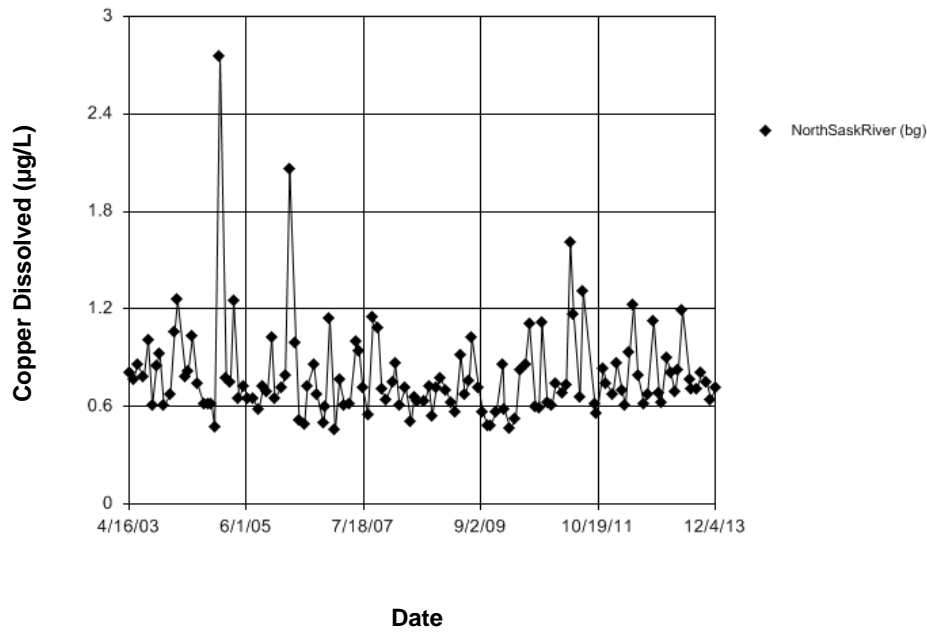


Figure E391 North Saskatchewan River: Copper Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.2473
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 3 groups of test (6) data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 0.2473
 Adjusted Kruskal-Wallis statistic (H') = 0.2473

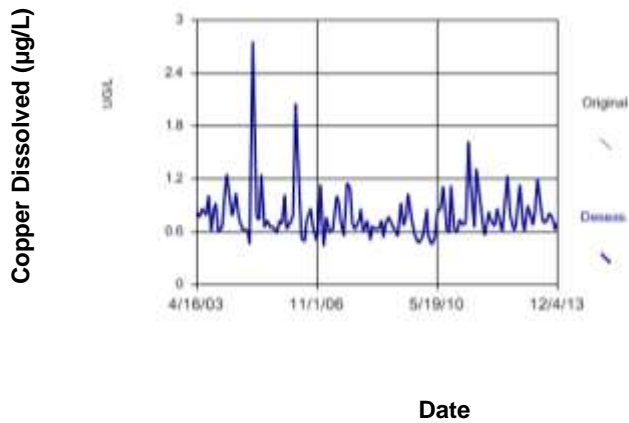


Figure E392 North Saskatchewan River: Copper Dissolved

Sen's Slope Estimator

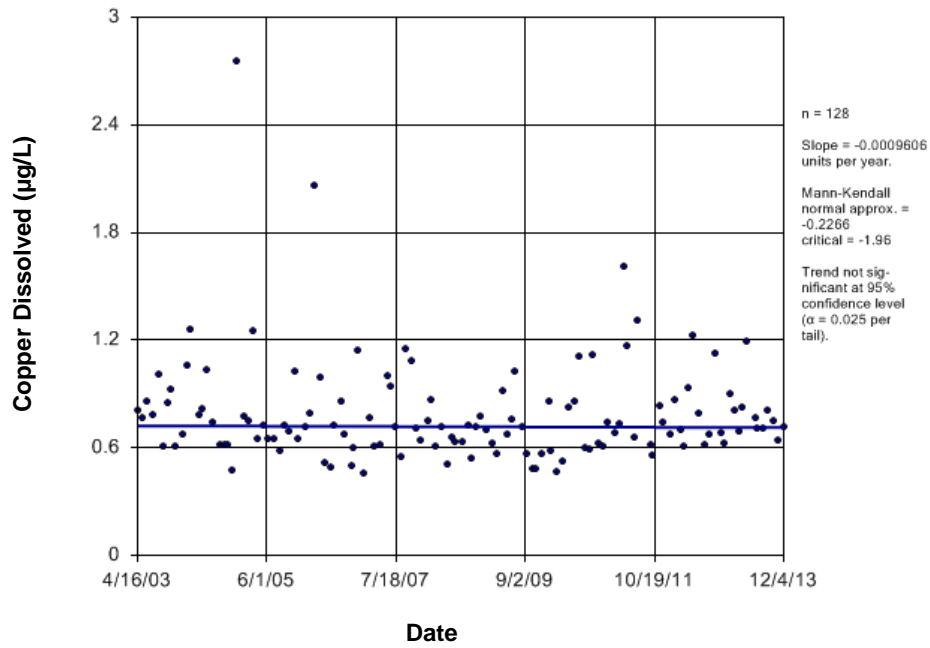


Figure E393 North Saskatchewan River: Copper Dissolved

Time Series

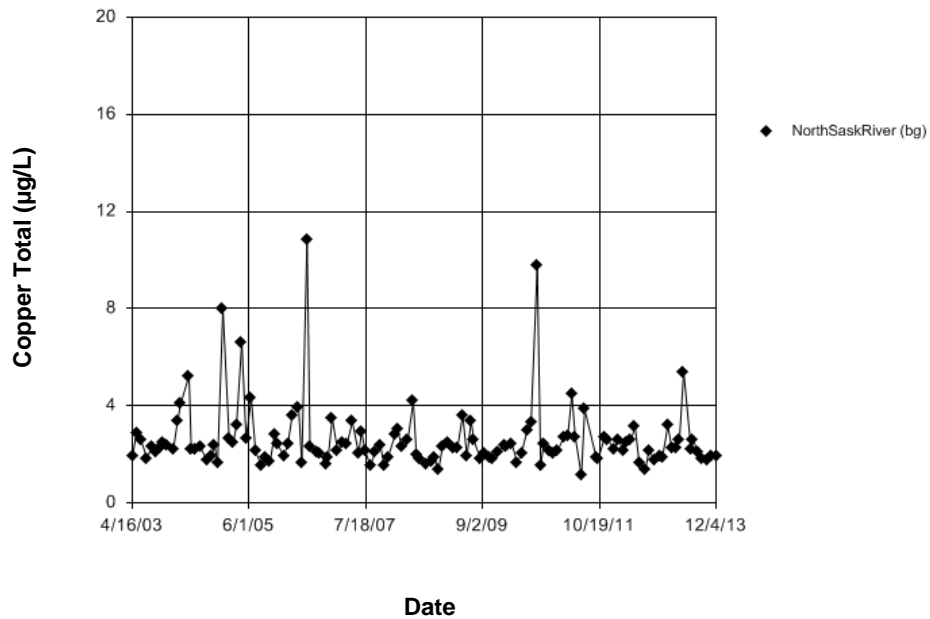


Figure E394 North Saskatchewan River: Copper Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates **NO SEASONALITY** at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 1.859
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 4 groups of data in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 1.859
 Adjusted Kruskal-Wallis statistic (H') = 1.859

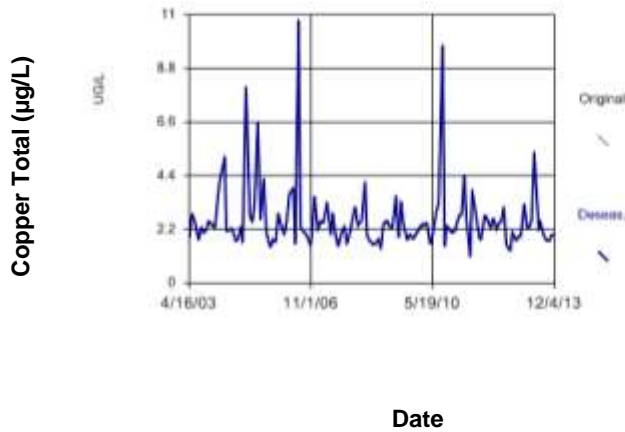


Figure E395 North Saskatchewan River: Copper Total

Sen's Slope Estimator

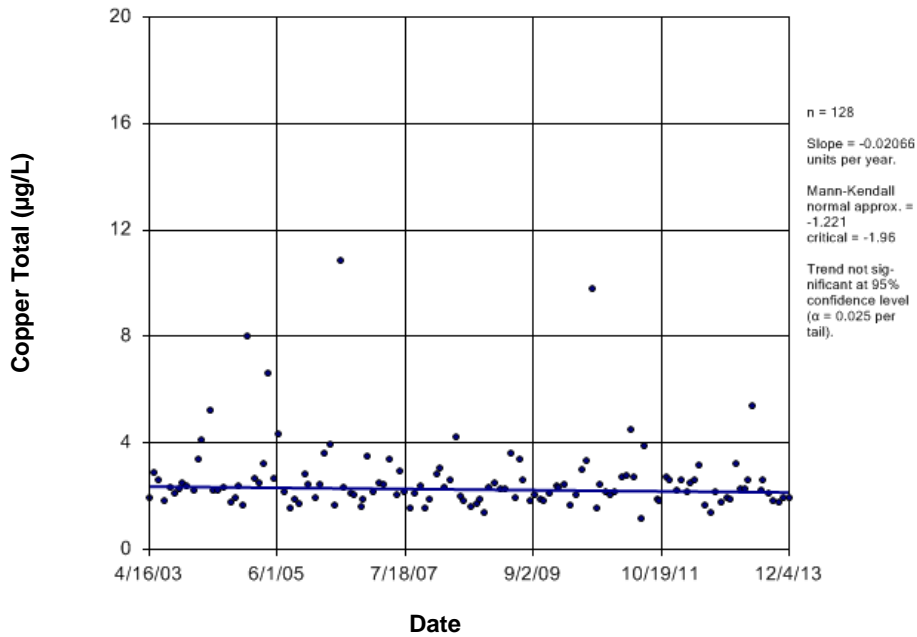


Figure E396 North Saskatchewan River: Copper Total

Time Series

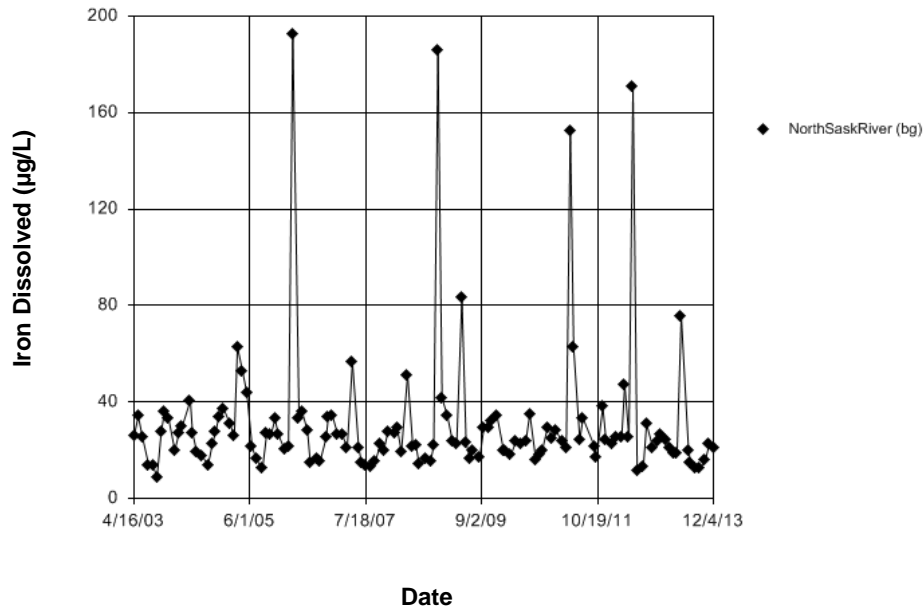


Figure E397 North Saskatchewan River: Iron Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-Squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 9.387. Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level. There were 3 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal. Kruskal-Wallis statistic (H) = 9.387. Adjusted Kruskal-Wallis statistic (H') = 9.387.

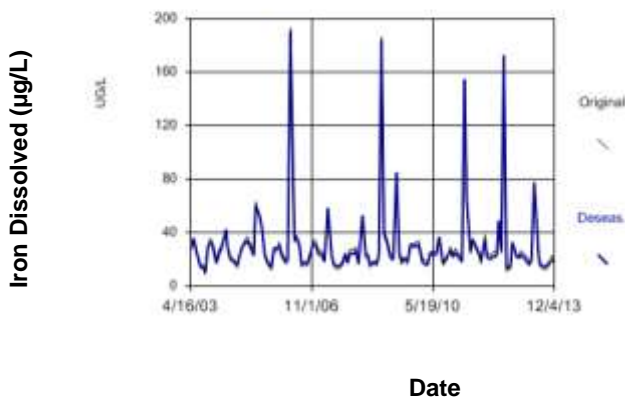


Figure E398 North Saskatchewan River: Iron Dissolved

Seasonal Kendall

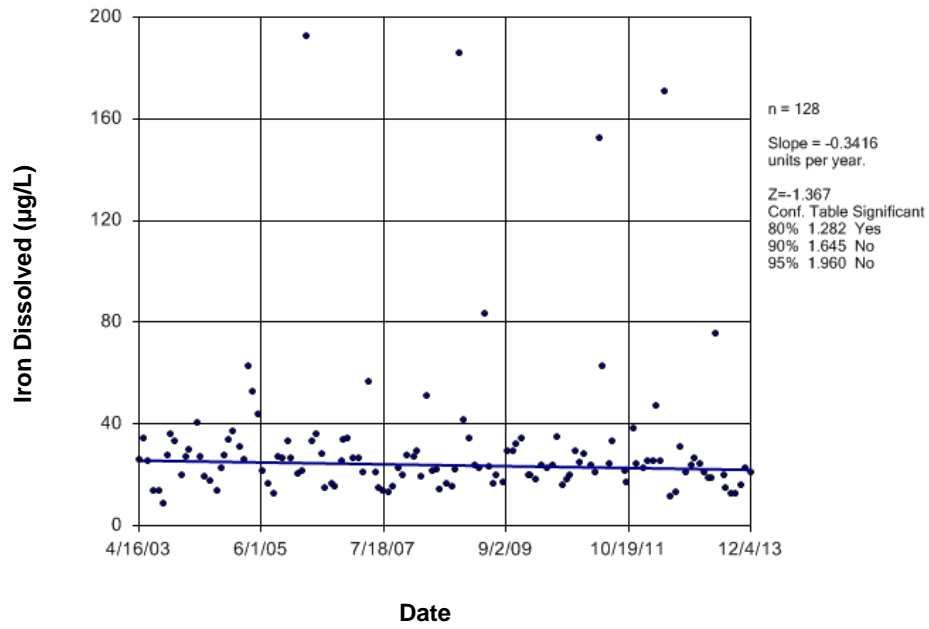


Figure E399 North Saskatchewan River: Iron Dissolved

Time Series

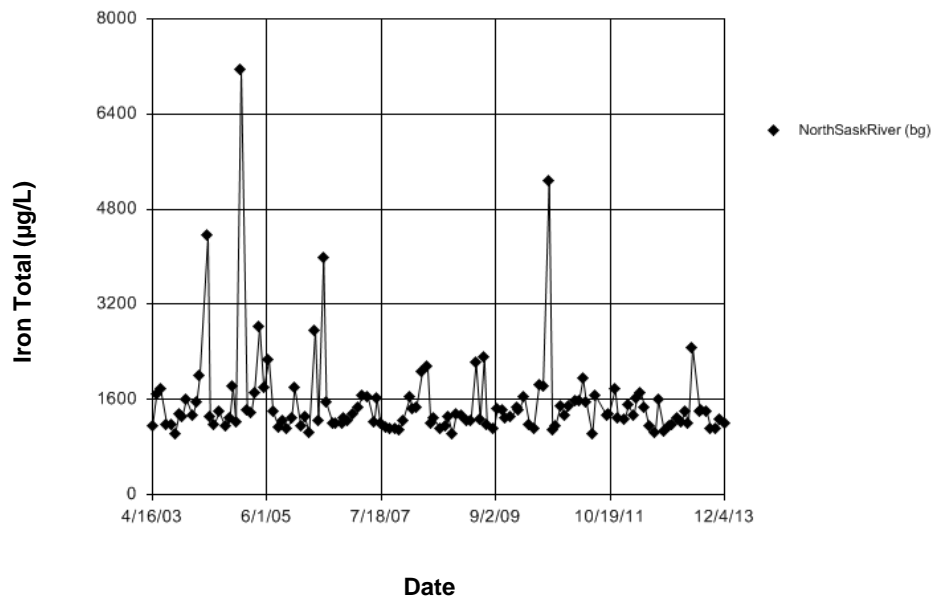


Figure E400 North Saskatchewan River: Iron Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the colorized Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.5582. Tabulated Chi-squared value = 3.841 with 1 degree of freedom at the 5% significance level. There were 6 groups of data in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal. Kruskal-Wallis statistic (H) = 0.5582. Adjusted Kruskal-Wallis statistic (H') = 0.5582.

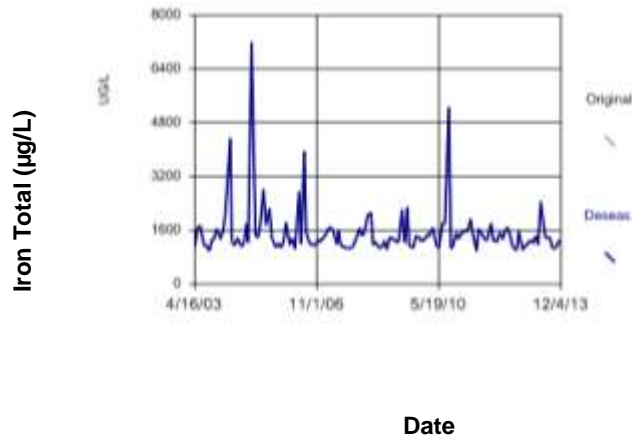


Figure E401 North Saskatchewan River: Iron Total

Sen's Slope Estimator

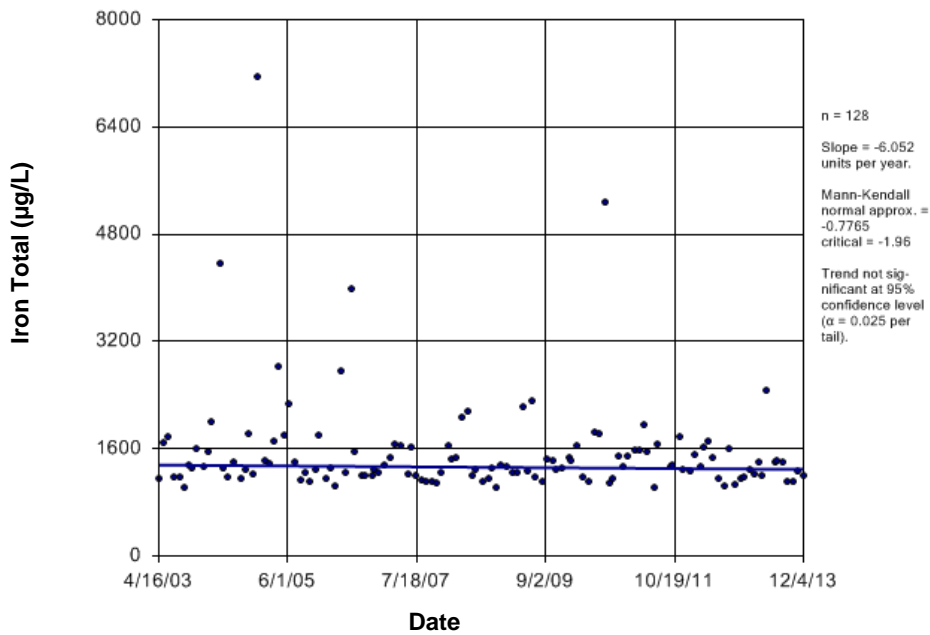


Figure E402 North Saskatchewan River: Iron Total

Time Series

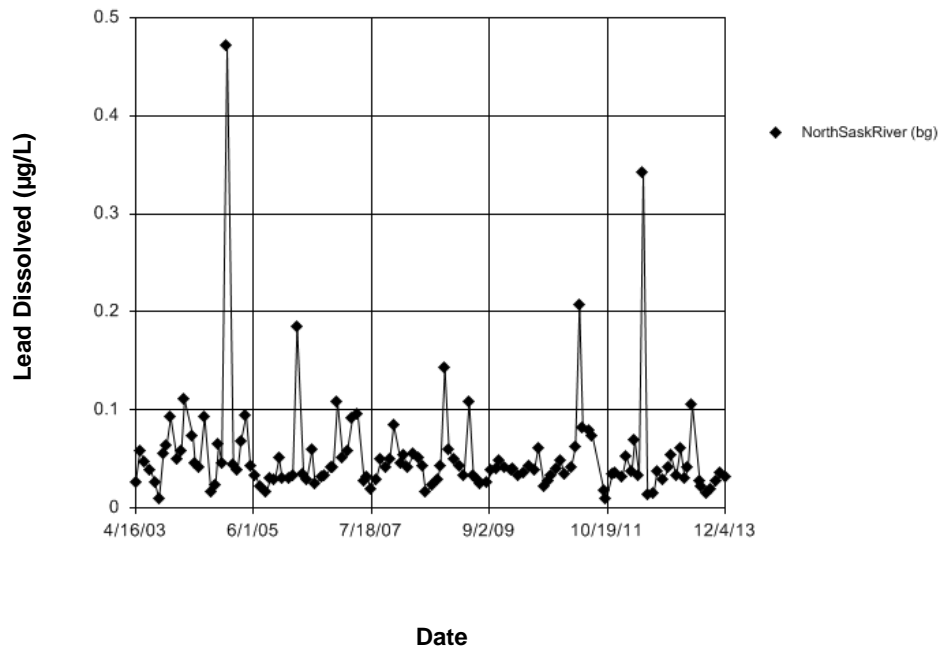


Figure E403 North Saskatchewan River: Lead Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 13.36. Calculated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level. There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (B) was necessary.

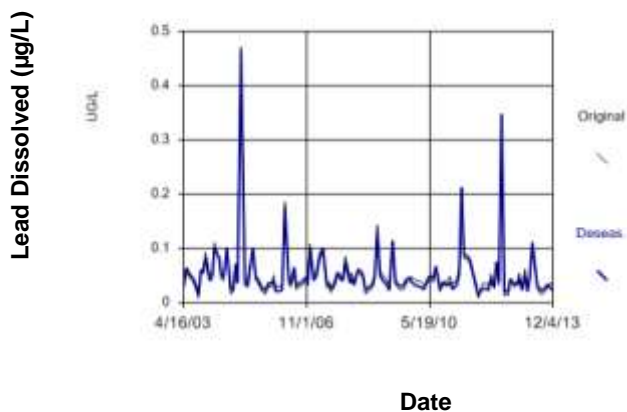


Figure E404 North Saskatchewan River: Lead Dissolved

Seasonal Kendall

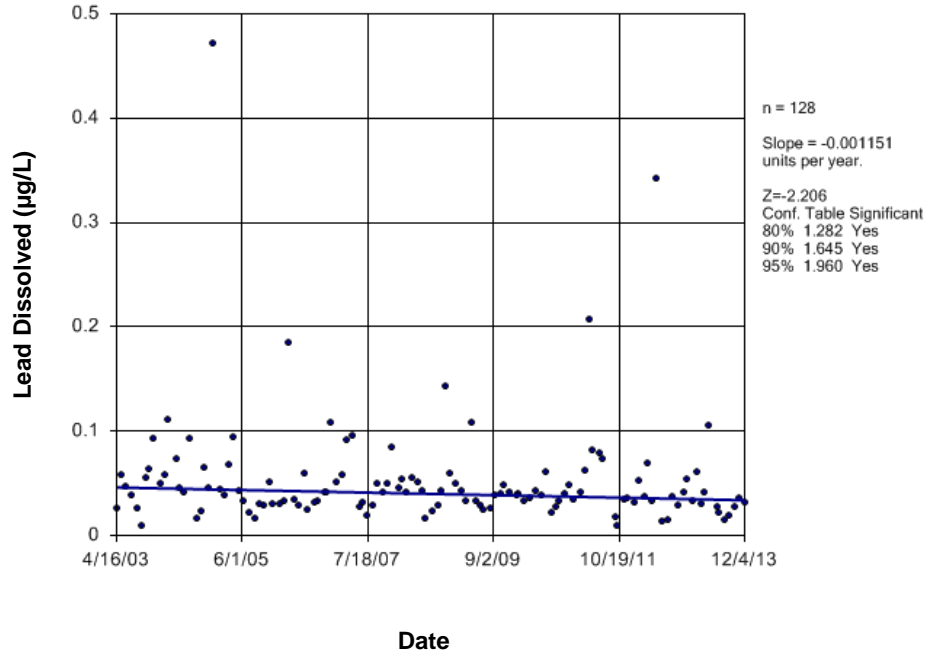


Figure E405 North Saskatchewan River: Lead Dissolved

Time Series

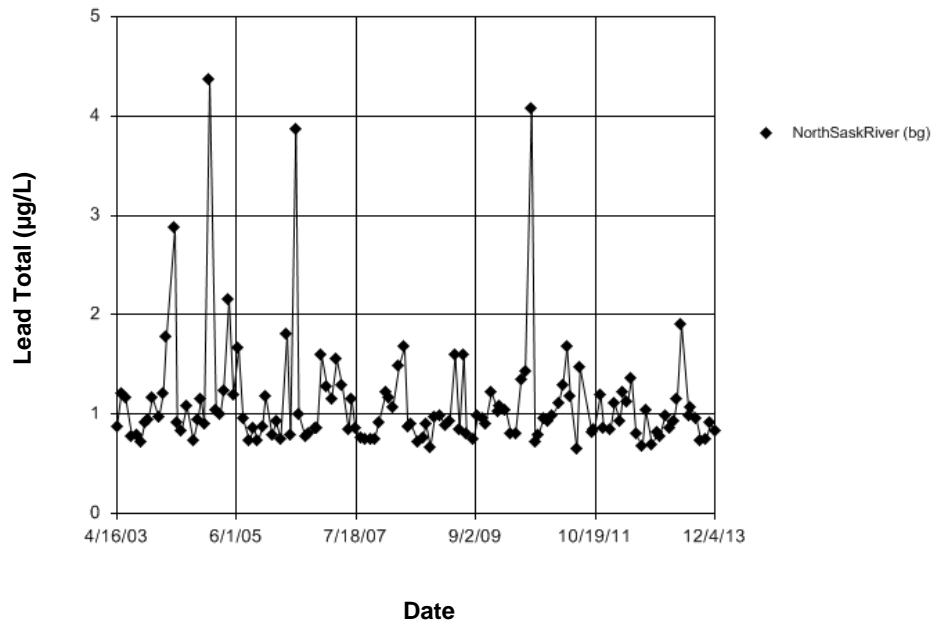


Figure E406 North Saskatchewan River: Lead Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-Squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 2.007
Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 2.007
Adjusted Kruskal-Wallis statistic (H') = 2.007

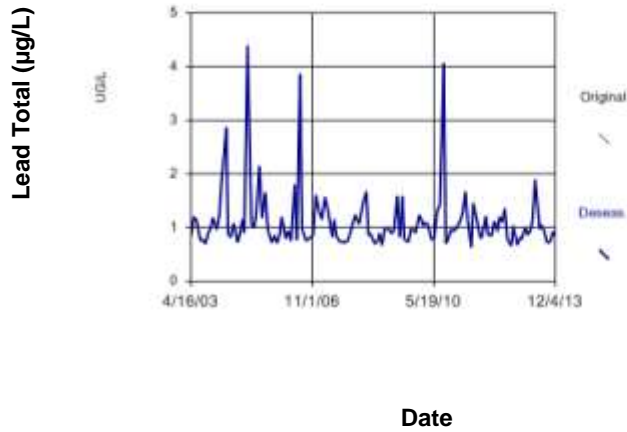


Figure E407 North Saskatchewan River: Lead Total

Sen's Slope Estimator

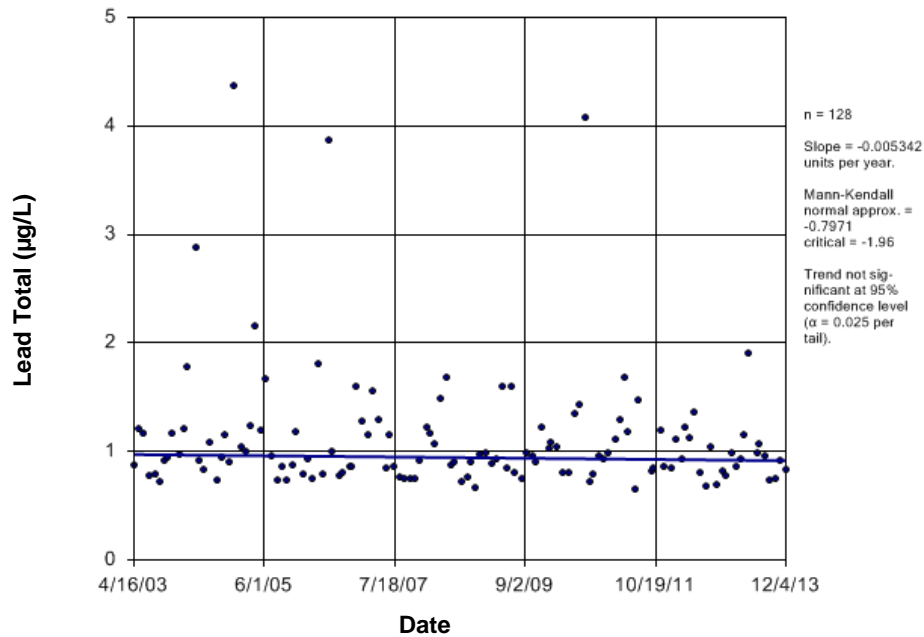
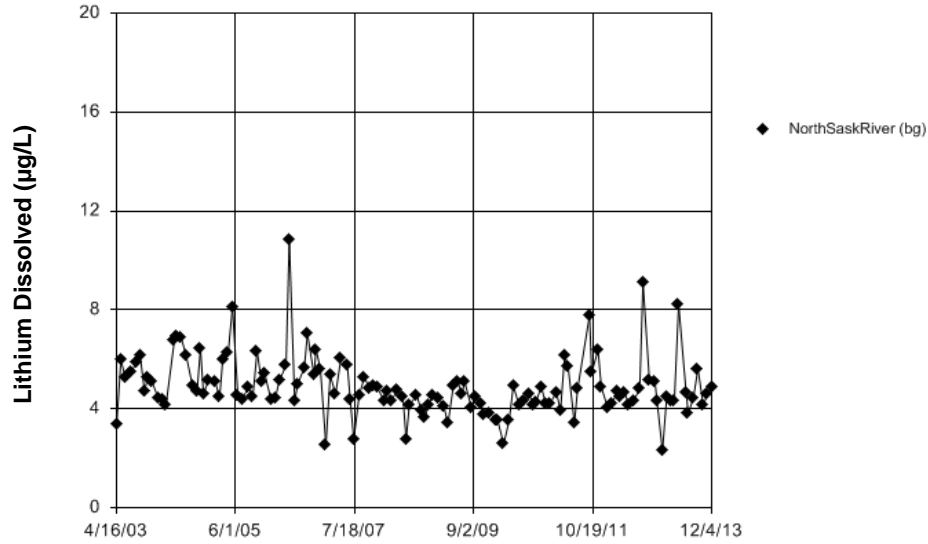


Figure E408 North Saskatchewan River: Lead Total

Time Series

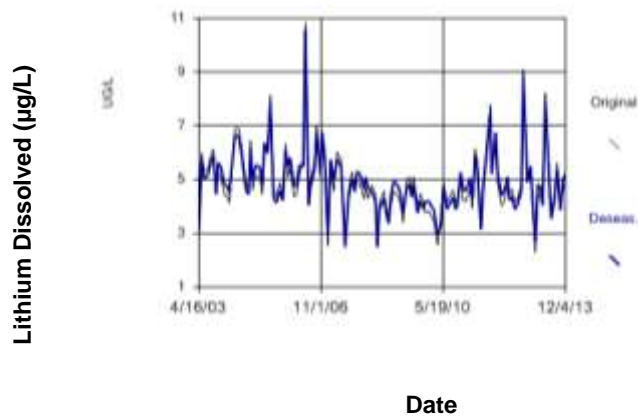


Date

Figure E409 North Saskatchewan River: Lithium Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 6.513
 Calculated Chi-squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 6.512
 Adjusted Kruskal-Wallis statistic (H') = 6.513



Date

Figure E410 North Saskatchewan River: Lithium Dissolved

Seasonal Kendall

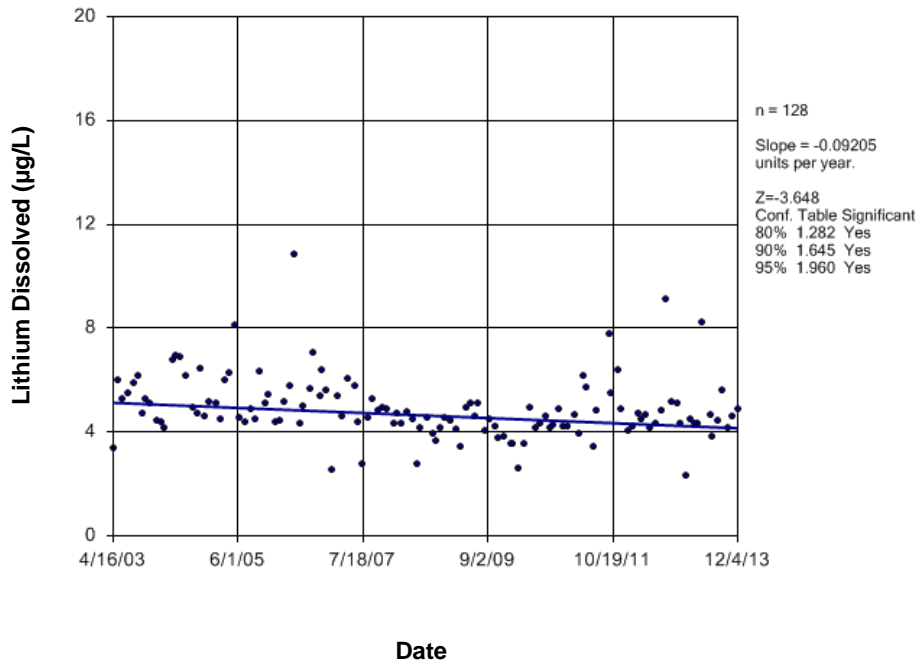


Figure E411 North Saskatchewan River: Lithium Dissolved

Time Series

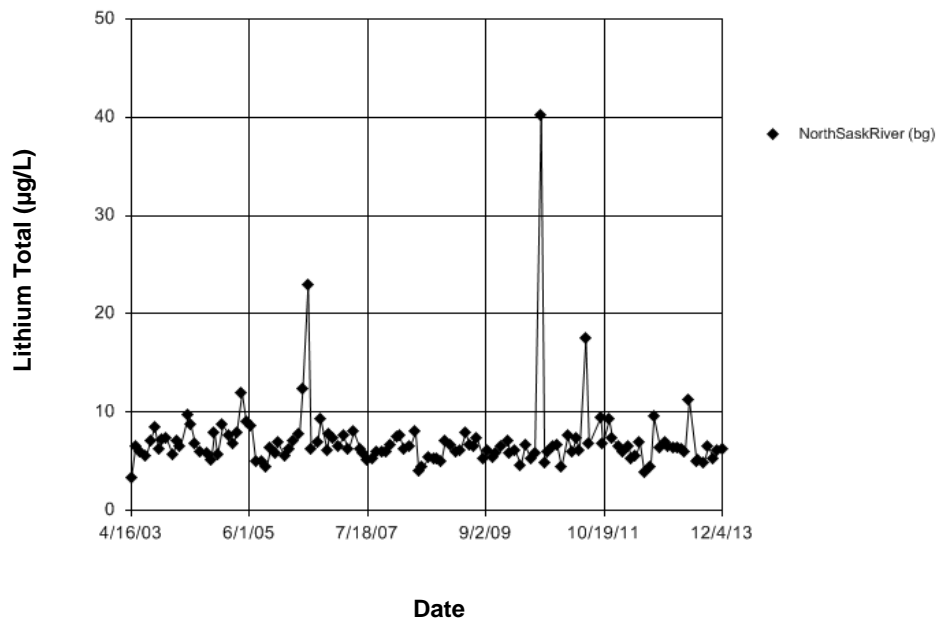


Figure E412 North Saskatchewan River: Lithium Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 2.403
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 3 groups of data in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 2.403
 Adjusted Kruskal-Wallis statistic (H') = 2.403

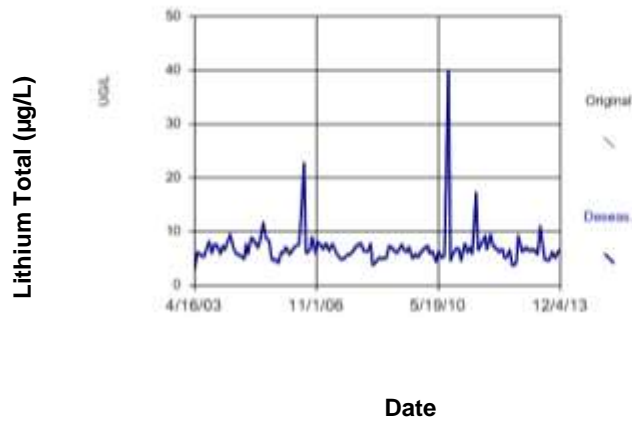


Figure E413 North Saskatchewan River: Lithium Total

Sen's Slope Estimator

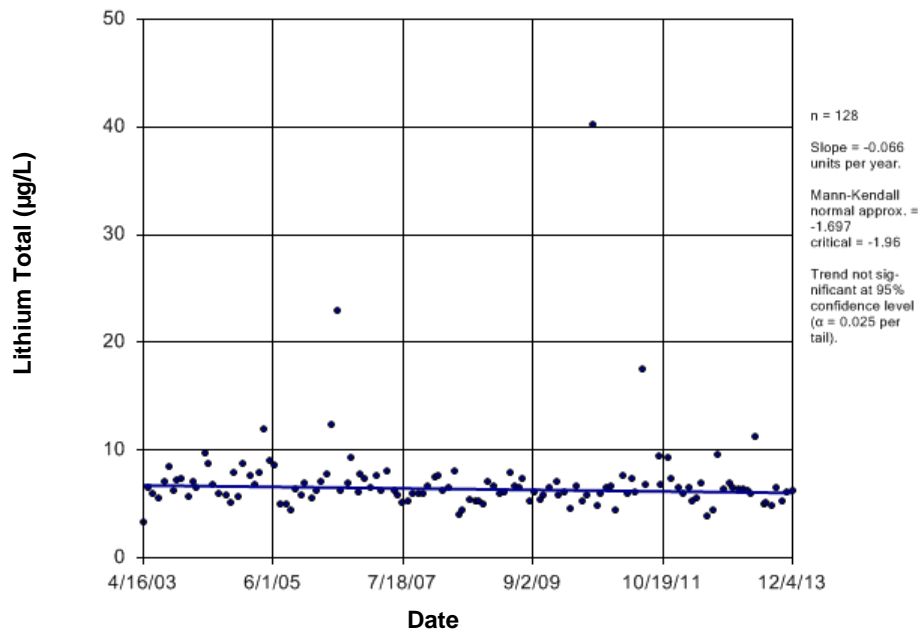


Figure E414 North Saskatchewan River: Lithium Total

Time Series

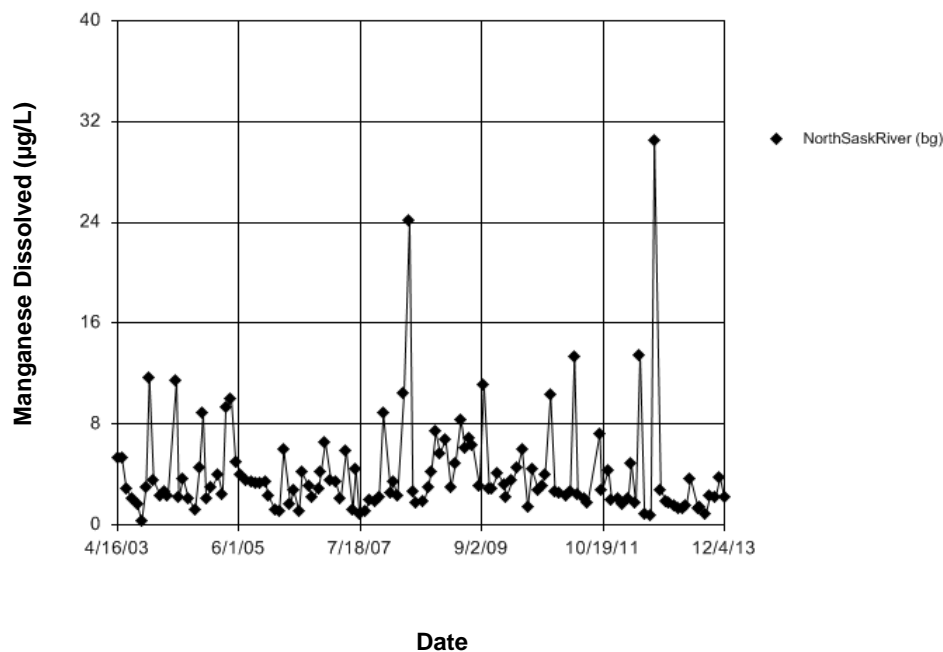


Figure E415 North Saskatchewan River: Manganese Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates **NO SEASONALITY** at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.09195
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 0.09195
 Adjusted Kruskal-Wallis statistic (H') = 0.09195

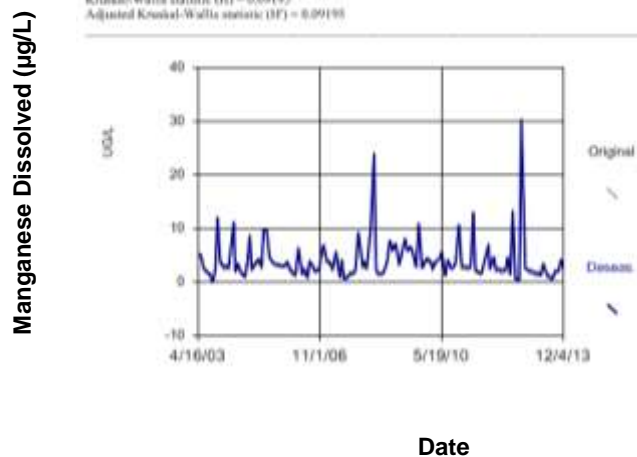


Figure E416 North Saskatchewan River: Manganese Dissolved

Sen's Slope Estimator

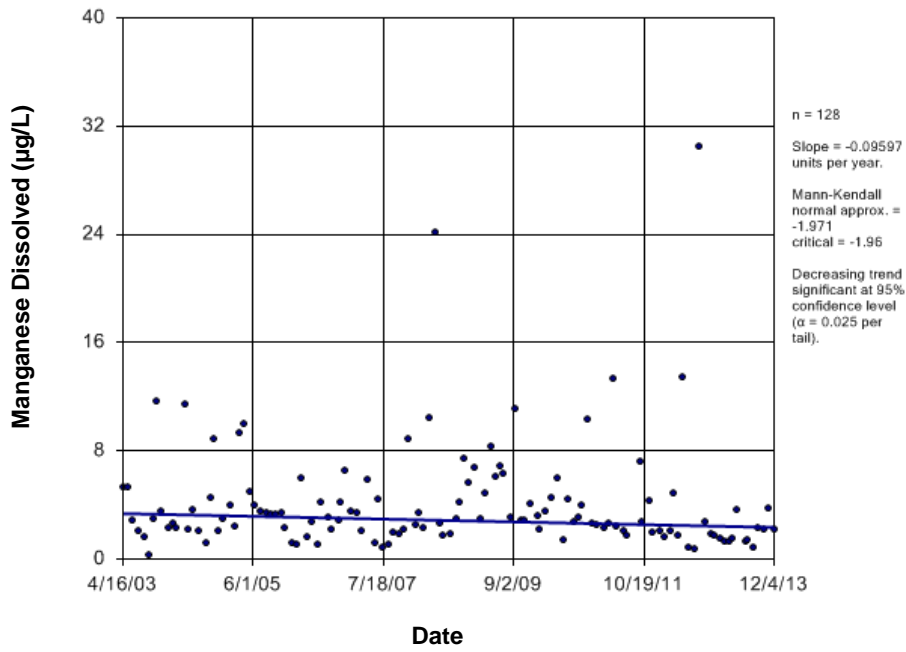


Figure E417 North Saskatchewan River: Manganese Dissolved

Time Series

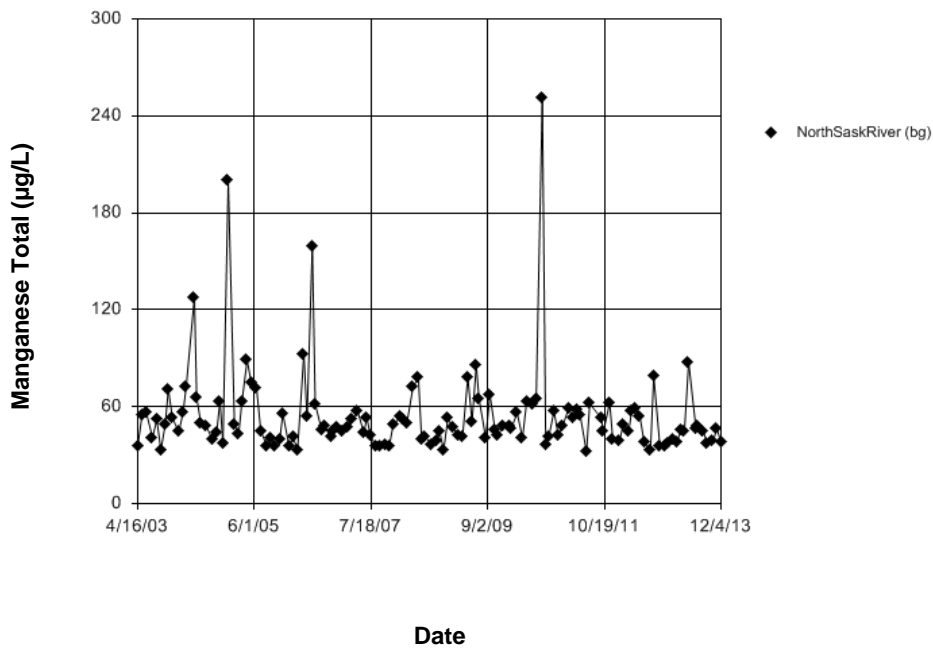


Figure E418 North Saskatchewan River: Manganese Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 1.634
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 1 group of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 1.634
 Adjusted Kruskal-Wallis statistic (H') = 1.634

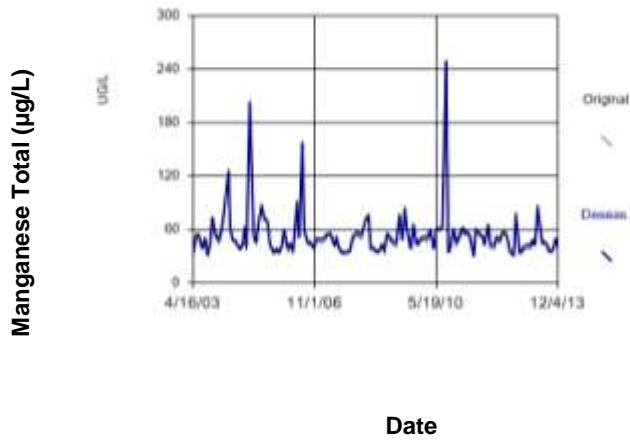


Figure E419 North Saskatchewan River: Manganese Total

Sen's Slope Estimator

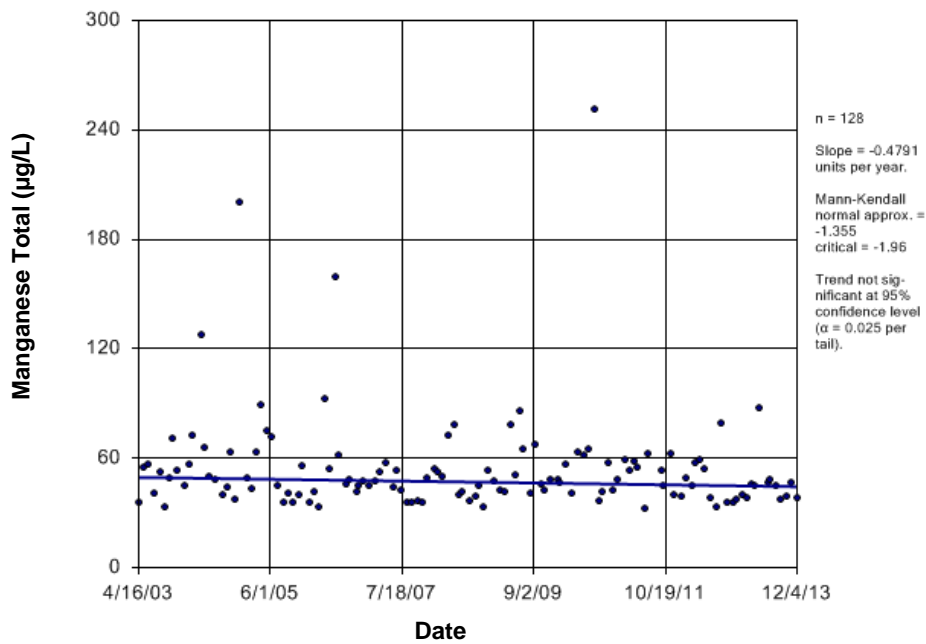


Figure E420 North Saskatchewan River: Manganese Total

Time Series

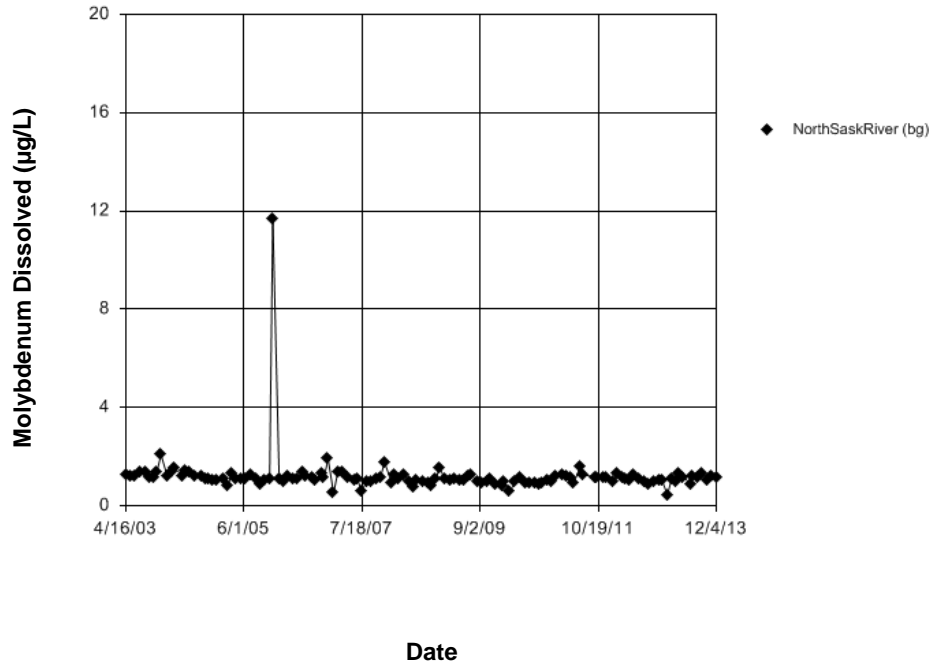


Figure E421 North Saskatchewan River: Molybdenum Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.9463
Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
There were 15 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H*) was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 0.9462
Adjusted Kruskal-Wallis statistic (H*) = 0.9463

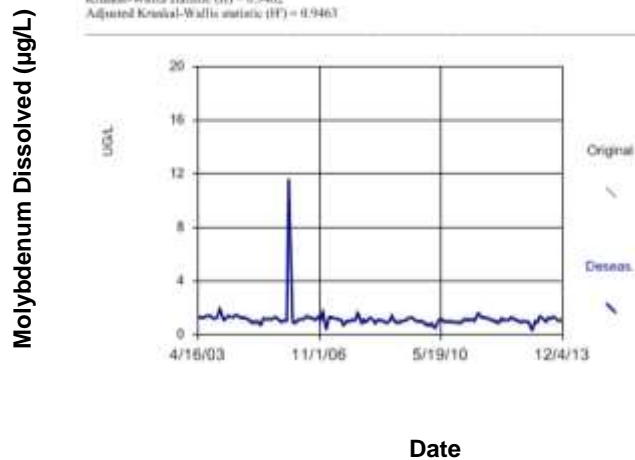


Figure E422 North Saskatchewan River: Molybdenum Dissolved

Sen's Slope Estimator

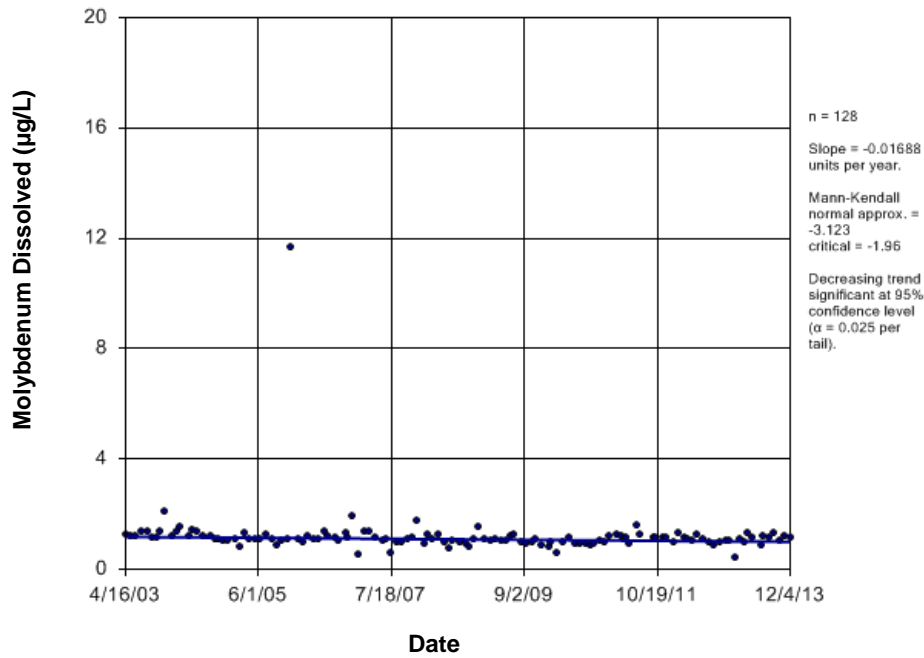


Figure E423 North Saskatchewan River: Molybdenum Dissolved

Time Series

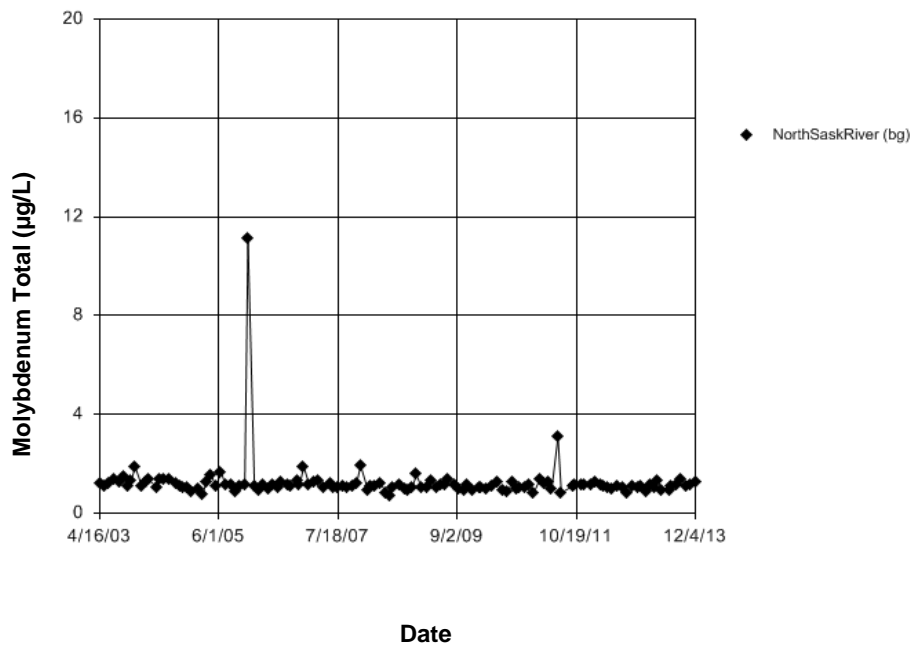


Figure E424 North Saskatchewan River: Molybdenum Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-Squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.4164.
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 12 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H_{adj}) was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 0.4164
 Adjusted Kruskal-Wallis statistic (H_{adj}) = 0.4164

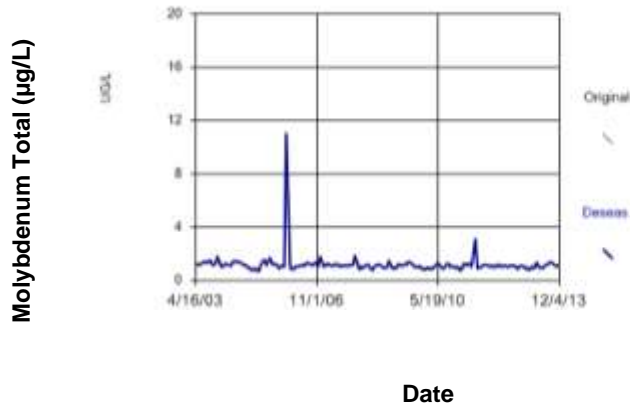


Figure E425 North Saskatchewan River: Molybdenum Total

Sen's Slope Estimator

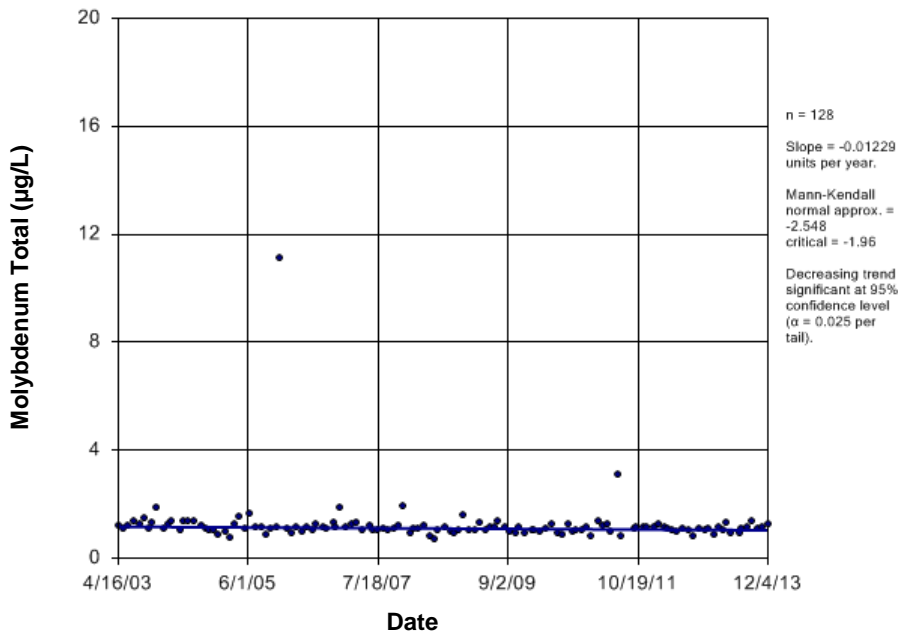


Figure E426 North Saskatchewan River: Molybdenum Total

Time Series

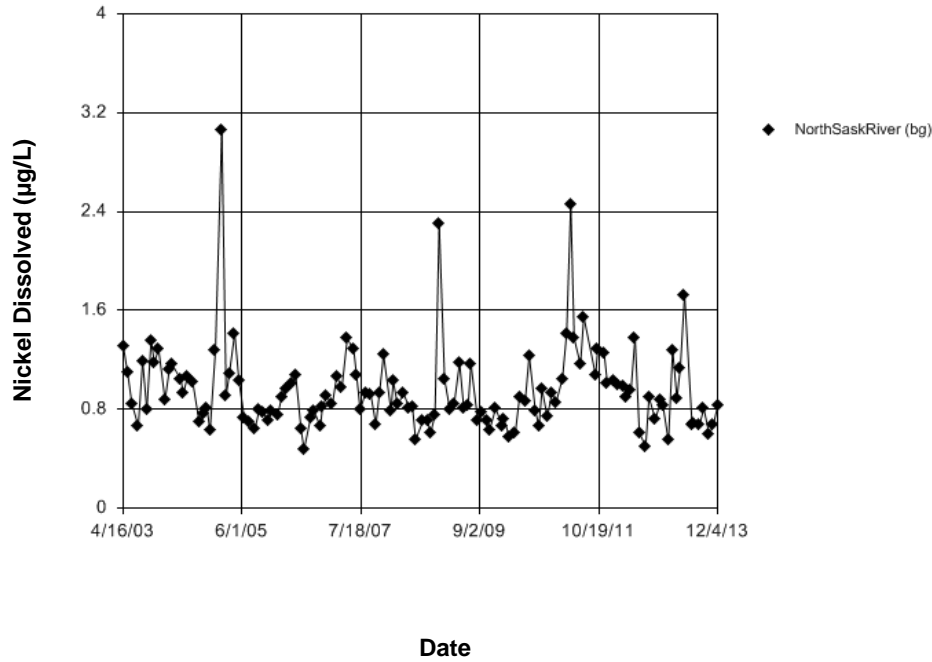


Figure E427 North Saskatchewan River: Nickel Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season.
 Calculated Kruskal-Wallis statistic = 1.3
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 1.3
 Adjusted Kruskal-Wallis statistic (H') = 1.3

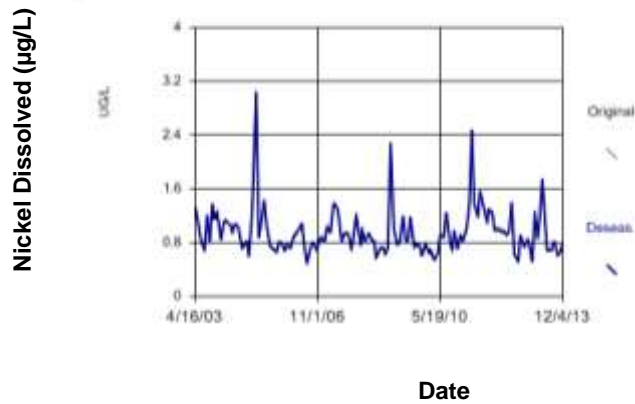


Figure E428 North Saskatchewan River: Nickel Dissolved

Sen's Slope Estimator

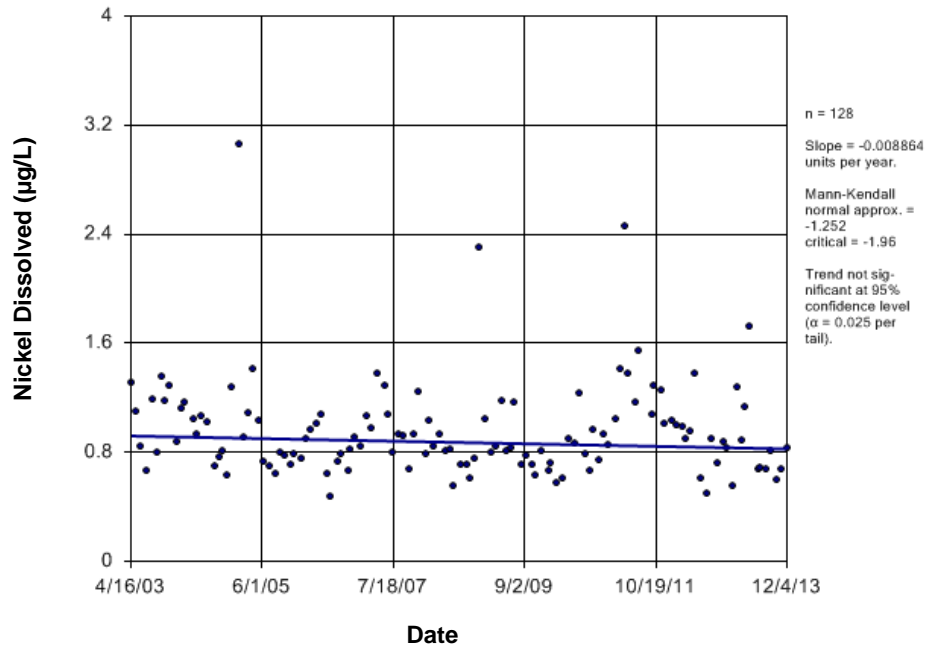


Figure E429 North Saskatchewan River: Nickel Dissolved

Time Series

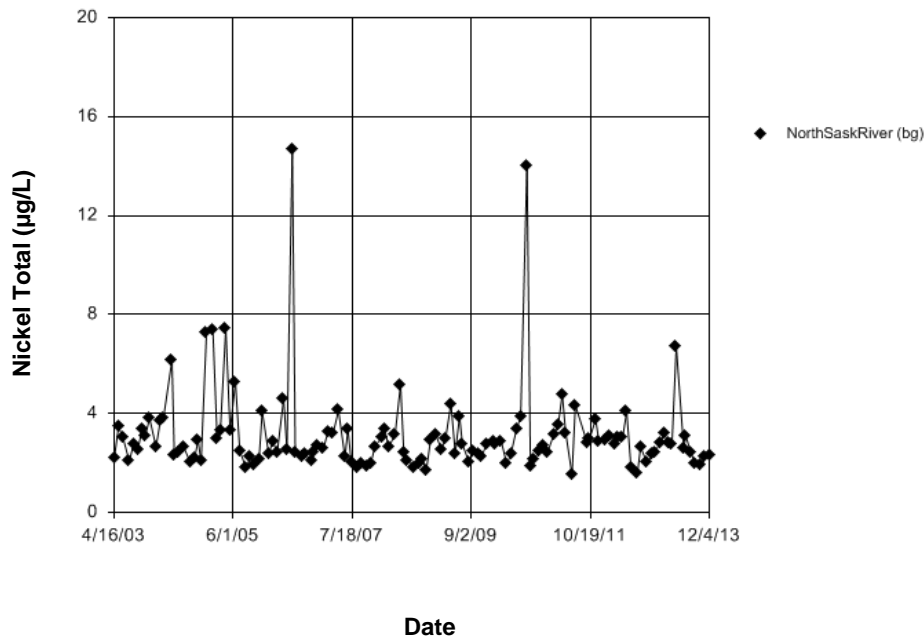


Figure E430 North Saskatchewan River: Nickel Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 3.507.
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 3.507.
 Adjusted Kruskal-Wallis statistic (H') = 3.507.

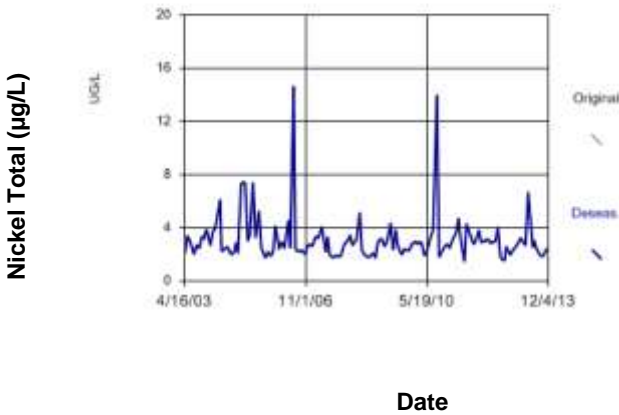


Figure E431 North Saskatchewan River: Nickel Total

Sen's Slope Estimator

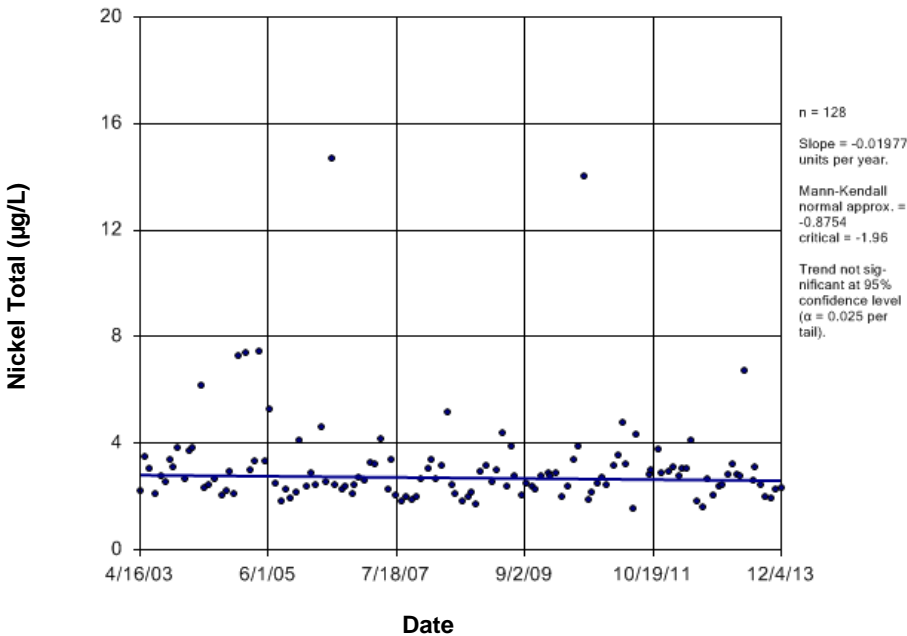


Figure E432 North Saskatchewan River: Nickel Total

Time Series

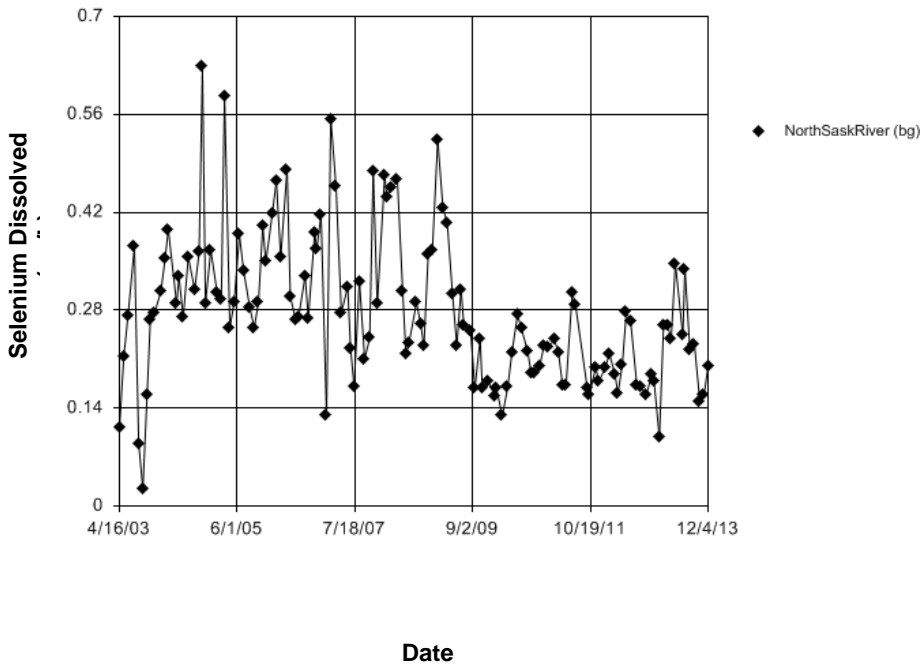


Figure E433 North Saskatchewan River: Selenium Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 3.085
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 3.085
 Adjusted Kruskal-Wallis statistic (H') = 3.085

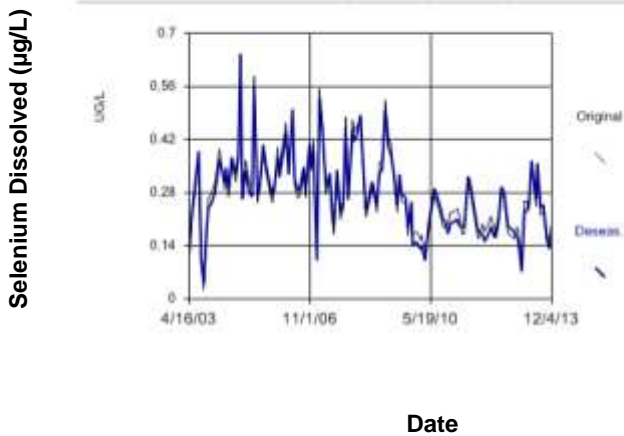


Figure E434 North Saskatchewan River: Selenium Dissolved

Sen's Slope Estimator

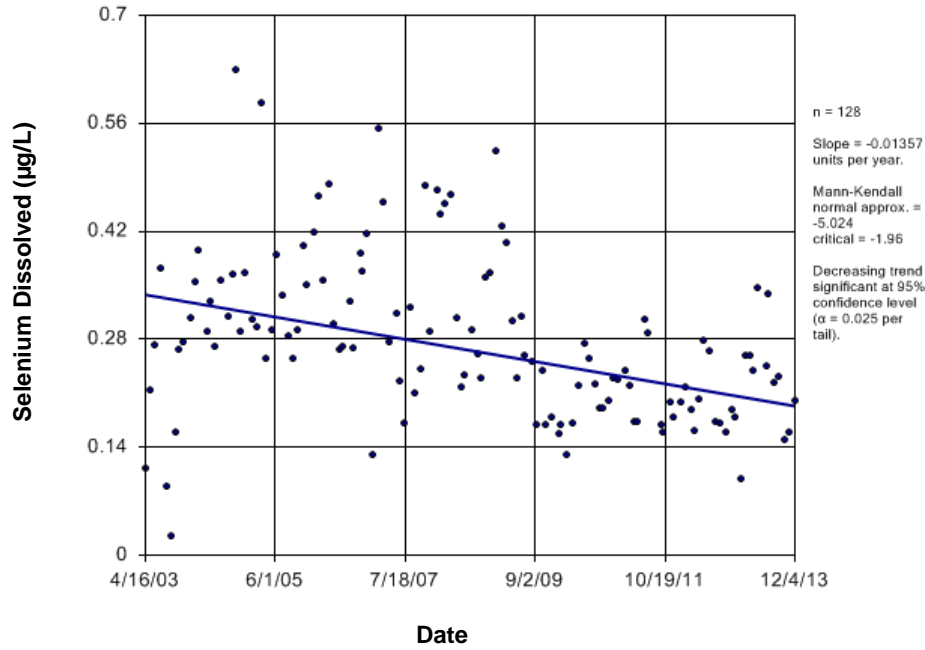


Figure E435 North Saskatchewan River: Selenium Dissolved

Time Series

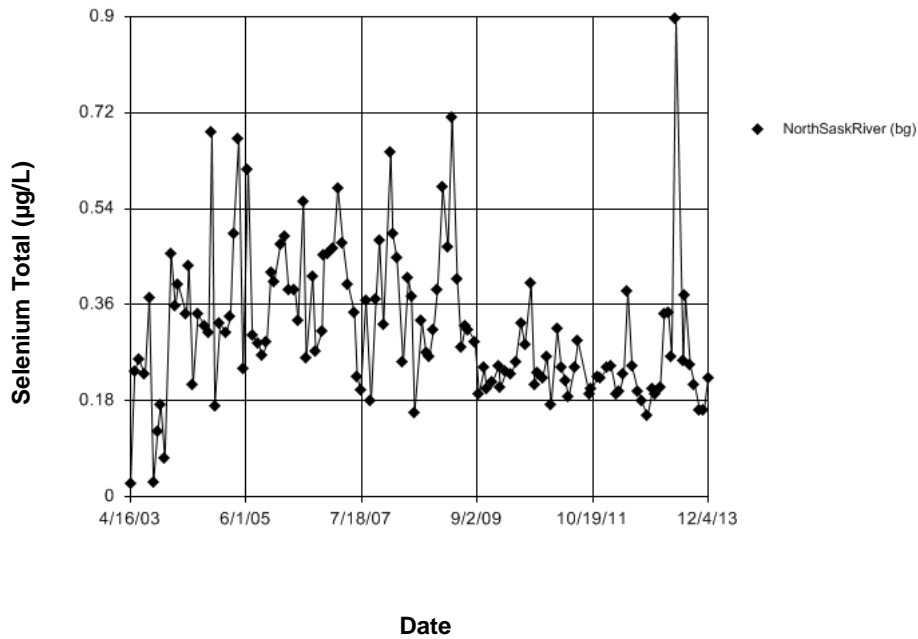
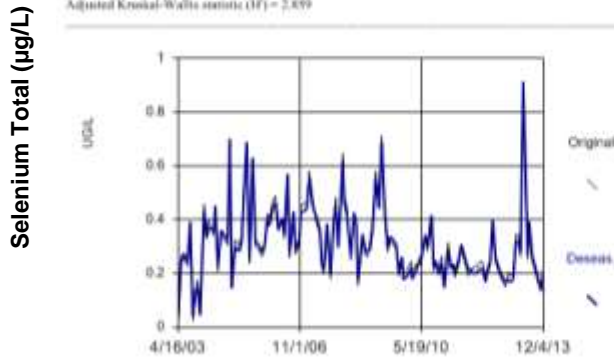


Figure E436 North Saskatchewan River: Selenium Total

Seasonality

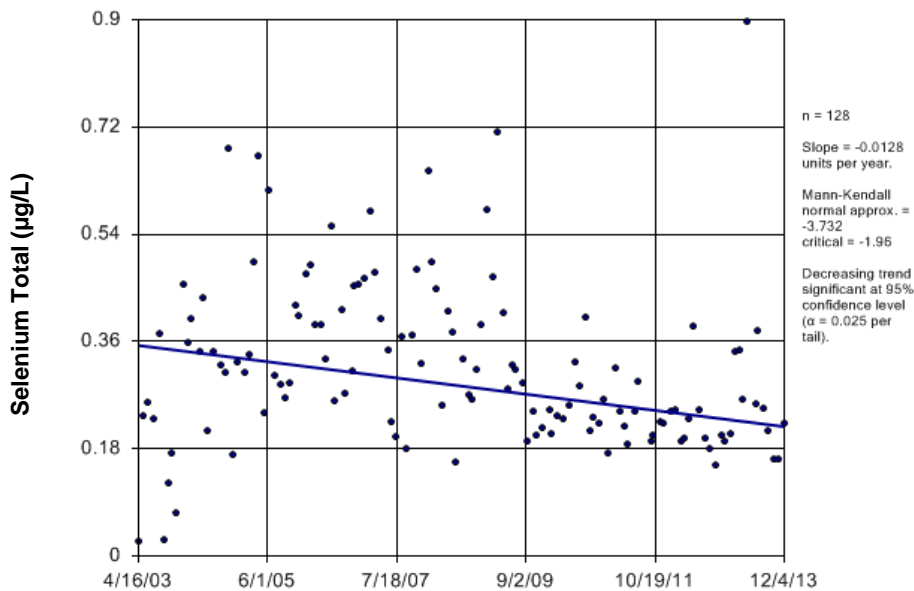
For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 2.859
Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 2.859
Adjusted Kruskal-Wallis statistic (H') = 2.859



Date

Figure E437 North Saskatchewan River: Selenium Total

Sen's Slope Estimator



Date

Figure E438 North Saskatchewan River: Selenium Total

Time Series

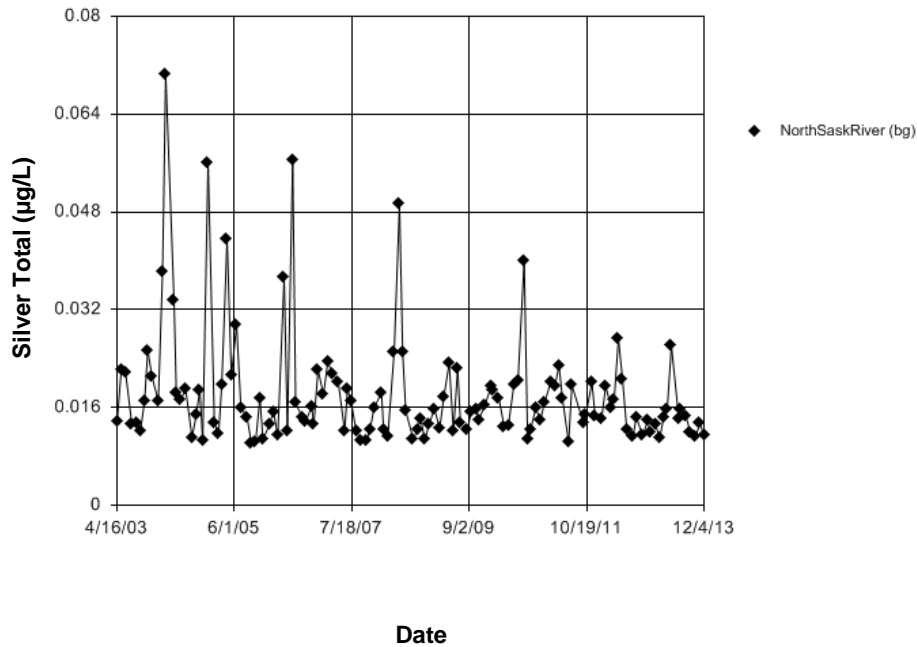


Figure E439 North Saskatchewan River: Silver Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.001133
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 8 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 0.001133
 Adjusted Kruskal-Wallis statistic (H') = 0.001133

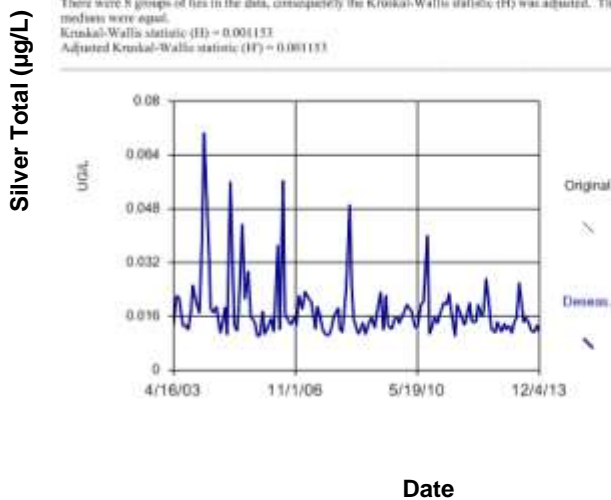


Figure E440 North Saskatchewan River: Silver Total

Sen's Slope Estimator

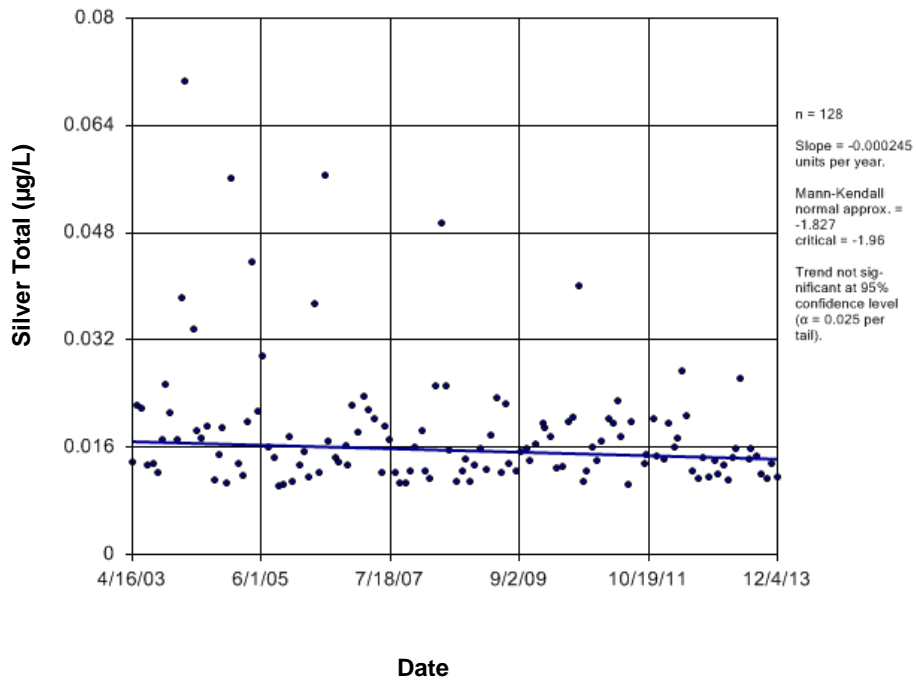


Figure E441 North Saskatchewan River: Silver Total

Time Series

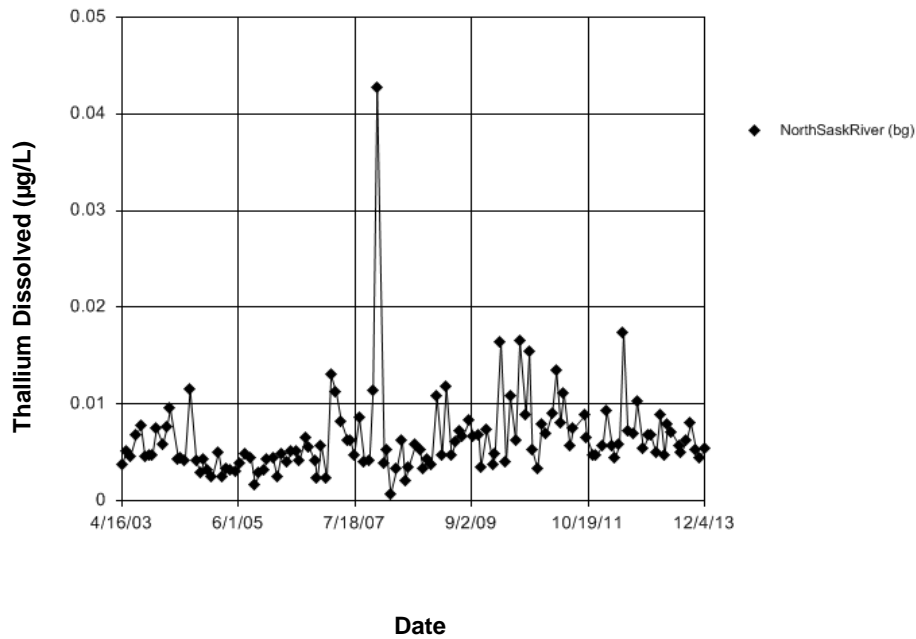


Figure E442 North Saskatchewan River: Thallium Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.09641
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 0.09641
 Adjusted Kruskal-Wallis statistic (H') = 0.09641

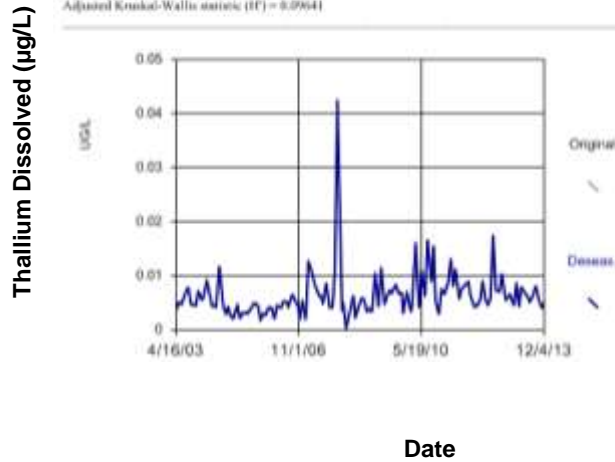


Figure E443 North Saskatchewan River: Thallium Dissolved

Sen's Slope Estimator

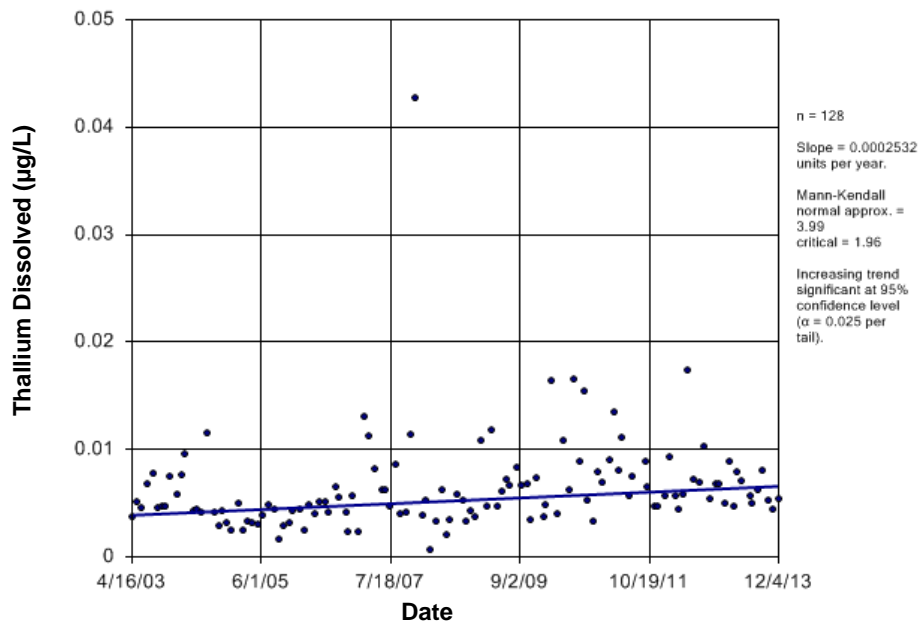


Figure E444 North Saskatchewan River: Thallium Dissolved

Time Series

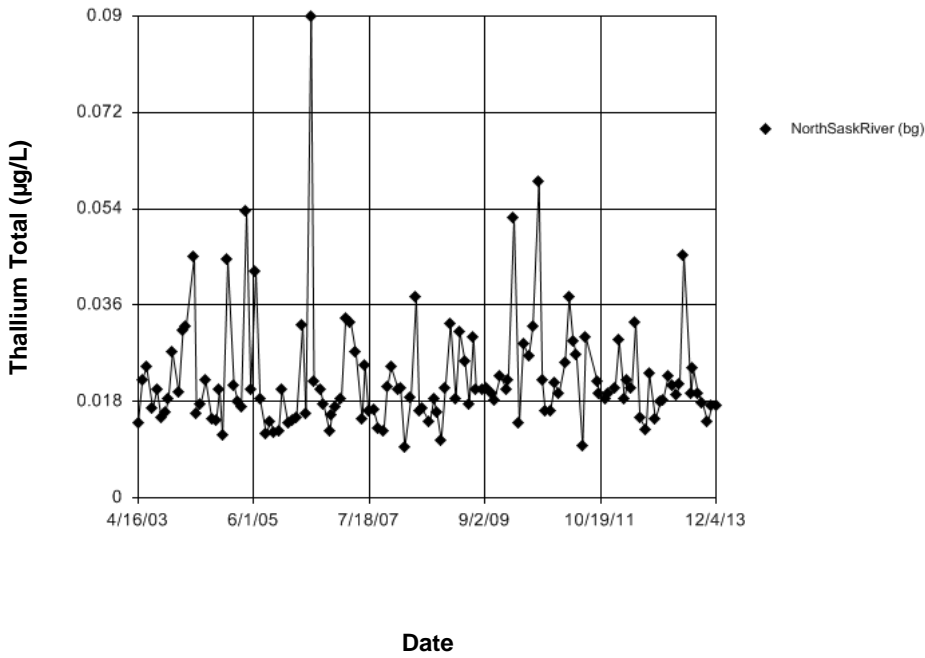


Figure E445 North Saskatchewan River: Thallium Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.4227
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 11 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 0.4227
 Adjusted Kruskal-Wallis statistic (H') = 0.4227

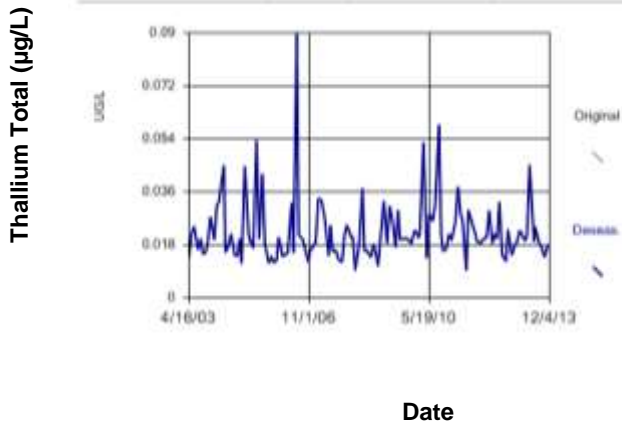


Figure E446 North Saskatchewan River: Thallium Total

Sen's Slope Estimator

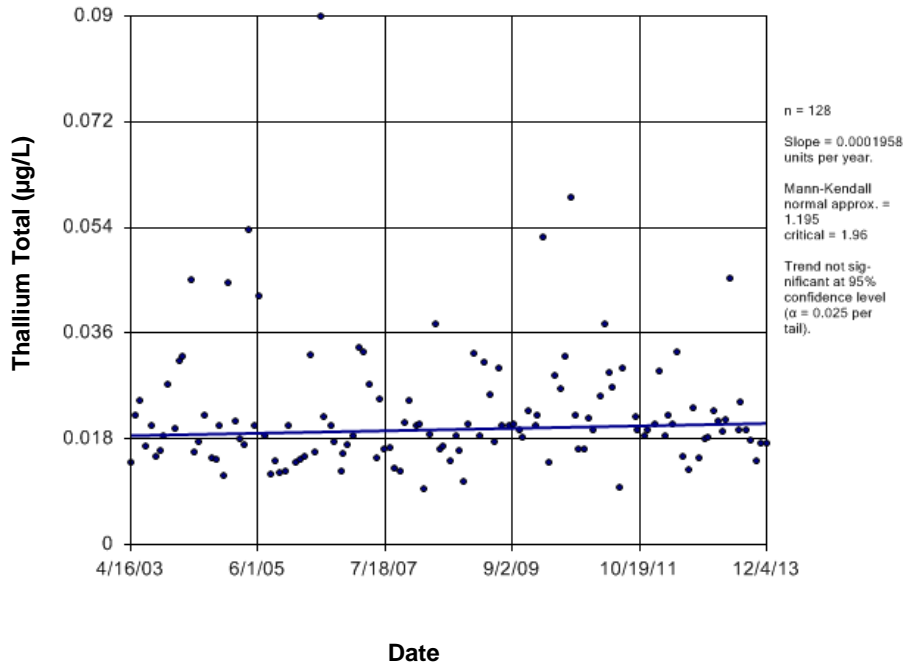


Figure E447 North Saskatchewan River: Thallium Total

Time Series

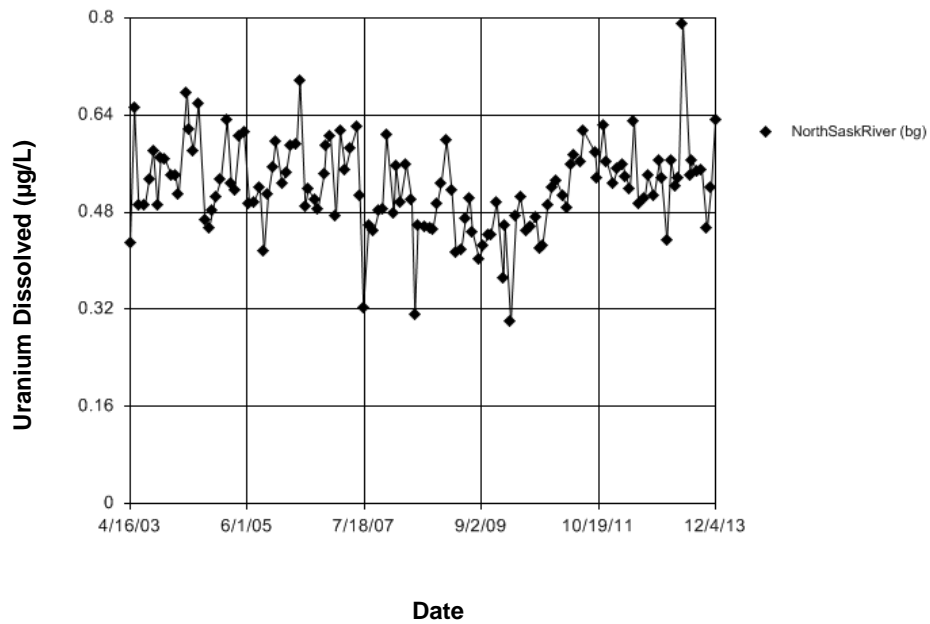
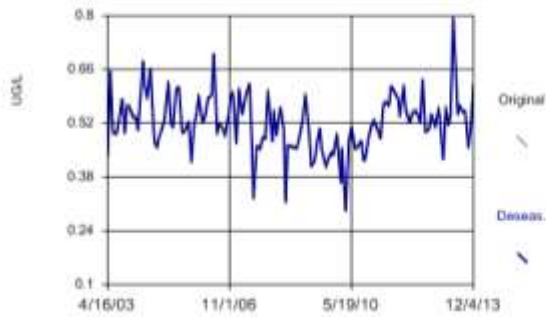


Figure E448 North Saskatchewan River: Uranium Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 3.328. Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level. There were 1 groups of data in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (Hf) was utilized to determine if the medians were equal. Kruskal-Wallis statistic (H) = 3.328. Adjusted Kruskal-Wallis statistic (Hf) = 3.328.

Uranium Dissolved ($\mu\text{g/L}$)



Date

Figure E449 North Saskatchewan River: Uranium Dissolved

Sen's Slope Estimator

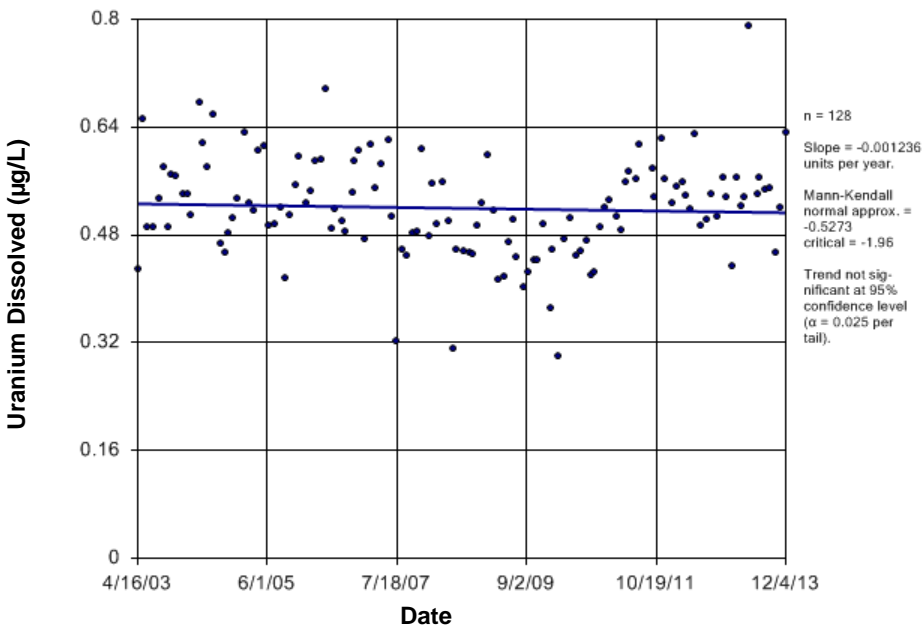


Figure E450 North Saskatchewan River: Uranium Dissolved

Time Series

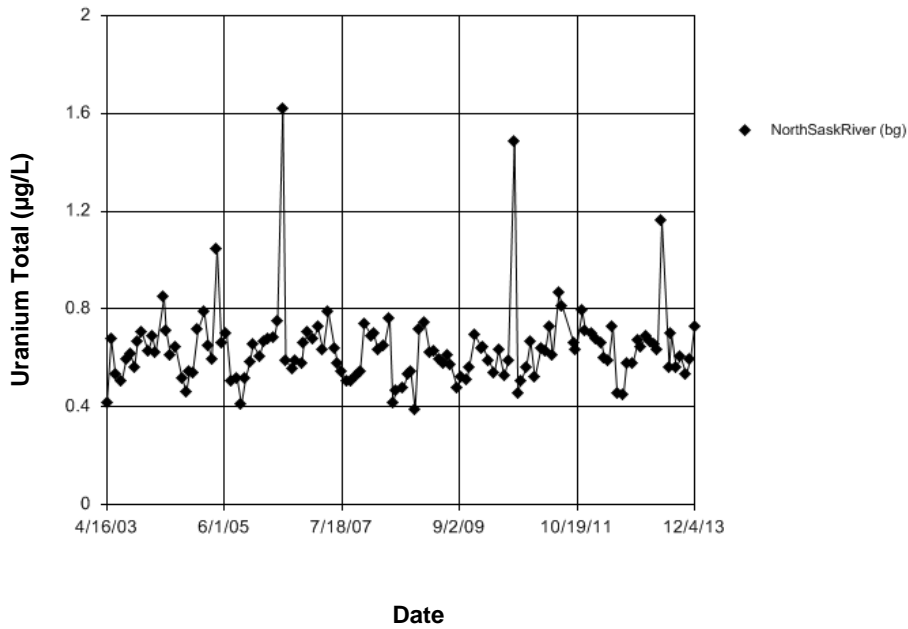


Figure E451 North Saskatchewan River: Uranium Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 15.14. Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level. There were 3 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H_{adj}) was utilized to determine if the medians were equal. Kruskal-Wallis statistic (H) = 15.14. Adjusted Kruskal-Wallis statistic (H_{adj}) = 13.14.

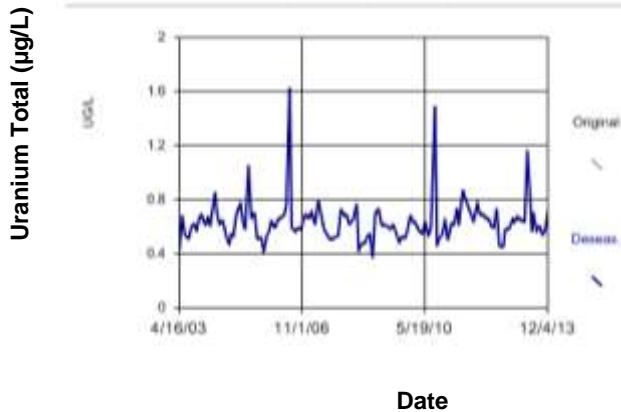


Figure E452 North Saskatchewan River: Uranium Total

Seasonal Kendall

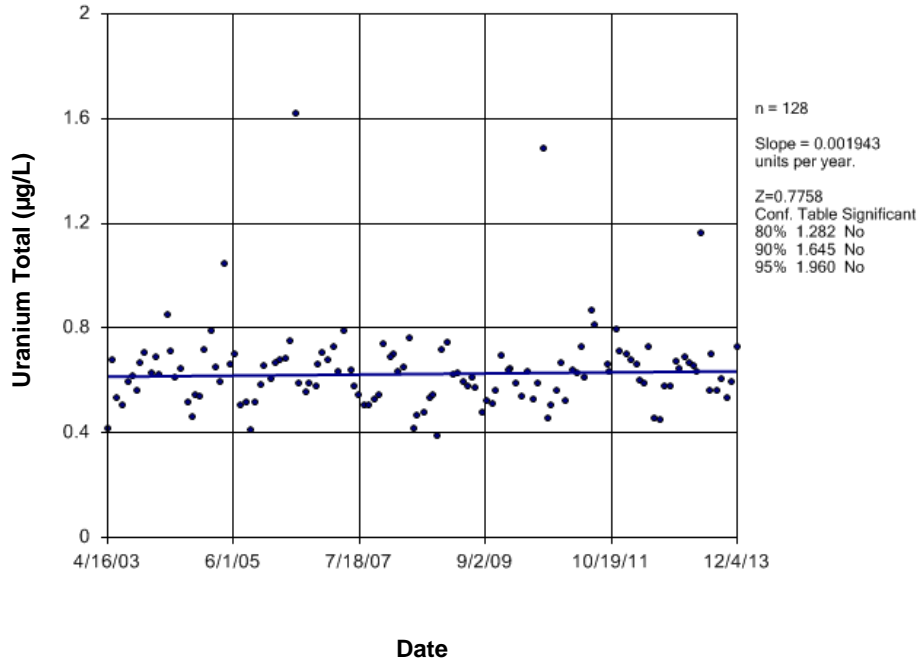


Figure E453 North Saskatchewan River: Uranium Total

Time Series

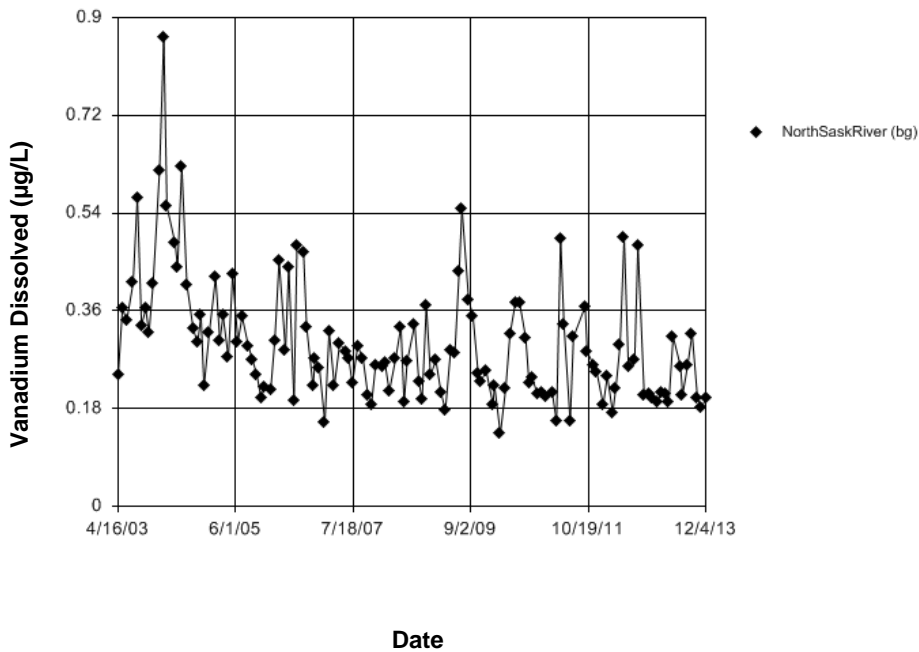


Figure E454 North Saskatchewan River: Vanadium Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 16.39
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 6 groups of data in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 16.39
 Adjusted Kruskal-Wallis statistic (H') = 16.39

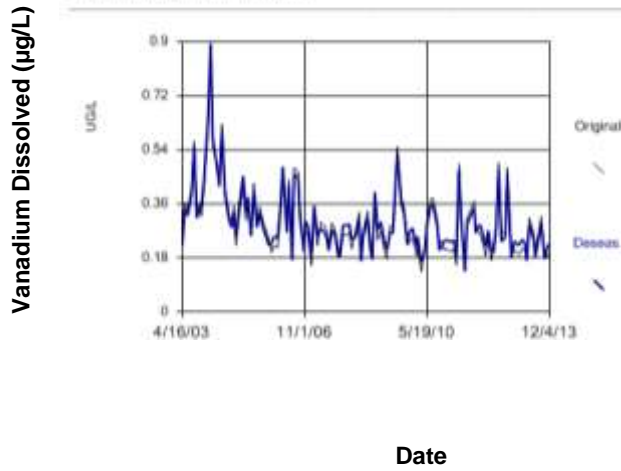


Figure E455 North Saskatchewan River: Vanadium Dissolved

Seasonal Kendall

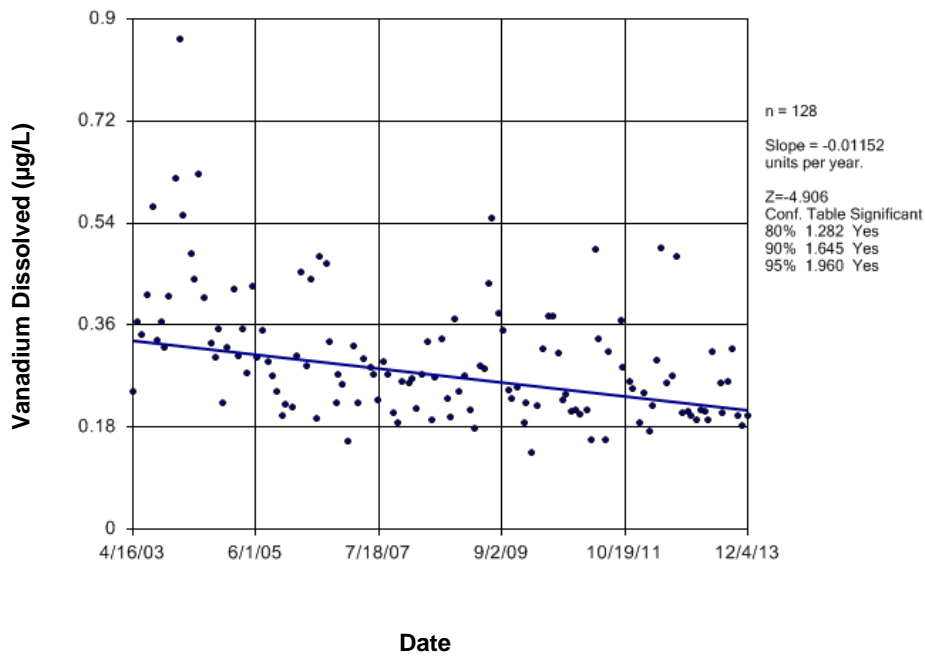


Figure E456 North Saskatchewan River: Vanadium Dissolved

Time Series

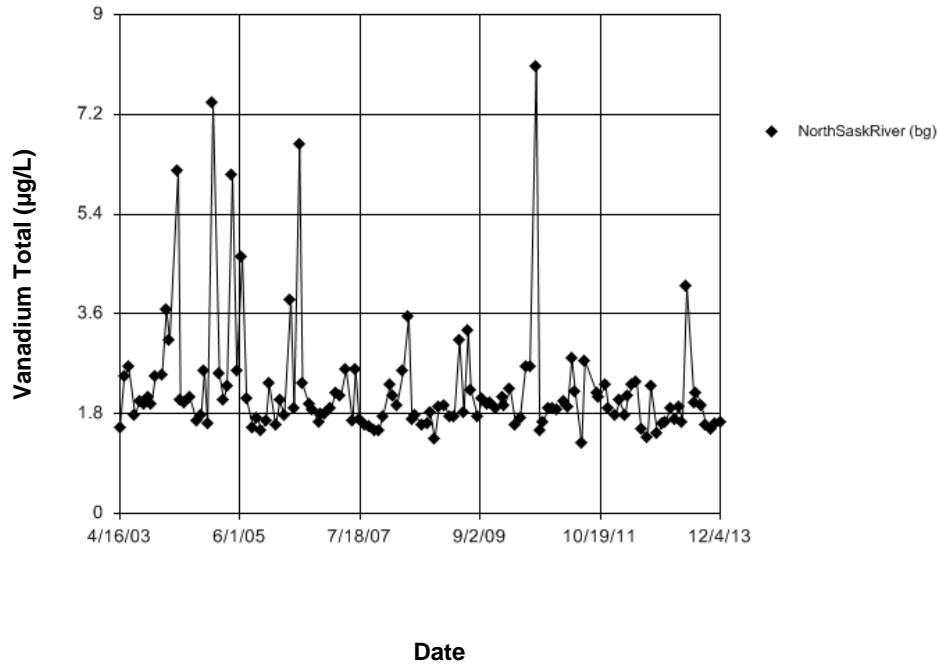


Figure E457 North Saskatchewan River: Vanadium Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates **NO SEASONALITY** at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.3561
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level
 There were 6 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 0.3561
 Adjusted Kruskal-Wallis statistic (H') = 0.3361

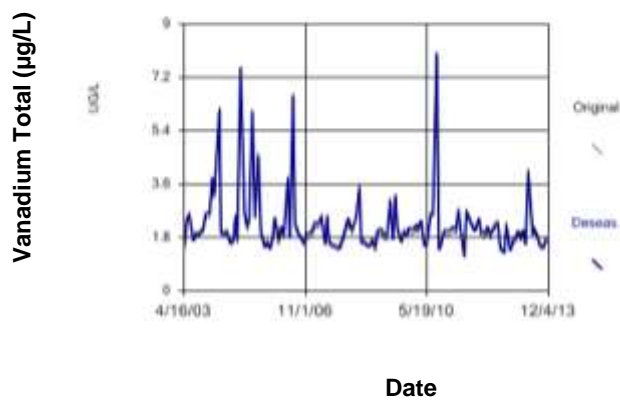


Figure E458 North Saskatchewan River: Vanadium Total

Sen's Slope Estimator

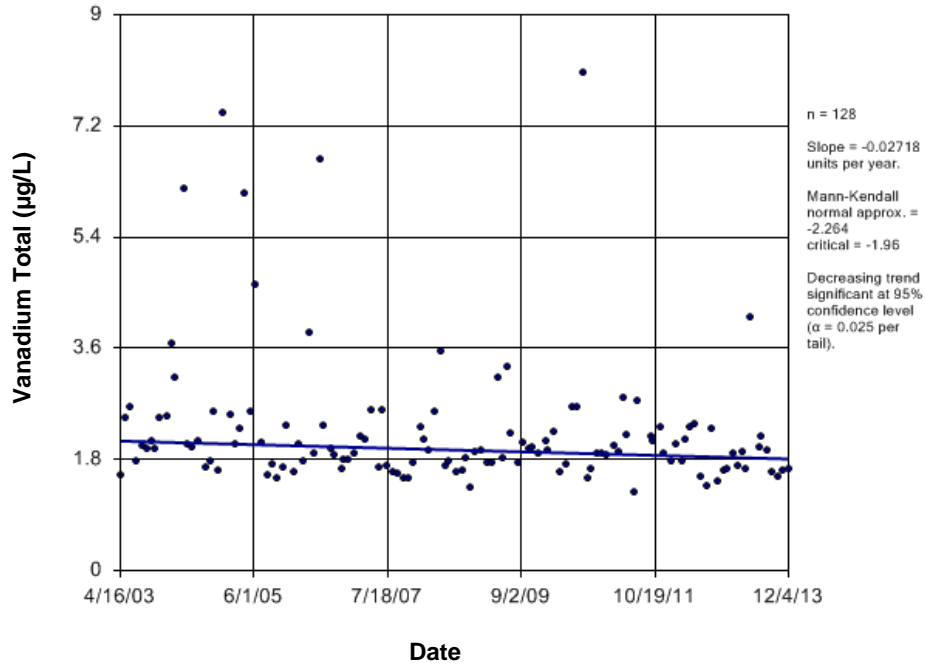


Figure E459 North Saskatchewan River: Vanadium Total

Time Series

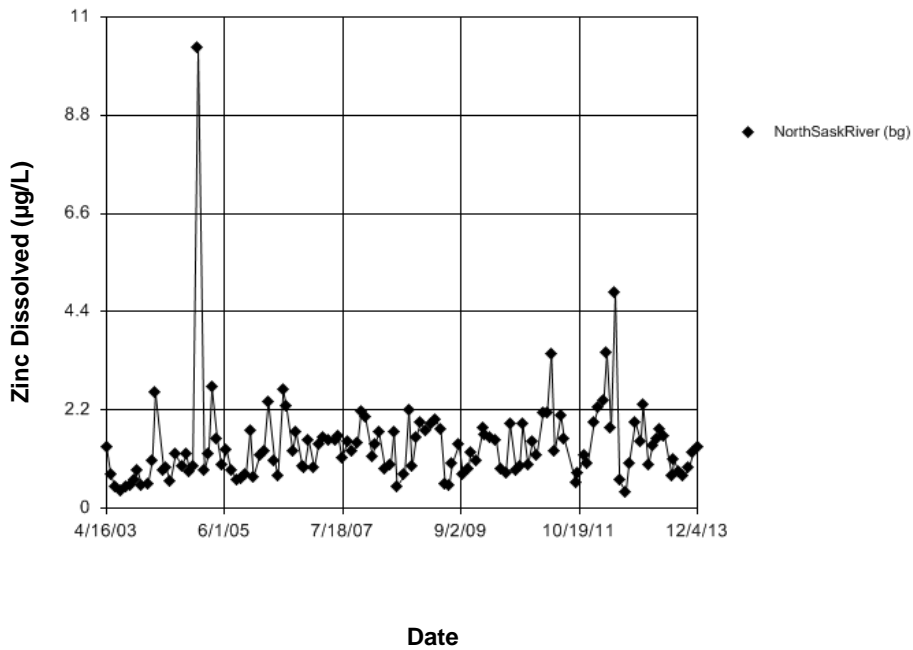


Figure E460 North Saskatchewan River: Zinc Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 12.96
Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
There were 5 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 12.96
Adjusted Kruskal-Wallis statistic (H') = 12.96

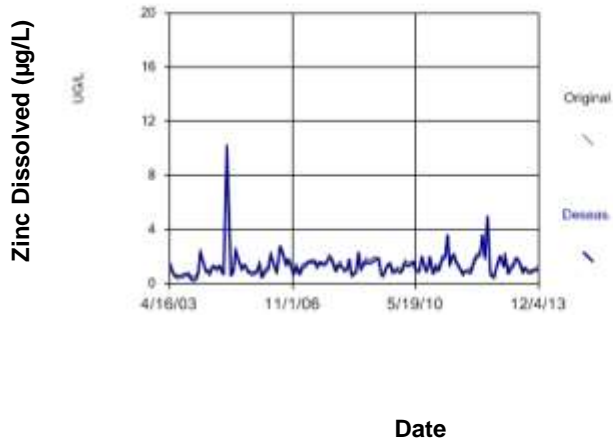


Figure E461 North Saskatchewan River: Zinc Dissolved

Seasonal Kendall

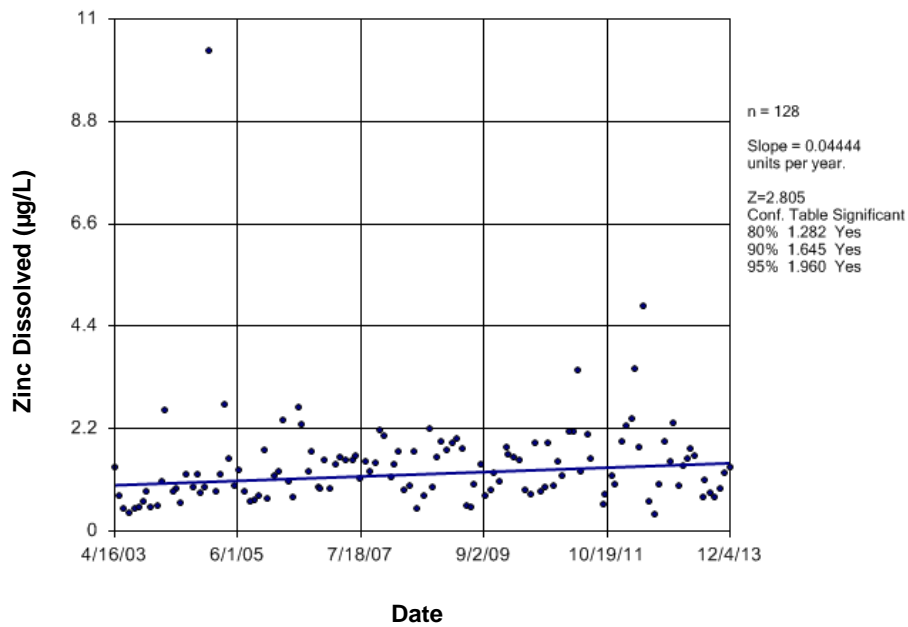


Figure E462 North Saskatchewan River: Zinc Dissolved

Time Series

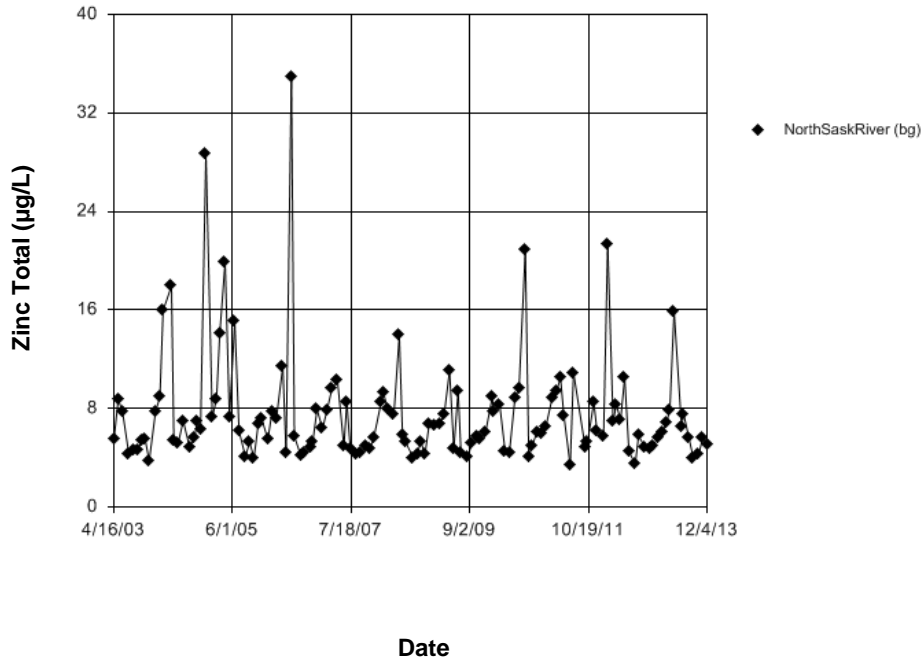


Figure E463 North Saskatchewan River: Zinc Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 7.434
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 2 groups of 565 in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 7.434
 Adjusted Kruskal-Wallis statistic (H') = 7.434

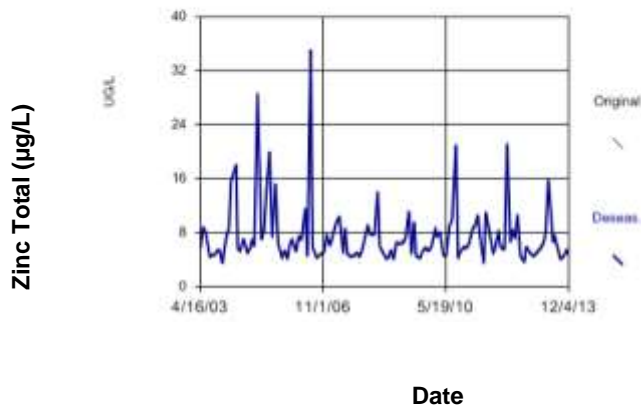


Figure E464 North Saskatchewan River: Zinc Total

Seasonal Kendall

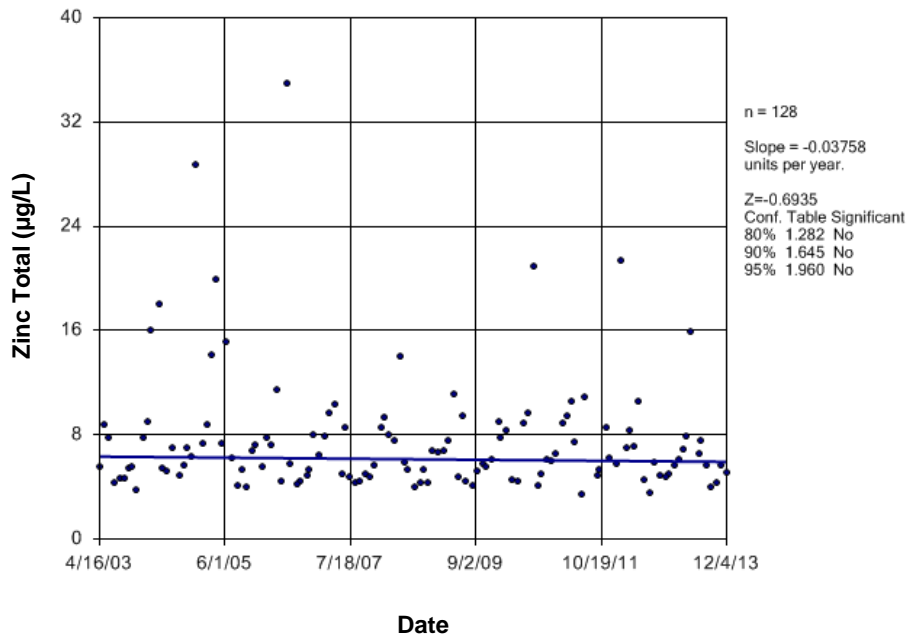


Figure E465 North Saskatchewan River: Zinc Total

Time Series

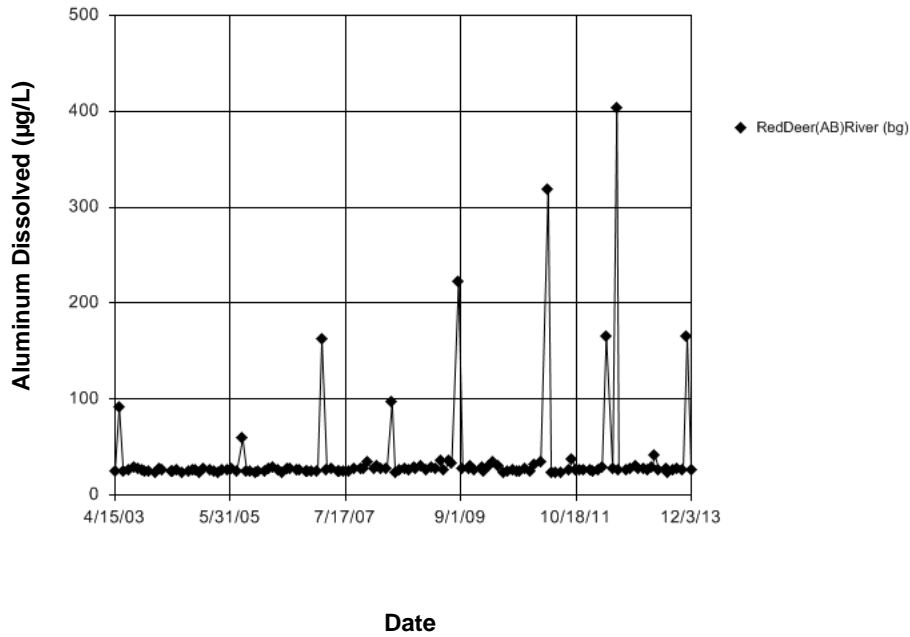


Figure E466 Red Deer River (AB-SK): Aluminum Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.09253
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 9 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 0.09253
 Adjusted Kruskal-Wallis statistic (H') = 0.09253

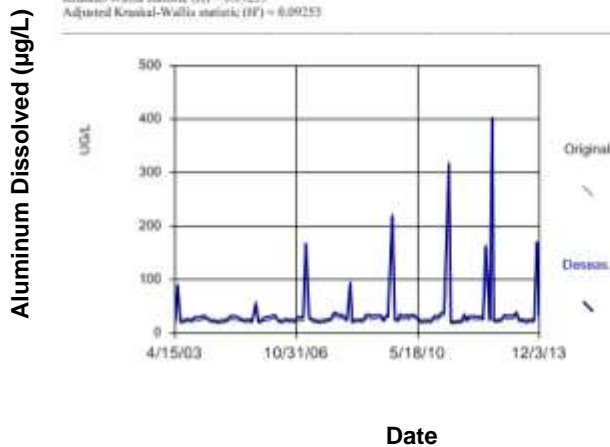


Figure E467 Red Deer River (AB-SK): Aluminum Dissolved

Sen's Slope Estimator

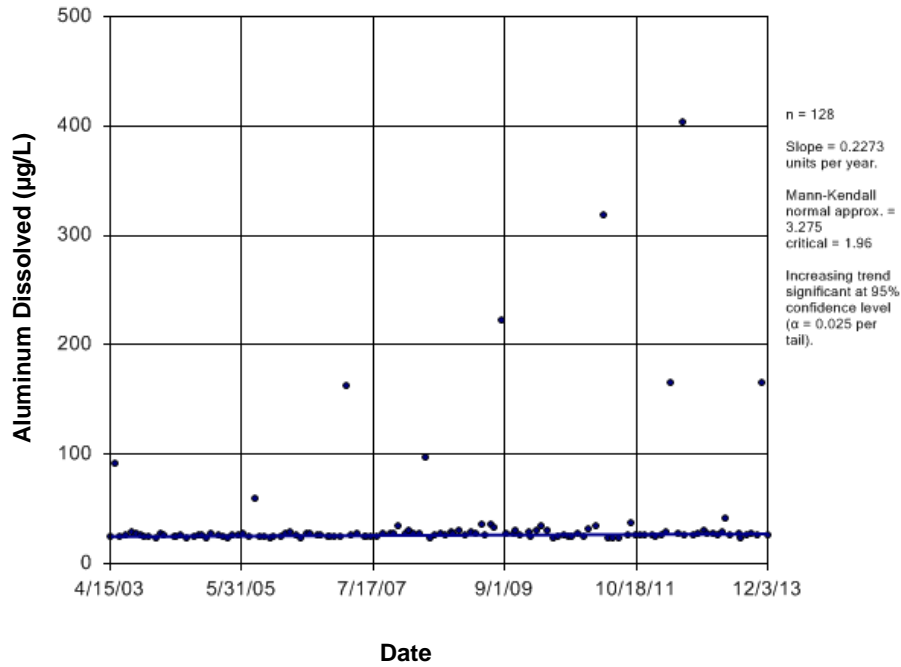


Figure E468 Red Deer River (AB-SK): Aluminum Dissolved

Time Series

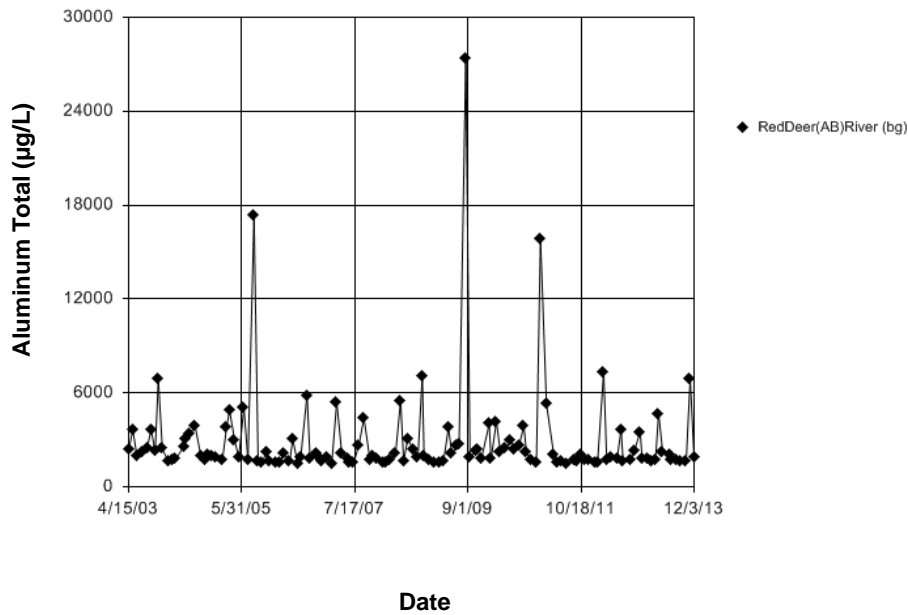


Figure E469 Red Deer River (AB-SK): Aluminum Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 4.628
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 7 groups of data in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 4.628
 Adjusted Kruskal-Wallis statistic (H') = 4.628

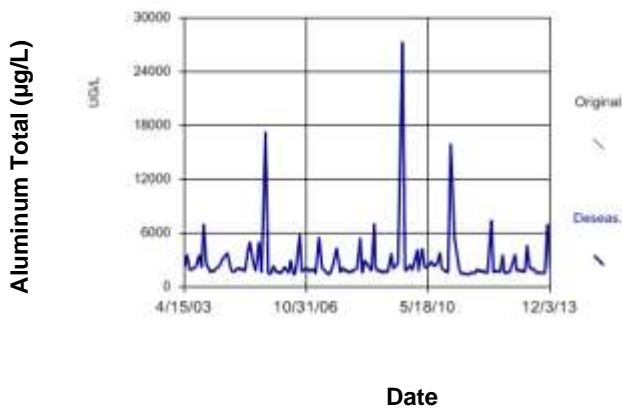


Figure E470 Red Deer River (AB-SK): Aluminum Total

Seasonal Kendall

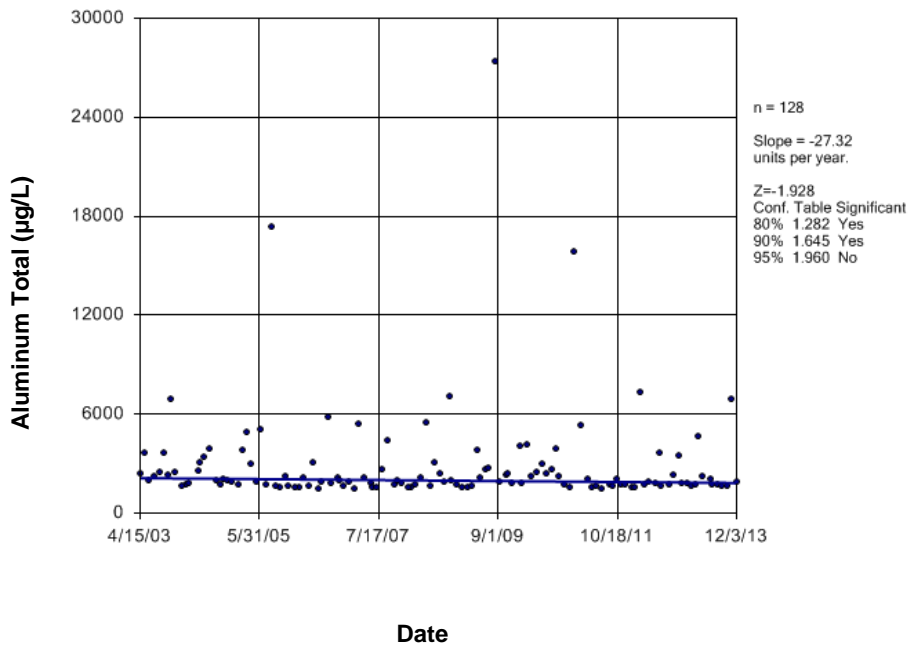


Figure E471 Red Deer River (AB-SK): Aluminum Total

Time Series

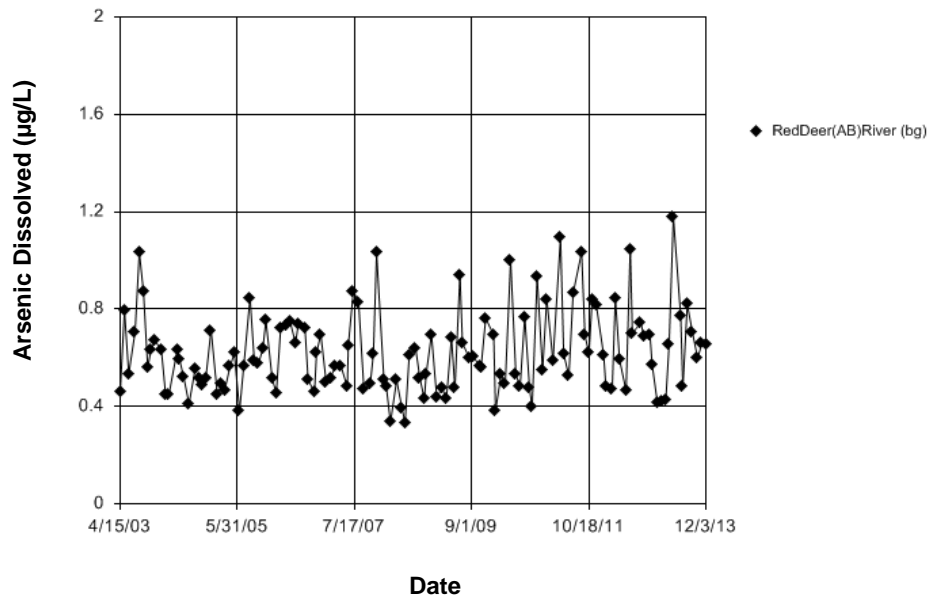


Figure E472 Red Deer River (AB-SK): Arsenic Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 3.182. Calculated Chi-squared value = 3.841 with 1 degree of freedom at the 5% significance level. There were 3 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal. Kruskal-Wallis statistic (H) = 3.182. Adjusted Kruskal-Wallis statistic (H') = 3.182.

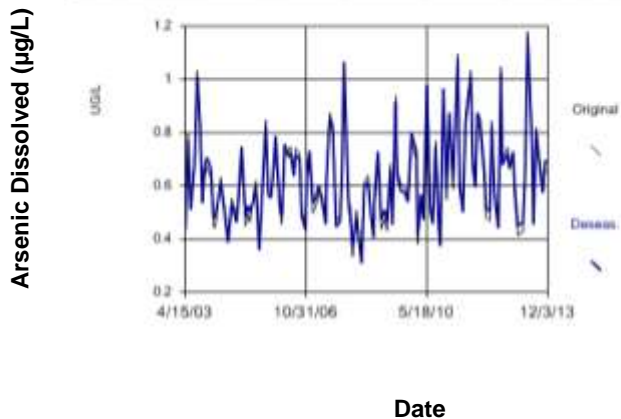


Figure E473 Red Deer River (AB-SK): Arsenic Dissolved

Sen's Slope Estimator

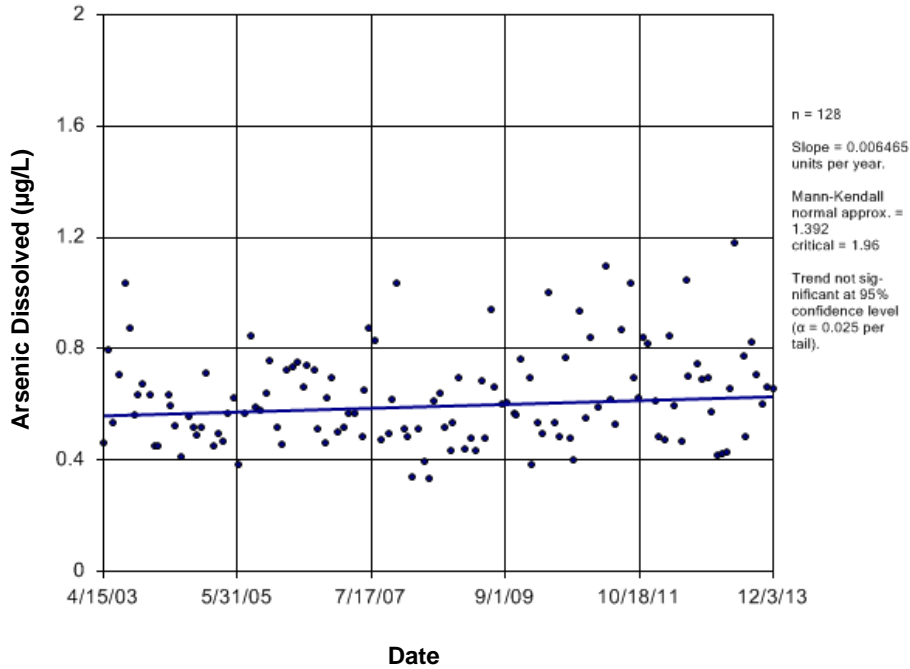


Figure E474 Red Deer River (AB-SK): Arsenic Dissolved

Time Series

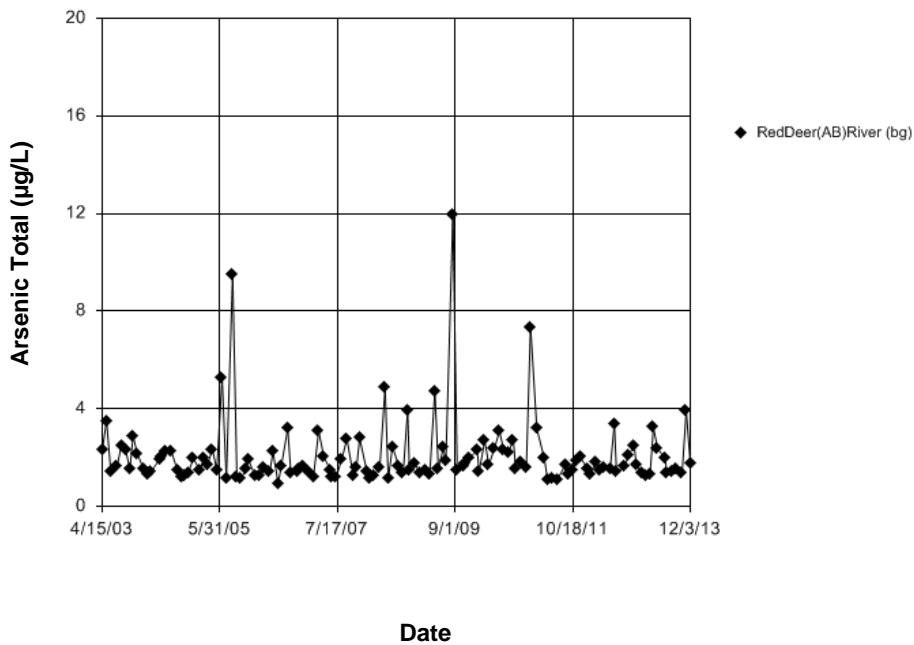
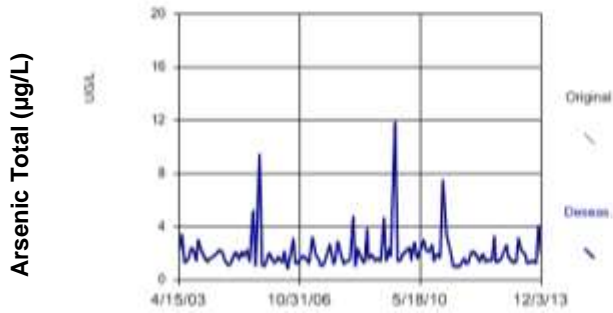


Figure E475 Red Deer River (AB-SK): Arsenic Total

Seasonality

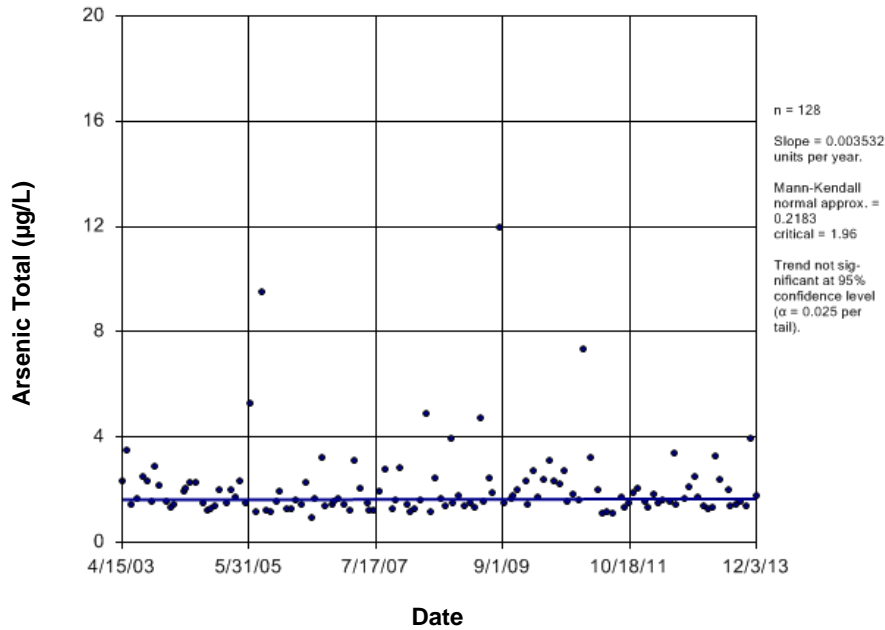
For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.4676
Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 0.4676
Adjusted Kruskal-Wallis statistic (H') = 0.4676



Date

Figure E476 Red Deer River (AB-SK): Arsenic Total

Sen's Slope Estimator



Date

Figure E477 Red Deer River (AB-SK): Arsenic Total

Time Series

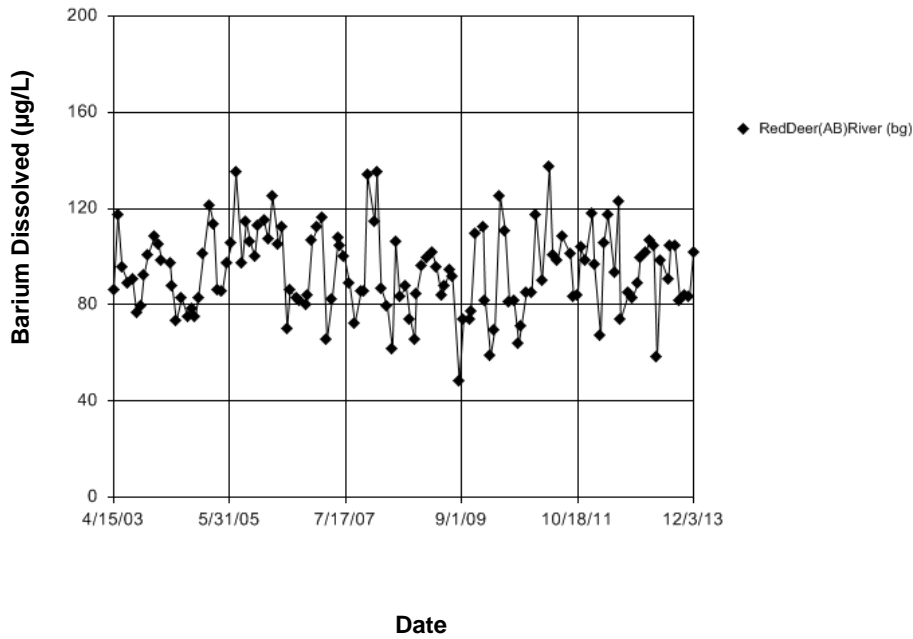


Figure E478 Red Deer River (AB-SK): Barium Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 11.03
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 5 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 11.03
 Adjusted Kruskal-Wallis statistic (H') = 11.03

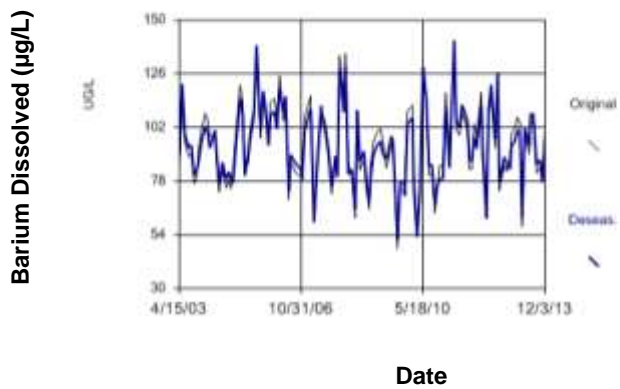


Figure E479 Red Deer River (AB-SK): Barium Dissolved

Seasonal Kendall

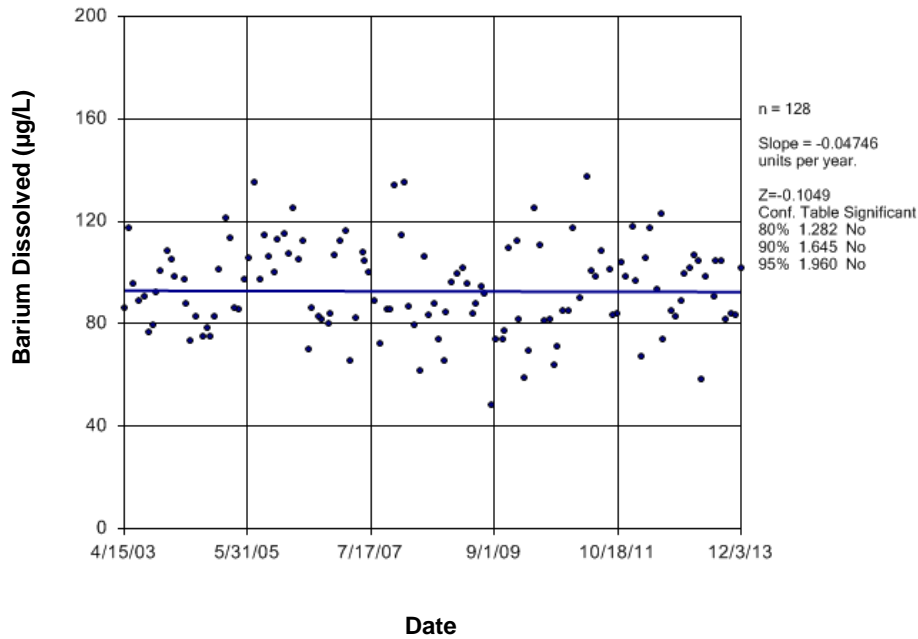


Figure E480 Red Deer River (AB-SK): Barium Dissolved

Time Series

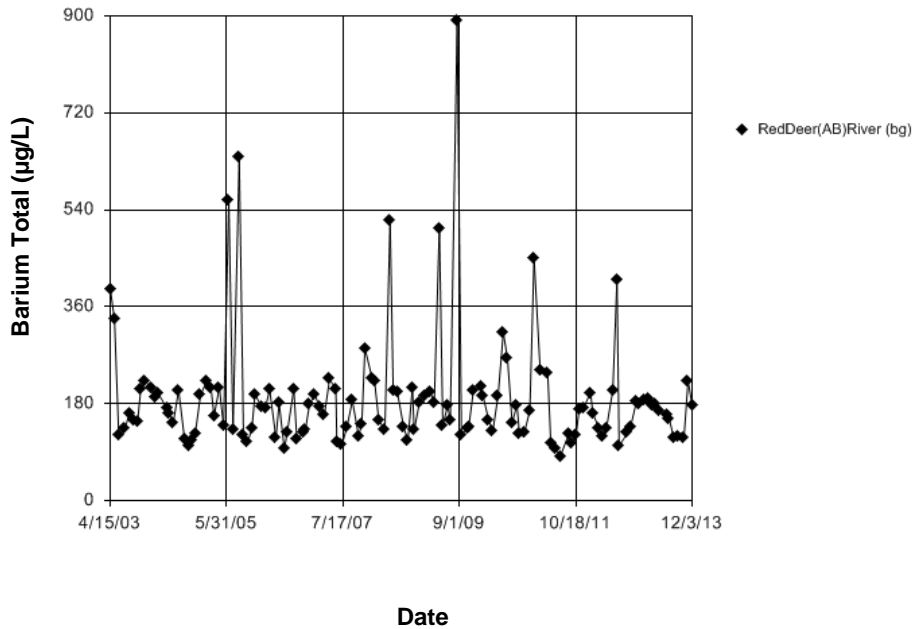
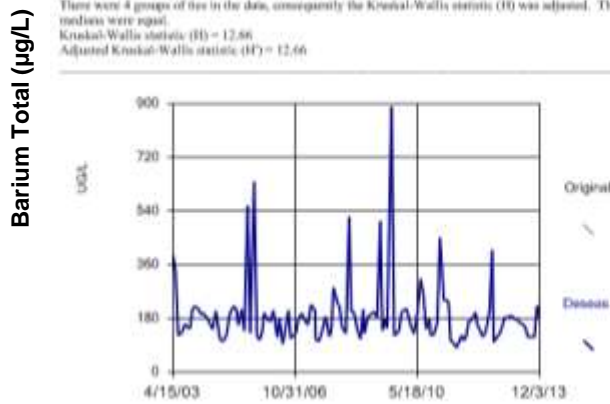


Figure E481 Red Deer River (AB-SK): Barium Total

Seasonality

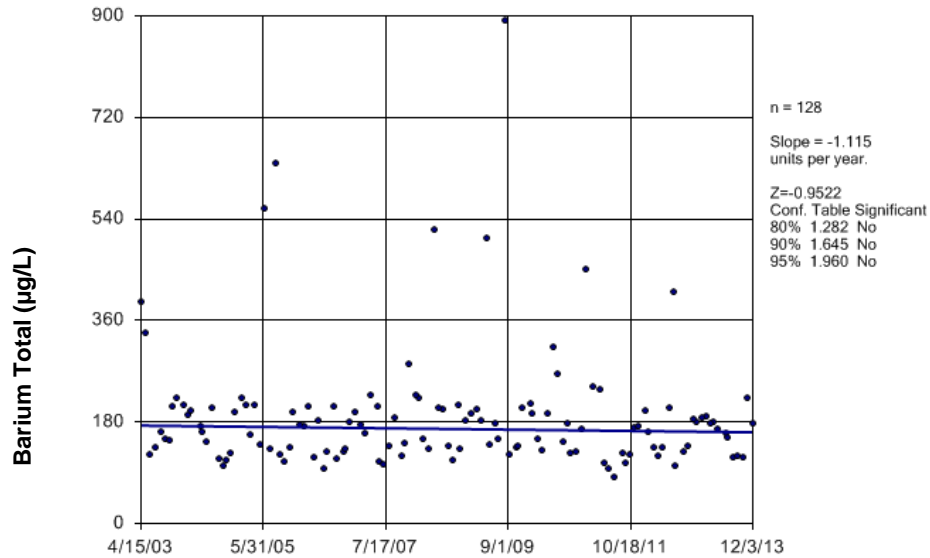
For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 12.66
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 4 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H*) was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 12.86
 Adjusted Kruskal-Wallis statistic (H*) = 12.66



Date

Figure E482 Red Deer River (AB-SK): Barium Total

Seasonal Kendall



Date

Figure E483 Red Deer River (AB-SK): Barium Total

Time Series

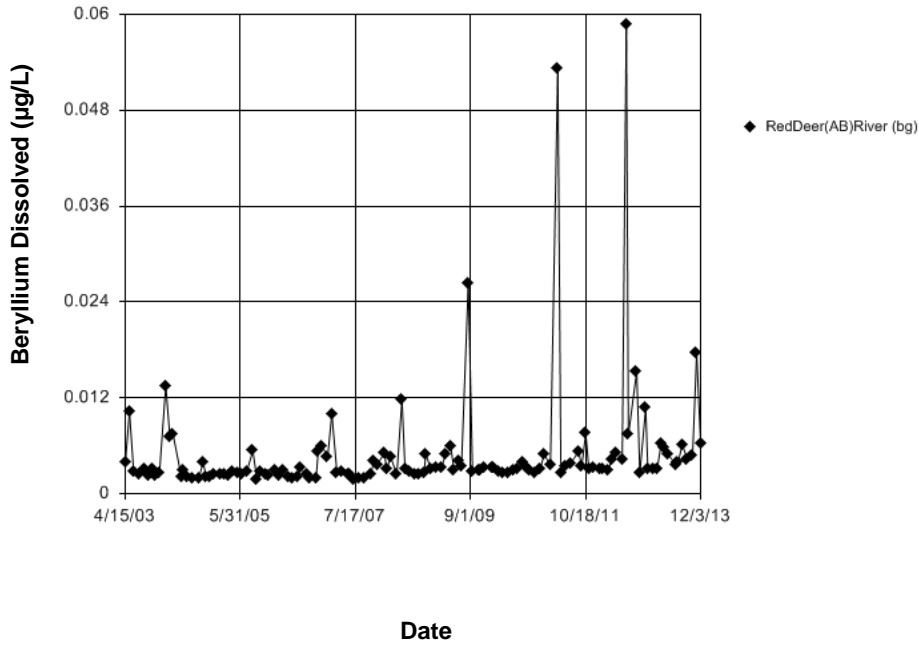


Figure E484 Red Deer River (AB-SK): Beryllium Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 3.376. Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level. There were 6 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal. Kruskal-Wallis statistic (H) = 3.376. Adjusted Kruskal-Wallis statistic (H') = 3.376.

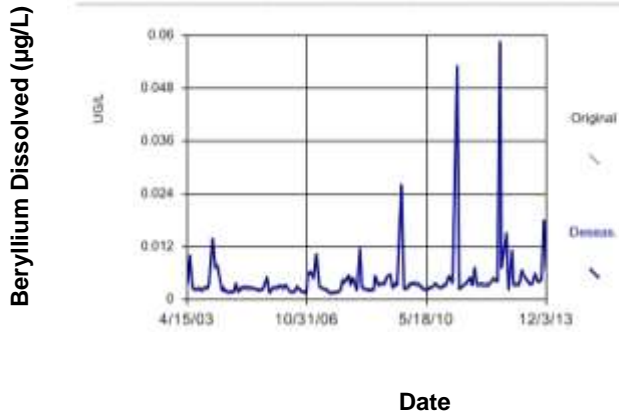


Figure E485 Red Deer River (AB-SK): Beryllium Dissolved

Sen's Slope Estimator

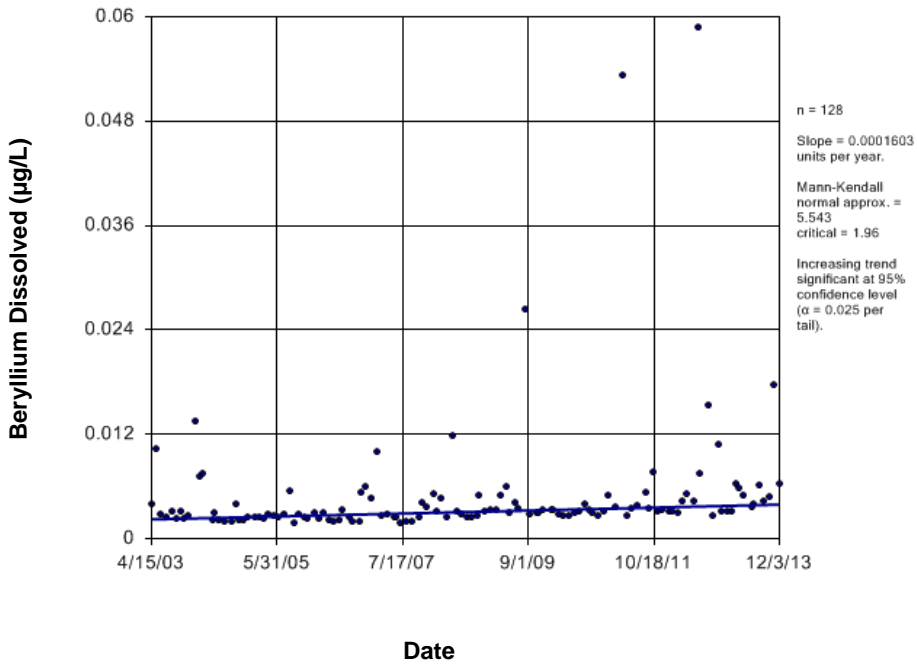


Figure E486 Red Deer River (AB-SK): Beryllium Dissolved

Time Series

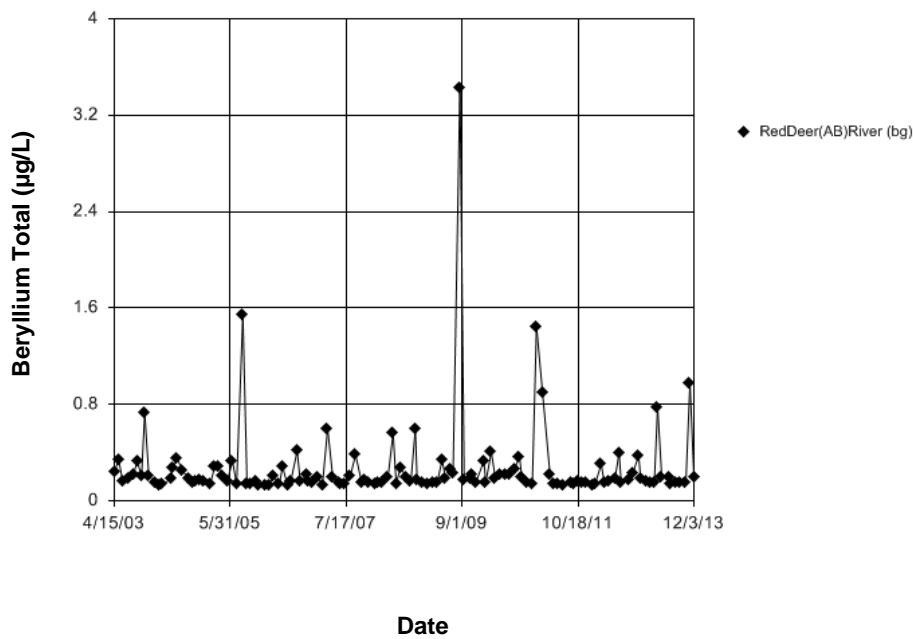


Figure E487 Red Deer River (AB-SK): Beryllium Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 4.339
 Tabulated Chi-squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 6 groups of data in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 4.339
 Adjusted Kruskal-Wallis statistic (H') = 4.339

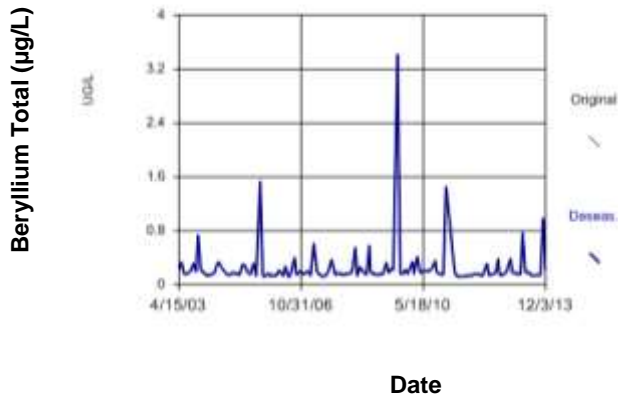


Figure E488 Red Deer River (AB-SK): Beryllium Total

Seasonal Kendall

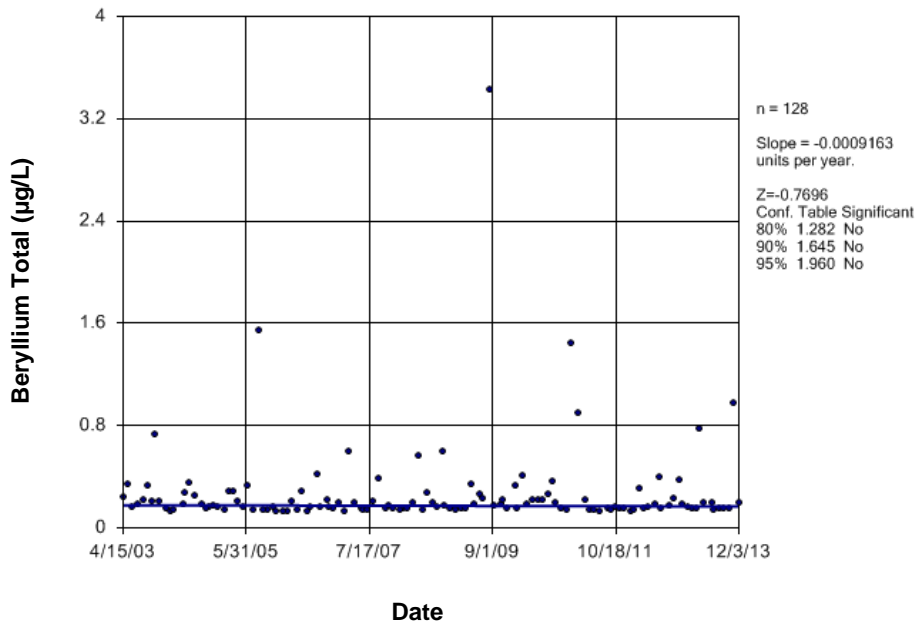


Figure E489 Red Deer River (AB-SK): Beryllium Total

Time Series

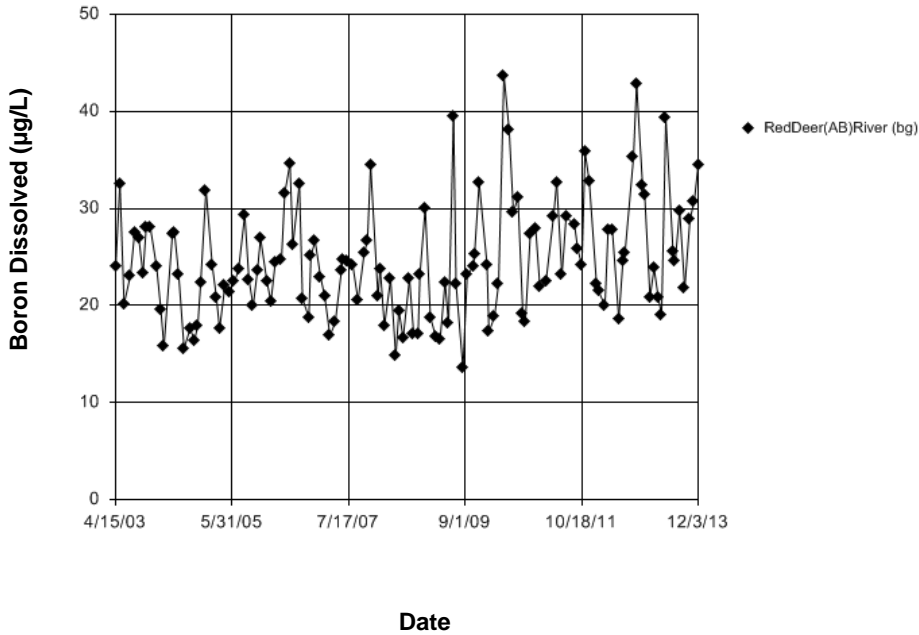


Figure E490 Red Deer River (AB-SK): Boron Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.1962. Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level. There were 3 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal. Kruskal-Wallis statistic (H) = 0.1962. Adjusted Kruskal-Wallis statistic (H') = 0.1962.

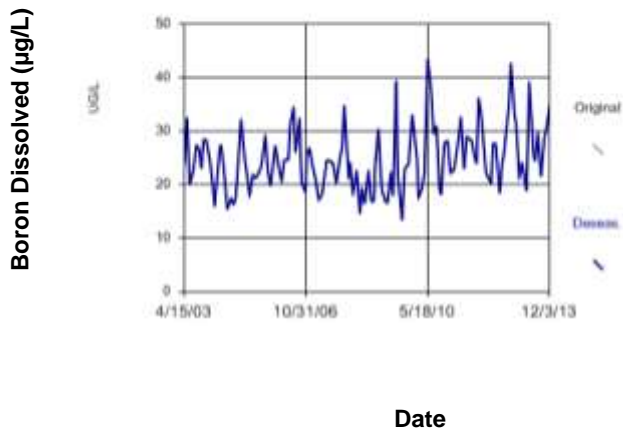


Figure E491 Red Deer River (AB-SK): Boron Dissolved

Sen's Slope Estimator

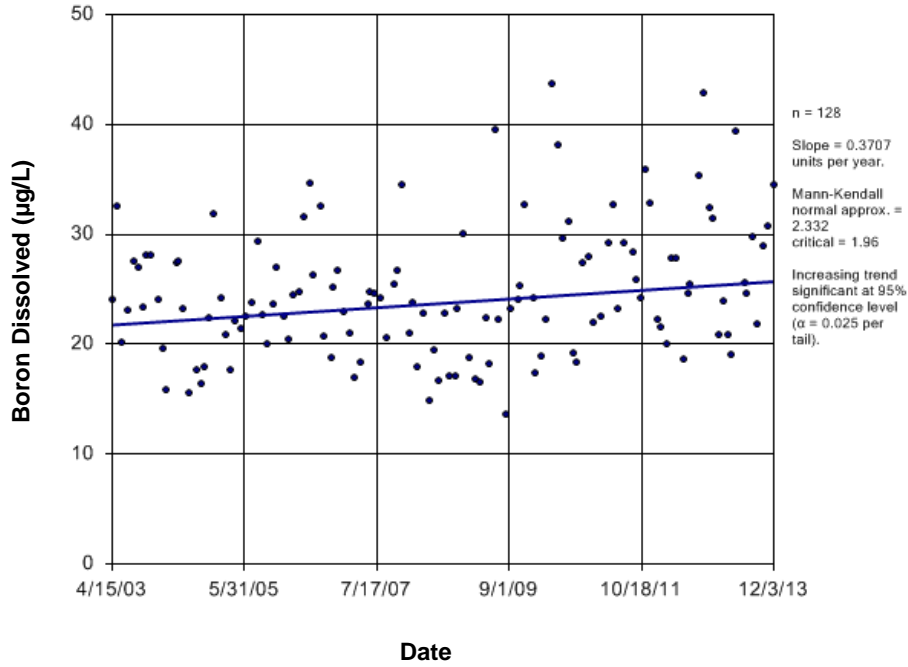


Figure E492 Red Deer River (AB-SK): Boron Dissolved

Time Series

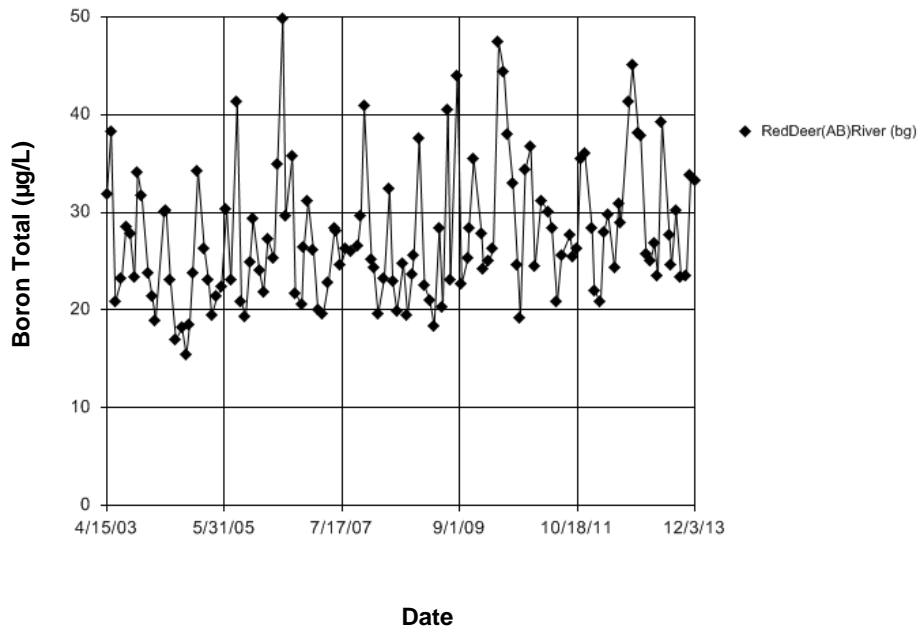
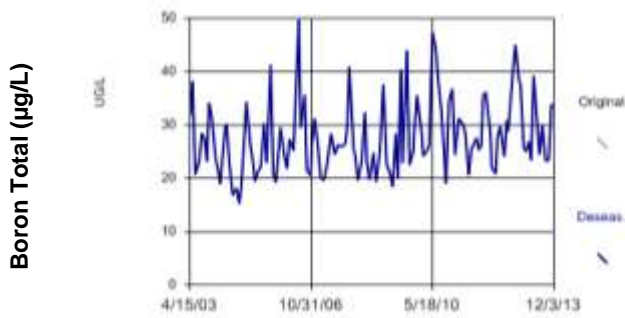


Figure E493 Red Deer River (AB-SK): Boron Total

Seasonality

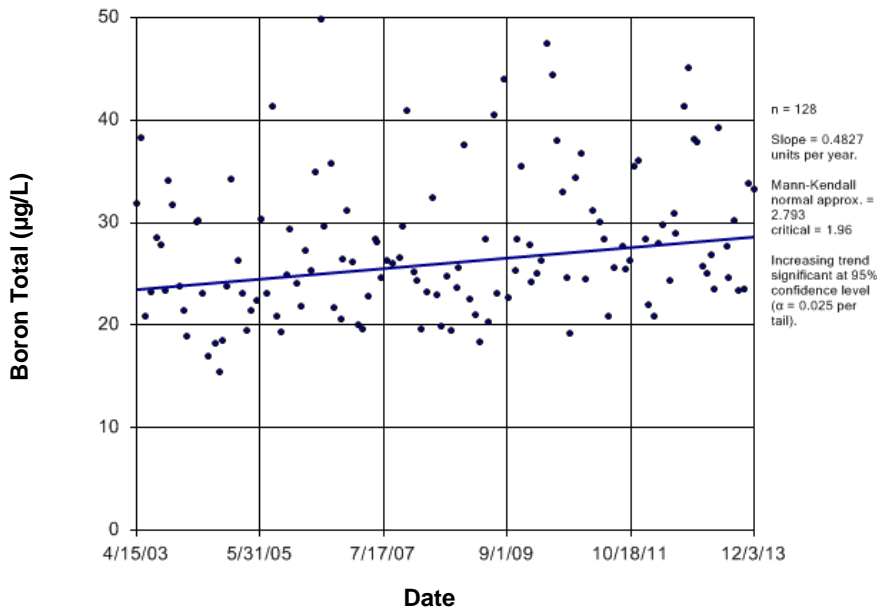
For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.07297
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 3 groups of data in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 0.07297
 Adjusted Kruskal-Wallis statistic (H') = 0.07297



Date

Figure E494 Red Deer River (AB-SK): Boron Total

Sen's Slope Estimator



Date

Figure E495 Red Deer River (AB-SK): Boron Total

Time Series

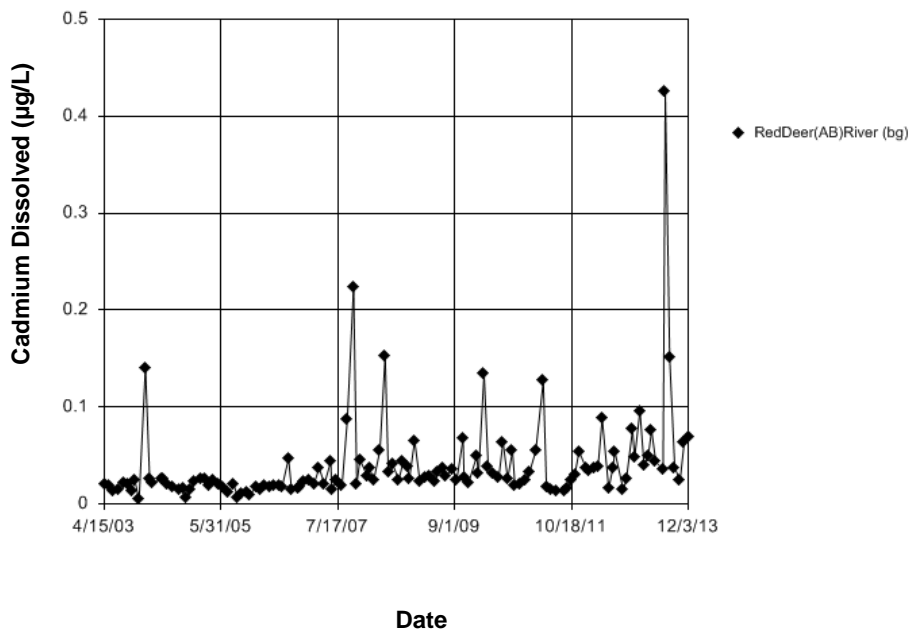


Figure E496 Red Deer River (AB-SK): Cadmium Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 2.111. Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level. There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal. Kruskal-Wallis statistic (H) = 2.111. Adjusted Kruskal-Wallis statistic (H') = 2.111

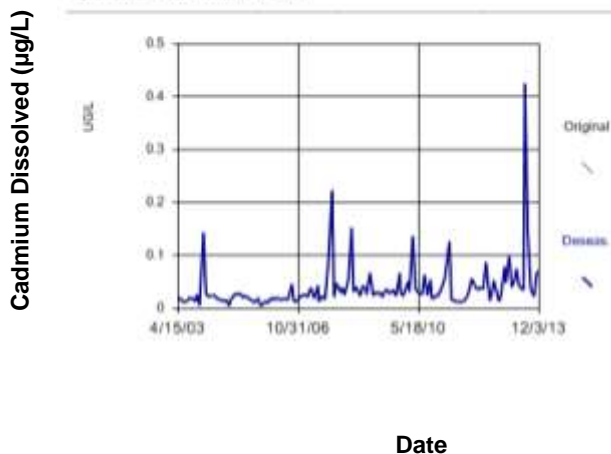


Figure E497 Red Deer River (AB-SK): Cadmium Dissolved

Sen's Slope Estimator

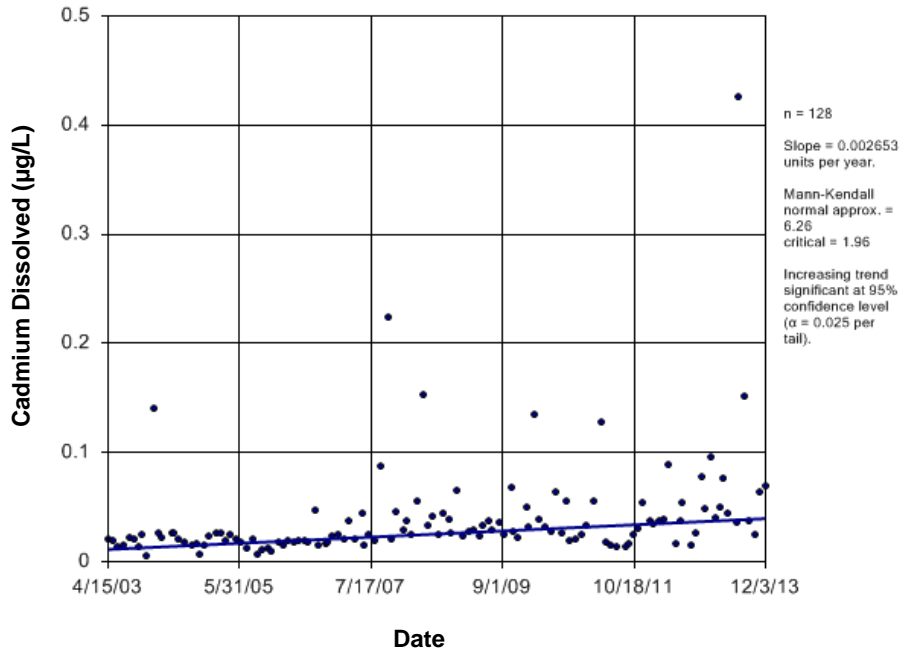


Figure E498 Red Deer River (AB-SK): Cadmium Dissolved

Time Series

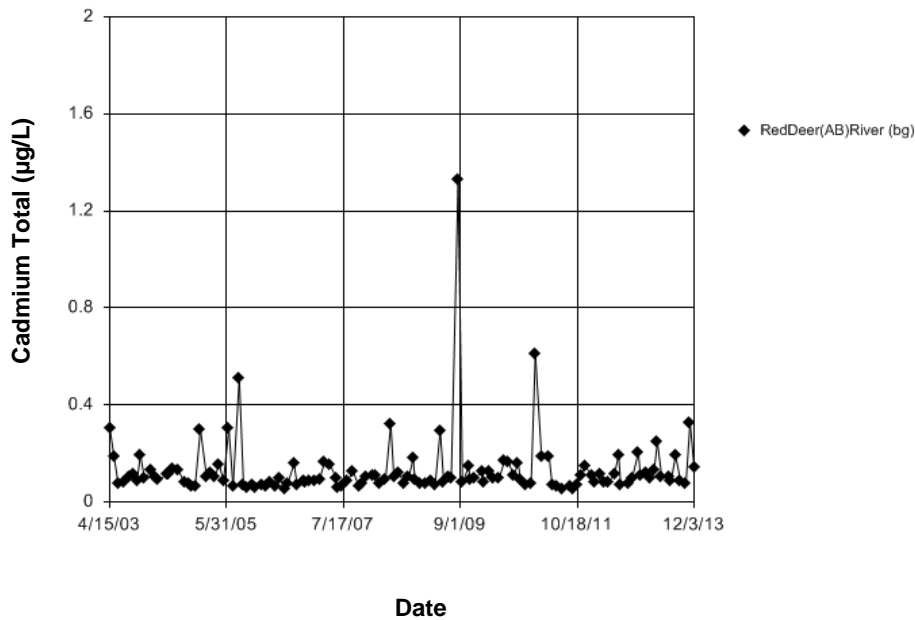


Figure E499 Red Deer River (AB-SK): Cadmium Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.2637
Tabulated Chi-Squared value = 5.841 with 1 degree of freedom at the 5% significance level.
There were 4 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 0.2637
Adjusted Kruskal-Wallis statistic (H') = 0.2637

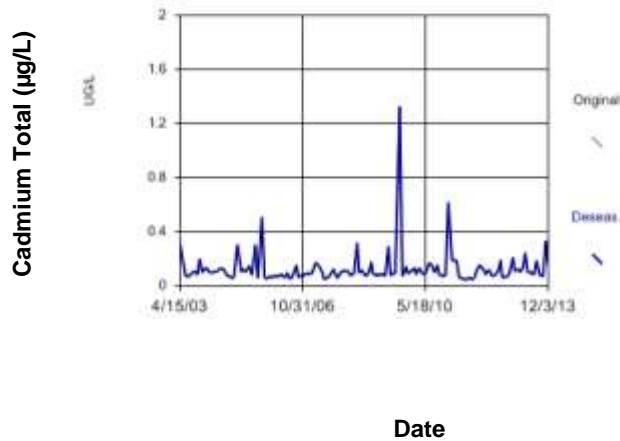


Figure E500 Red Deer River (AB-SK): Cadmium Total

Sen's Slope Estimator

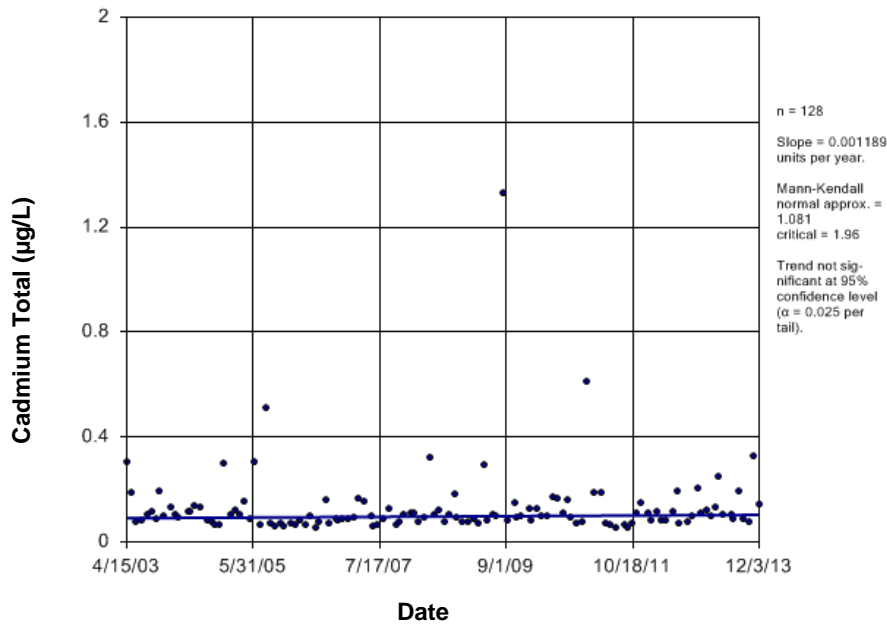


Figure E501 Red Deer River (AB-SK): Cadmium Total

Time Series

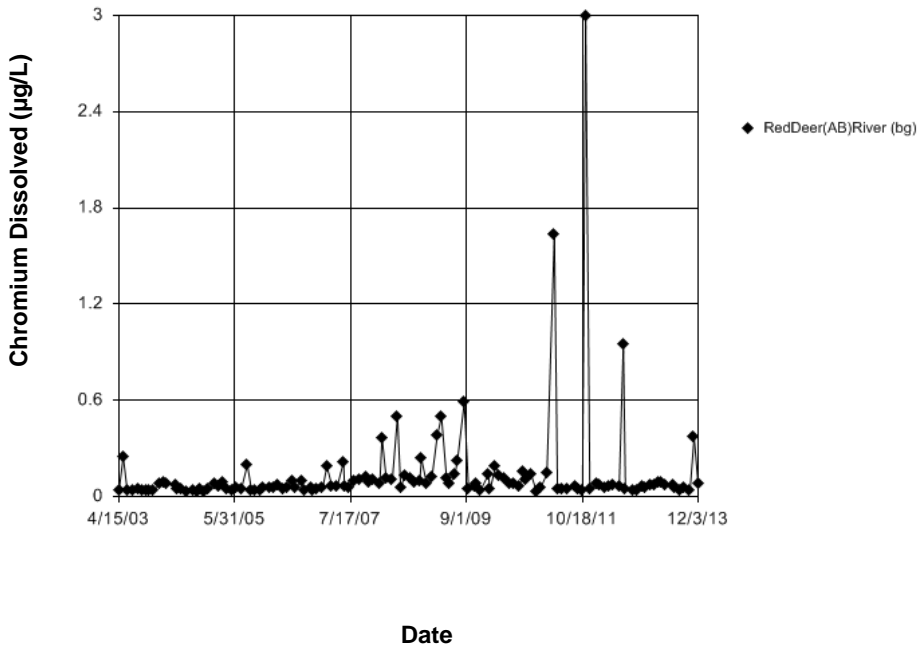


Figure E502 Red Deer River (AB-SK): Chromium Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 2.041
 Tabulated Chi-Squared value = 3.841 with 3 degrees of freedom at the 5% significance level.
 There were 4 groups of data in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 2.041
 Adjusted Kruskal-Wallis statistic (H') = 2.041

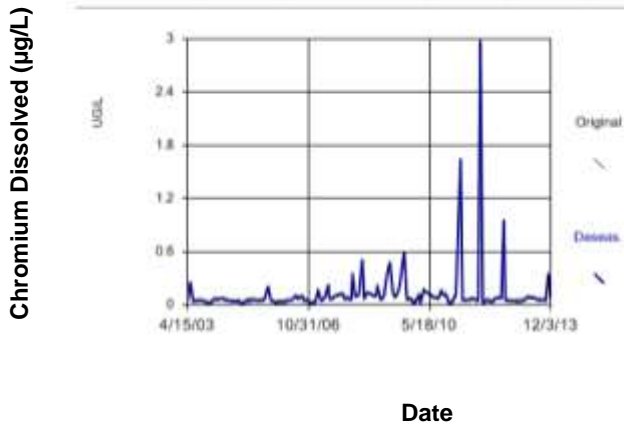


Figure E503 Red Deer River (AB-SK): Chromium Dissolved

Sen's Slope Estimator

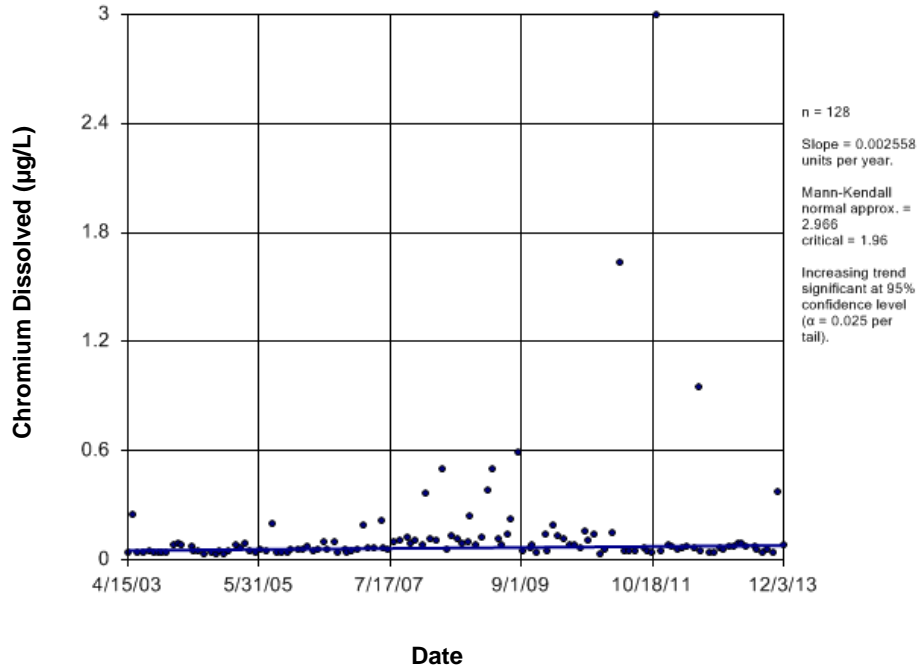


Figure E504 Red Deer River (AB-SK): Chromium Dissolved

Time Series

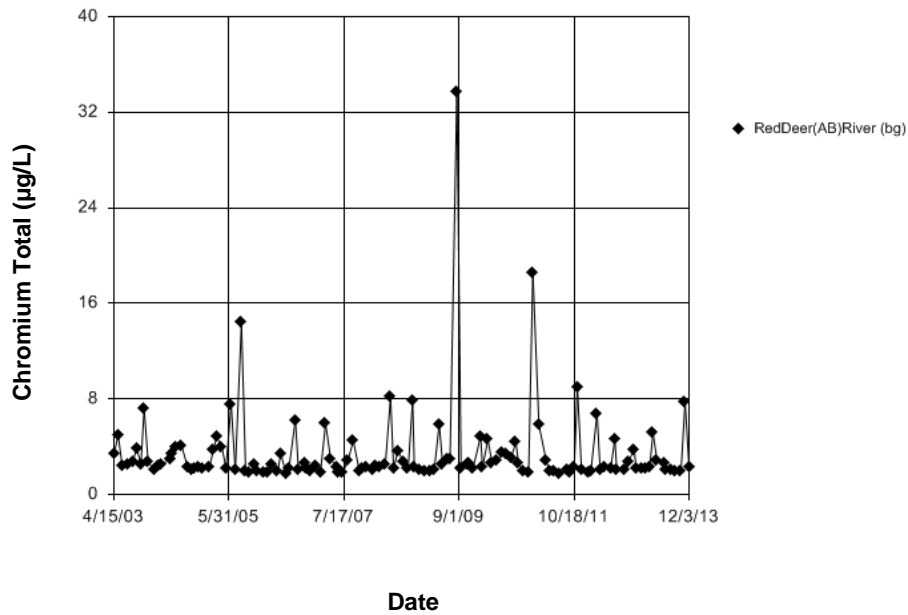


Figure E505 Red Deer River (AB-SK): Chromium Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 1.765
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 3 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 1.765
 Adjusted Kruskal-Wallis statistic (H') = 1.765

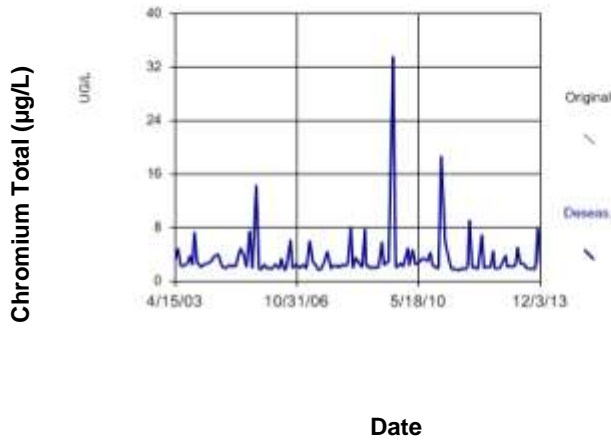


Figure E506 Red Deer River (AB-SK): Chromium Total

Sen's Slope Estimator

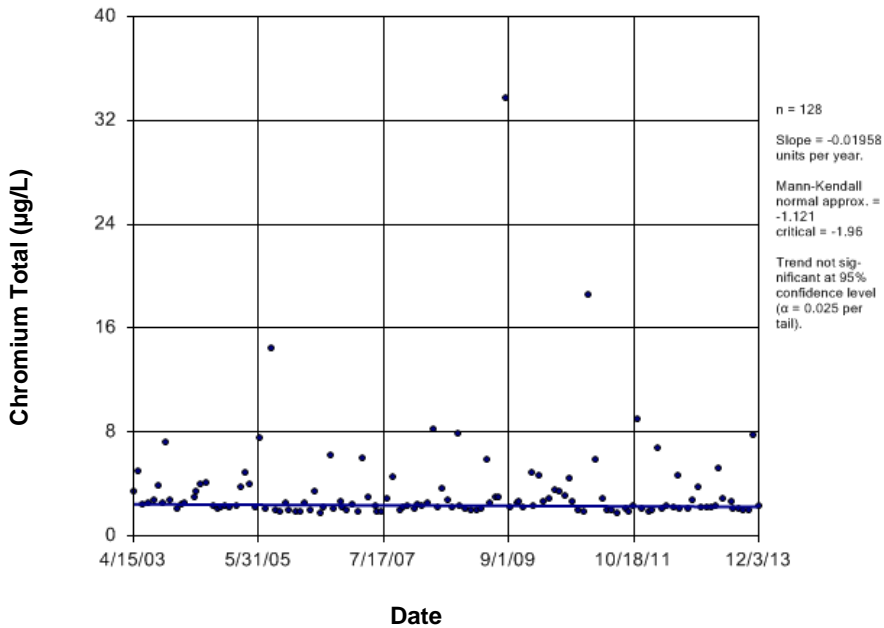


Figure E507 Red Deer River (AB-SK): Chromium Total

Time Series

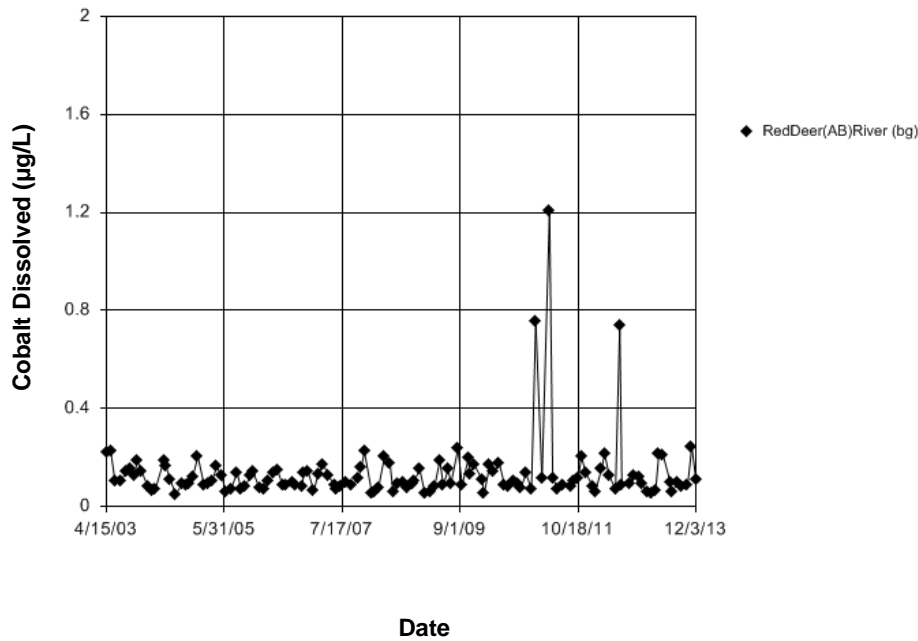


Figure E508 Red Deer River (AB-SK): Cobalt Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.284. Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level. There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal. Kruskal-Wallis statistic (H) = 0.284. Adjusted Kruskal-Wallis statistic (H') = 0.284.

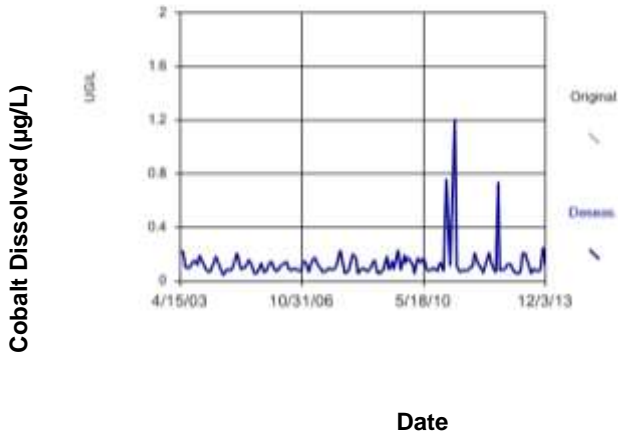


Figure 509 Red Deer River (AB-SK): Cobalt Dissolved

Sen's Slope Estimator

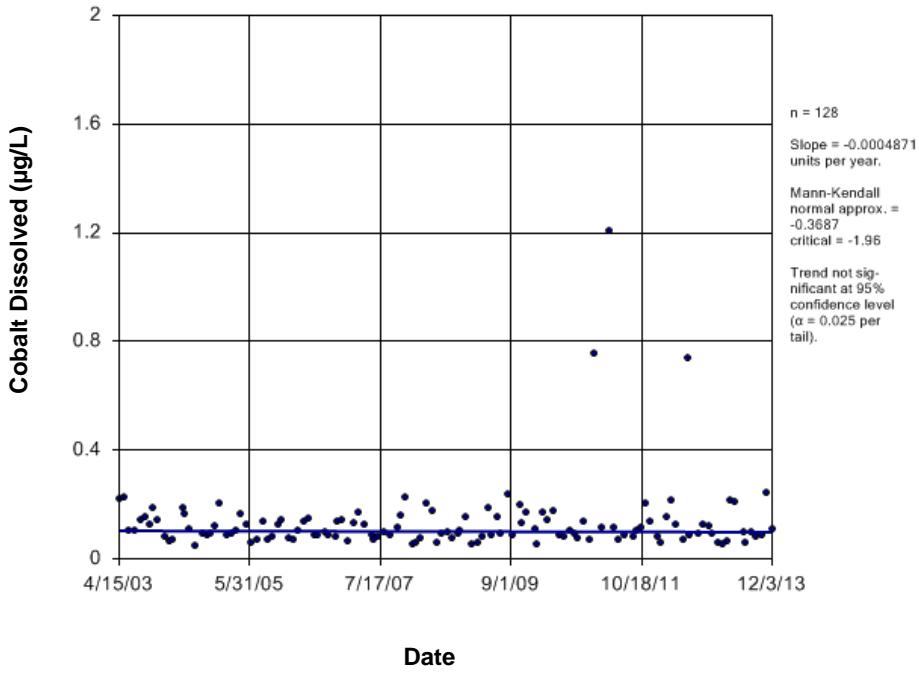


Figure E510 Red Deer River (AB-SK): Cobalt Dissolved

Time Series

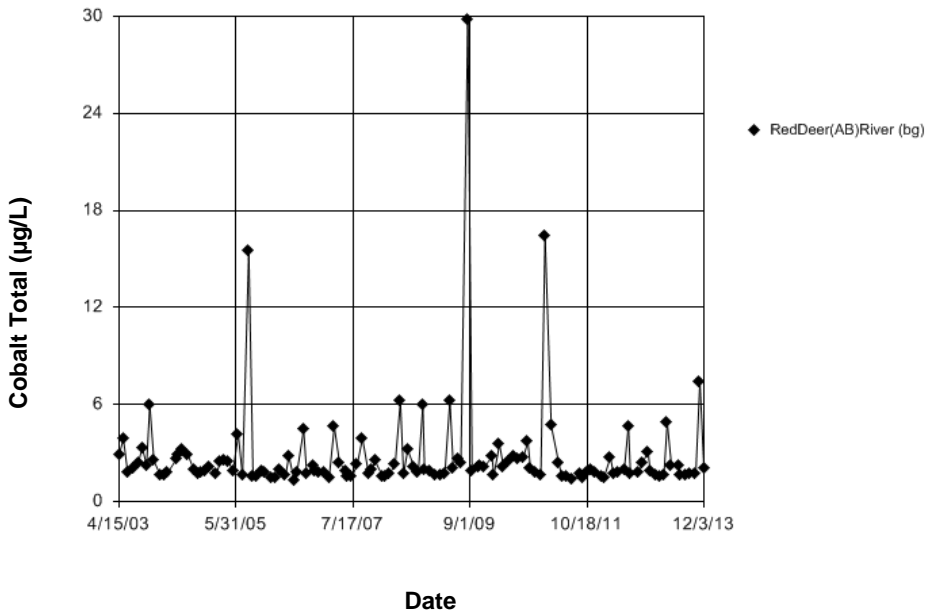


Figure 511 Red Deer River (AB-SK): Cobalt Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 3.502
 Tabulated Chi-Squared value = 3.841 with 3 degrees of freedom at the 5% significance level.
 There were 3 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 3.502
 Adjusted Kruskal-Wallis statistic (H') = 3.502

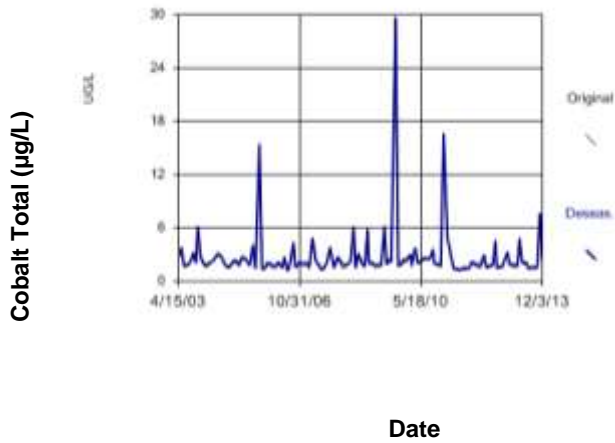


Figure E512 Red Deer River (AB-SK): Cobalt Total

Sen's Slope Estimator

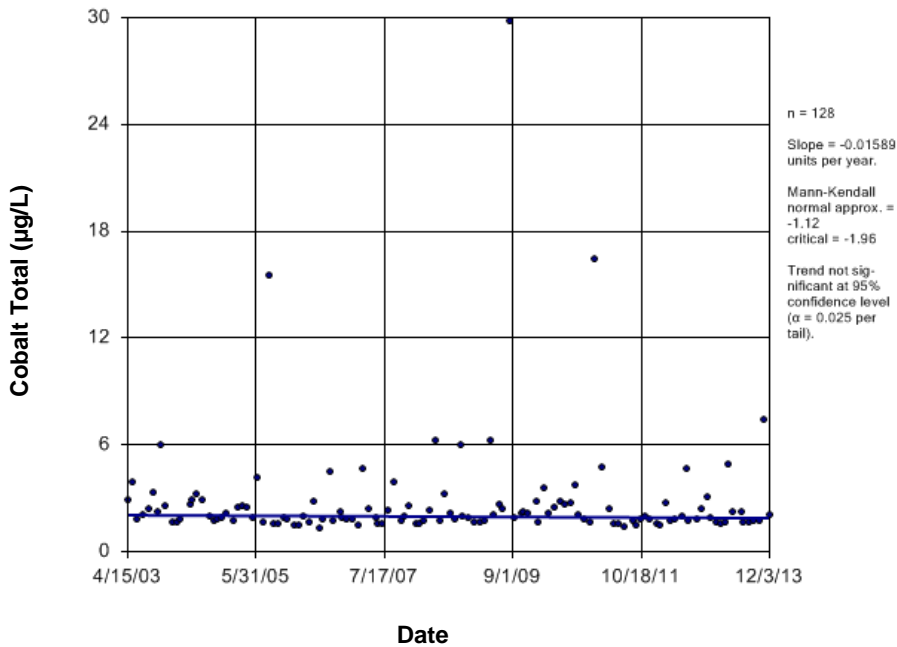


Figure E513 Red Deer River (AB-SK): Cobalt Total

Time Series

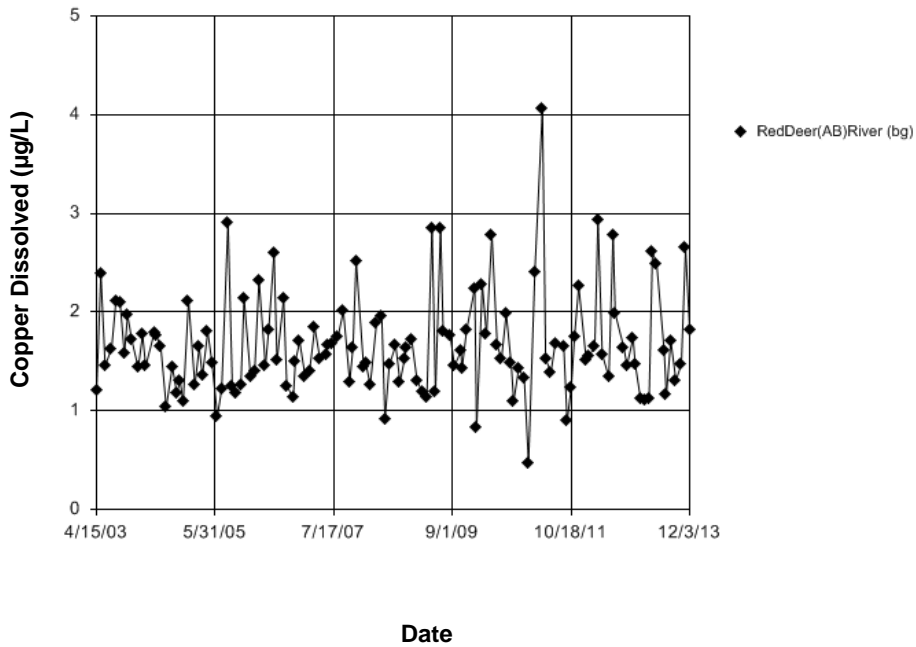


Figure E514 Red Deer River (AB-SK): Copper Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.7913
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 10 groups of data in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 0.7913
 Adjusted Kruskal-Wallis statistic (H') = 0.7933

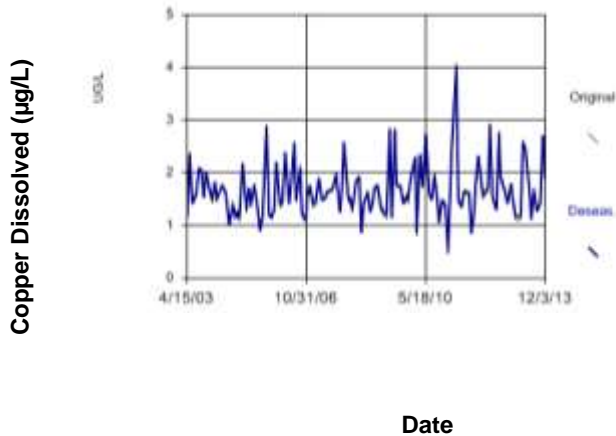


Figure E515 Red Deer River (AB-SK): Copper Dissolved

Sen's Slope Estimator

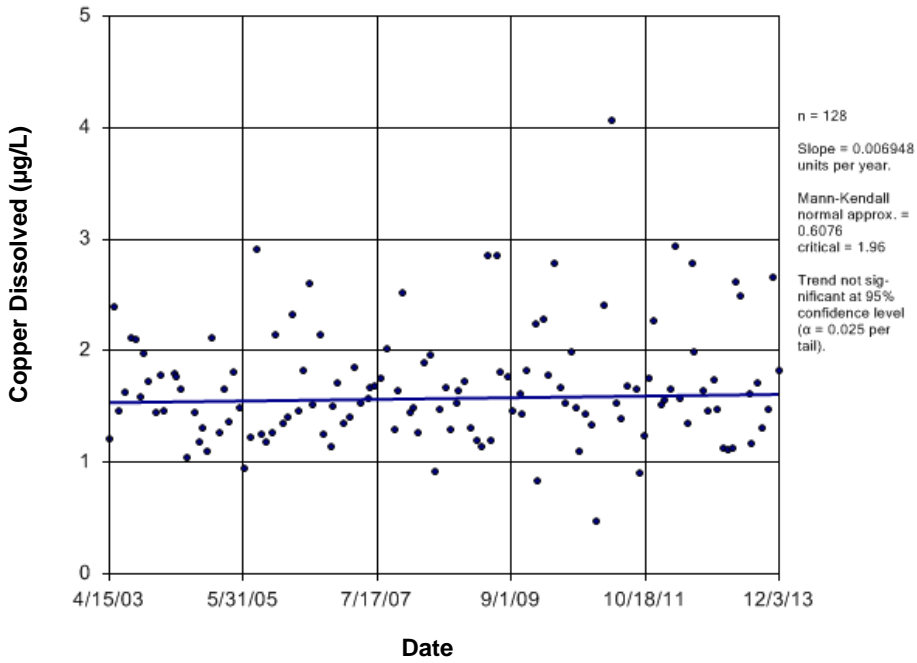


Figure E516 Red Deer River (AB-SK): Copper Dissolved

Time Series

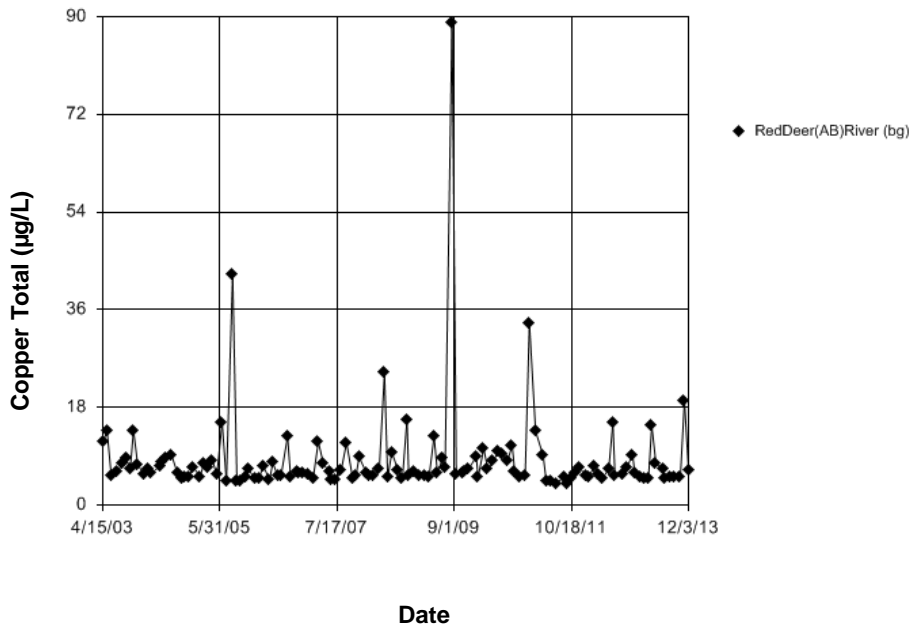


Figure E517 Red Deer River (AB-SK): Copper Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 6.1593
Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
There were 1 groups of sex in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 0.1393
Adjusted Kruskal-Wallis statistic (H') = 8.1593

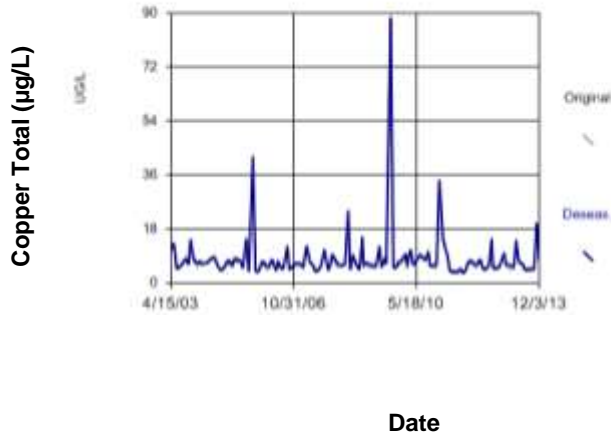


Figure E518 Red Deer River (AB-SK): Copper Total

Sen's Slope Estimator

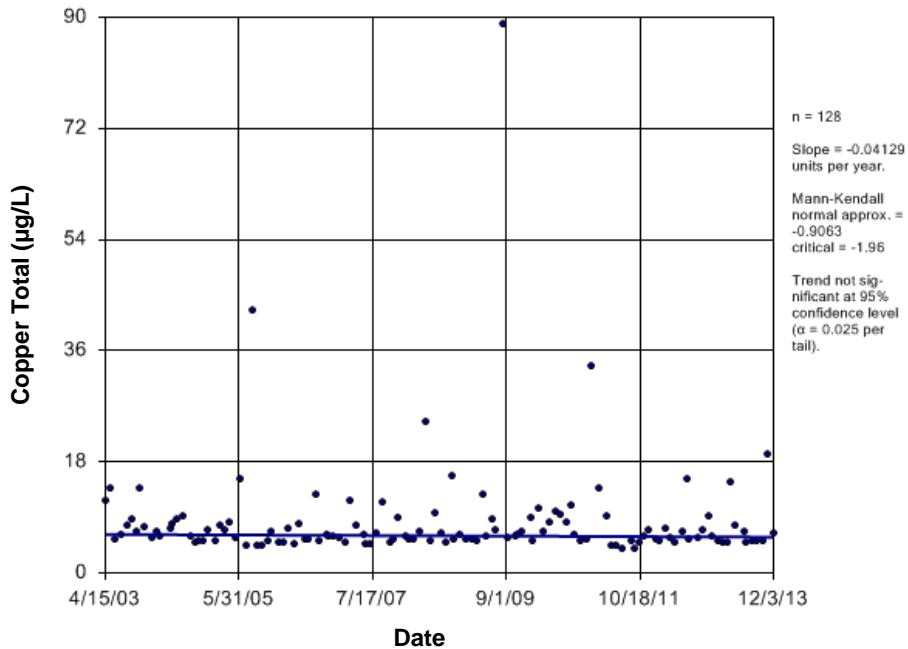


Figure E519 Red Deer River (AB-SK): Copper Total

Time Series

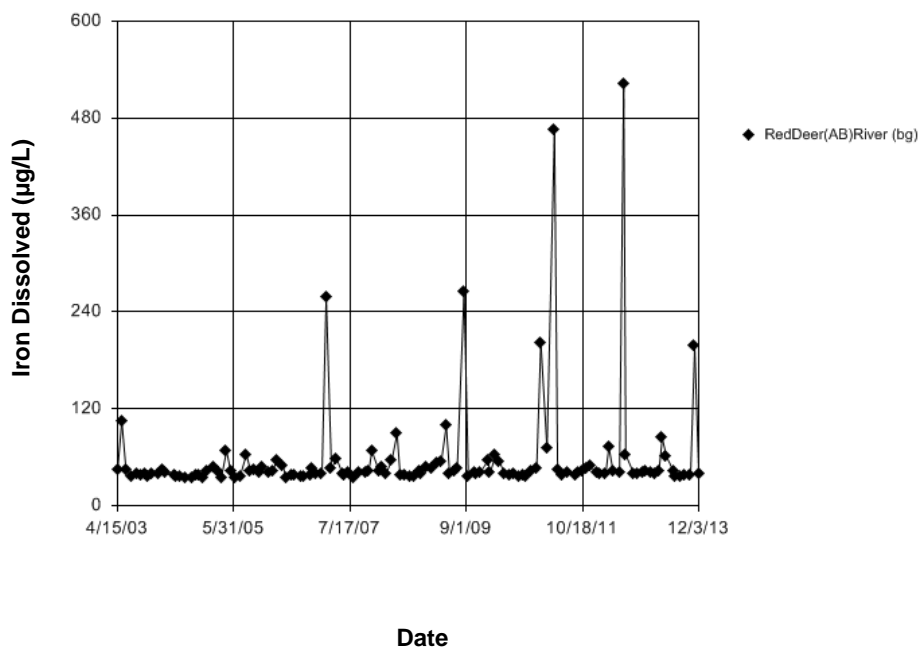


Figure E520 Red Deer River (AB-SK): Iron Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-Squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 9.537
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 4 groups of data in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 9.537
 Adjusted Kruskal-Wallis statistic (H') = 9.537

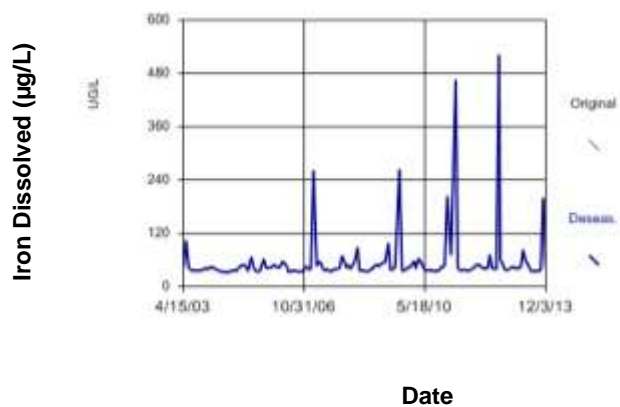


Figure E521 Red Deer River (AB-SK): Iron Dissolved

Seasonal Kendall

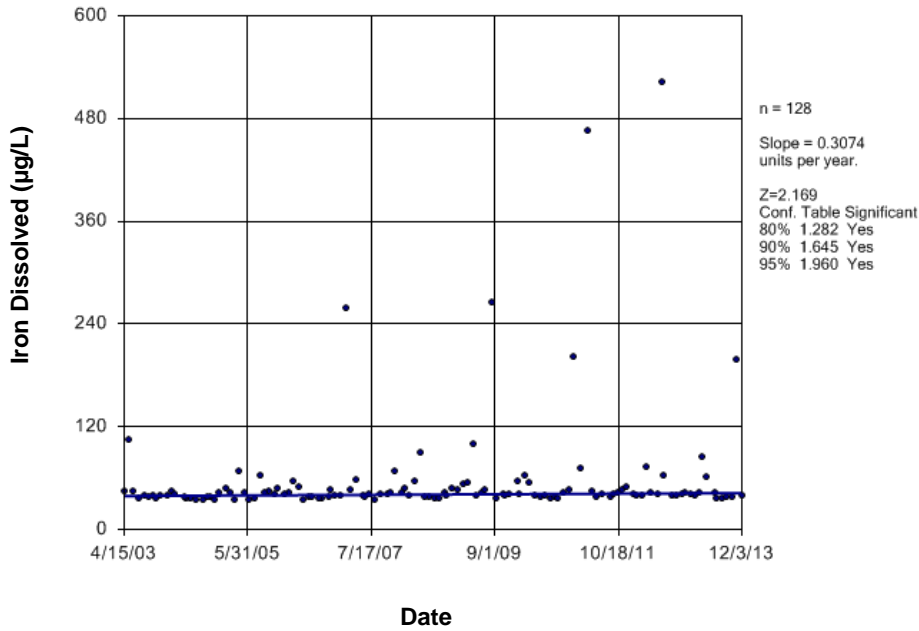


Figure E522 Red Deer River (AB-SK): Iron Dissolved

Time Series

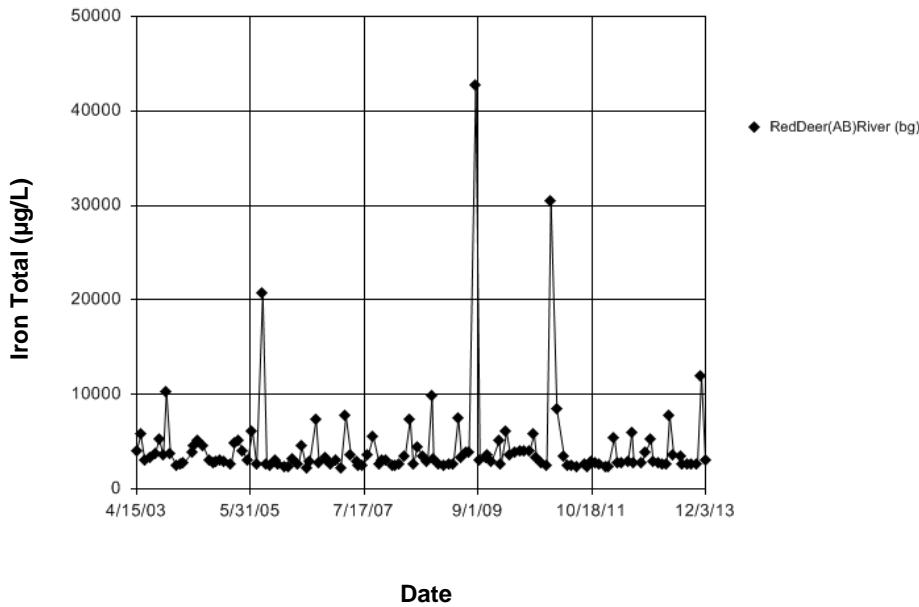


Figure E523 Red Deer River (AB-SK): Iron Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
 Calculated Kruskal-Wallis statistic = 4.98
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level
 There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 4.98
 Adjusted Kruskal-Wallis statistic (H') = 4.98

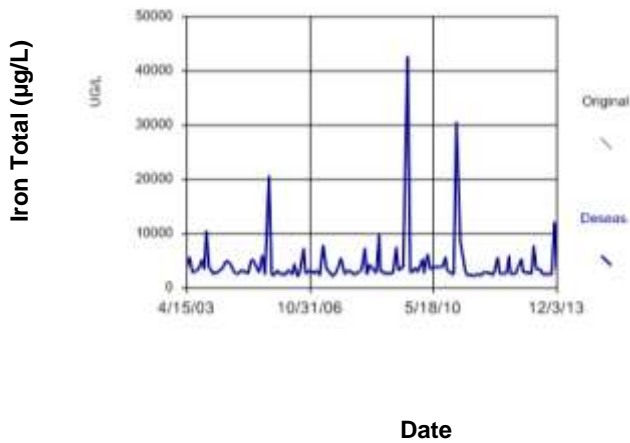


Figure E524 Red Deer River (AB-SK): Iron Total

Seasonal Kendall

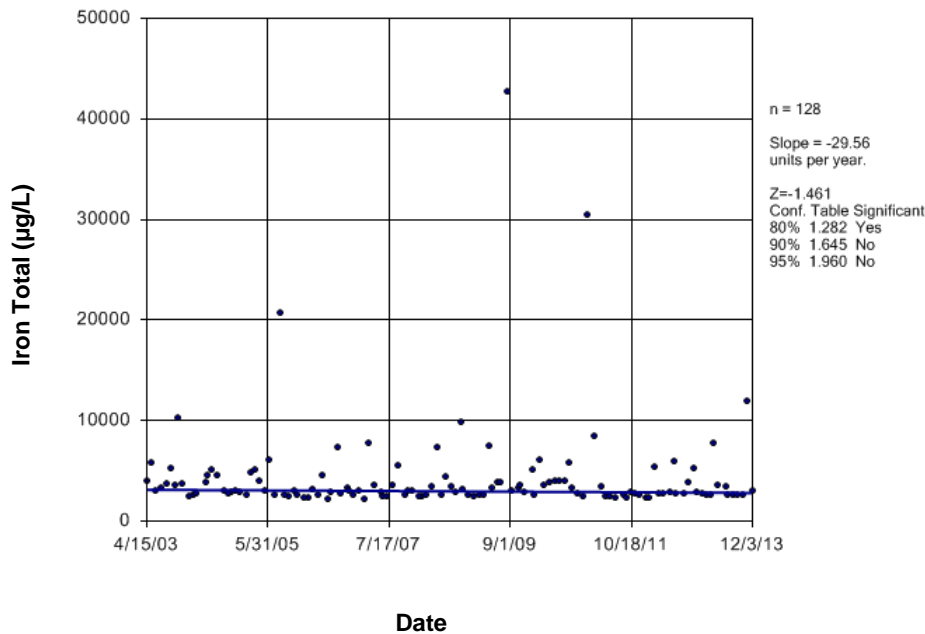


Figure E525 Red Deer River (AB-SK): Iron Total

Time Series

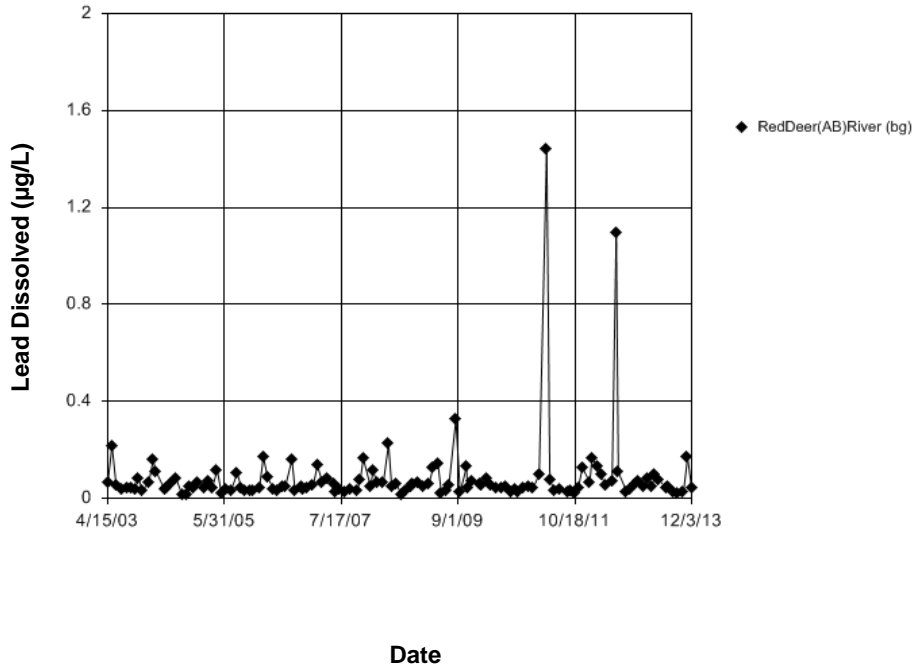


Figure E526 Red Deer River (AB-SK): Lead Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates **SEASONALITY** at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 13.43
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 13.43
 Adjusted Kruskal-Wallis statistic (H') = 13.43

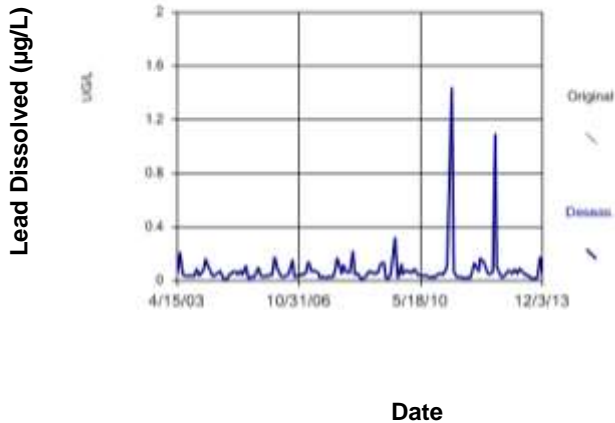


Figure E527 Red Deer River (AB-SK): Lead Dissolved

Seasonal Kendall

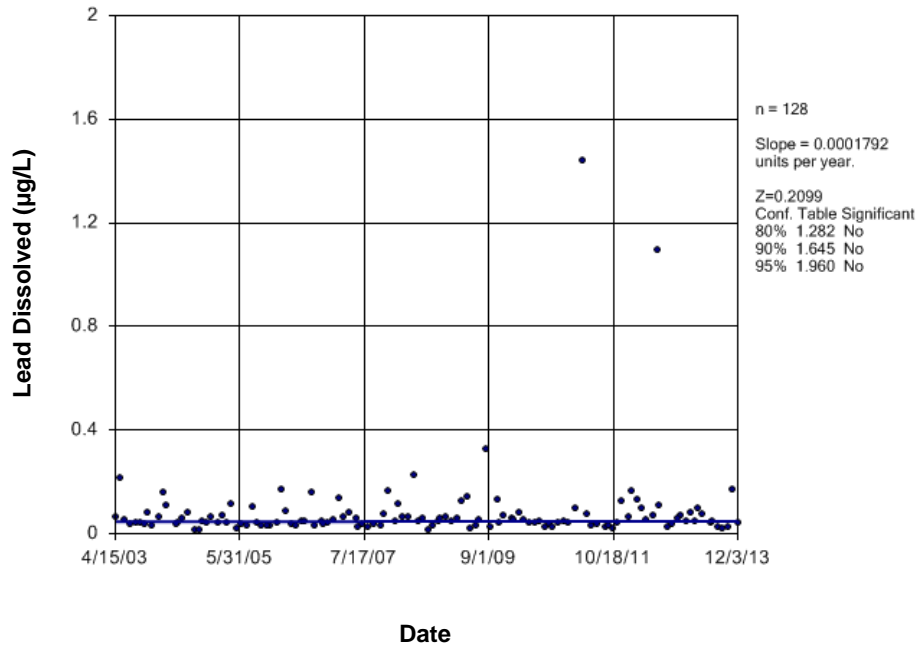


Figure E528 Red Deer River (AB-SK): Lead Dissolved

Time Series

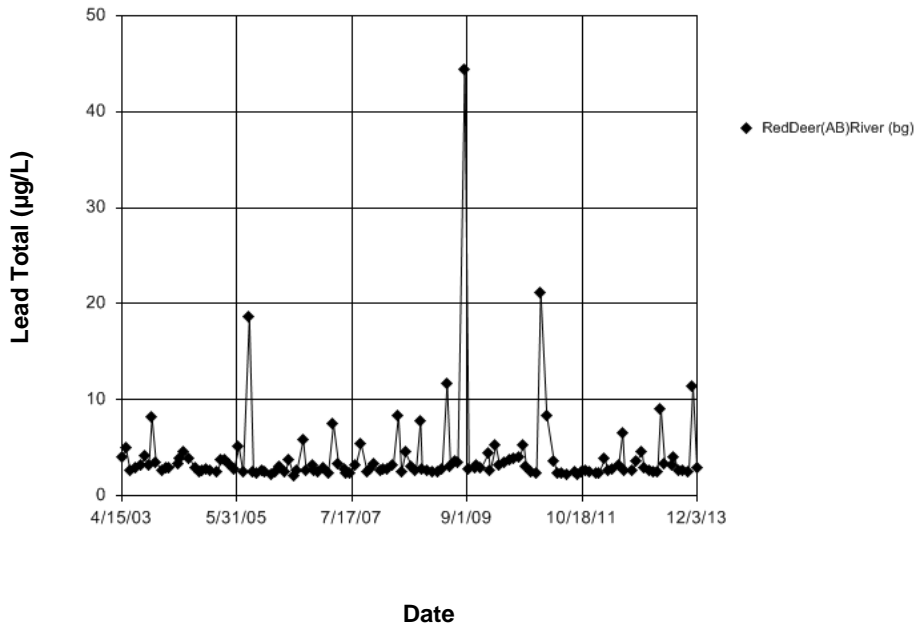


Figure E529 Red Deer River (AB-SK): Lead Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 2.722
Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
There were 5 groups of data in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 2.722
Adjusted Kruskal-Wallis statistic (H') = 2.722

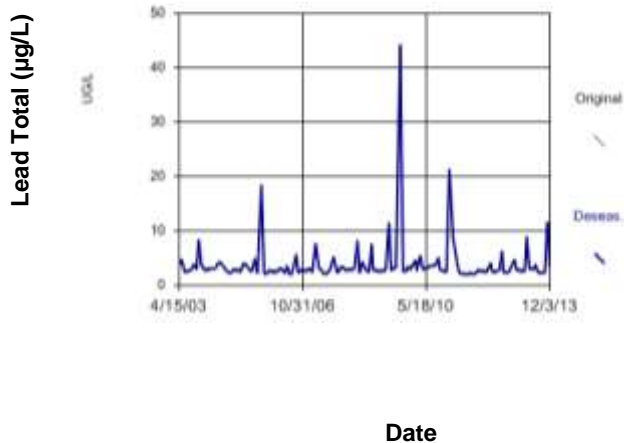


Figure E530 Red Deer River (AB-SK): Lead Total

Sen's Slope Estimator

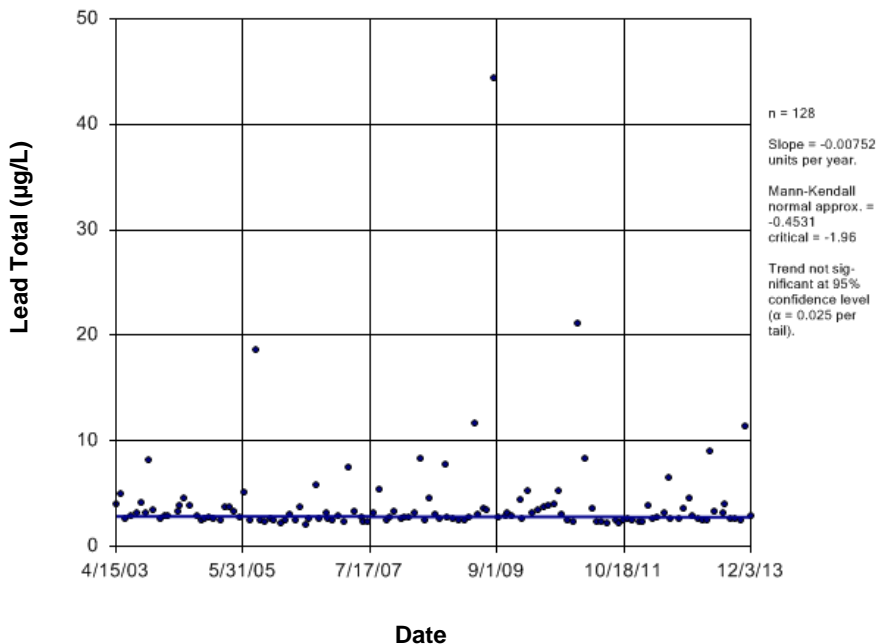


Figure E531 Red Deer River (AB-SK): Lead Total

Time Series

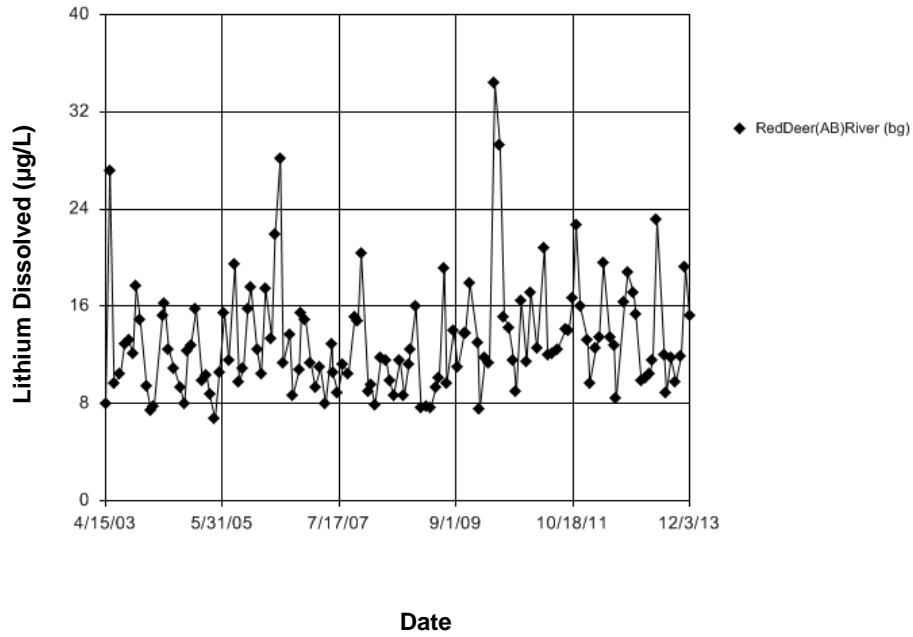


Figure E532 Red Deer River (AB-SK): Lithium Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.009475
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 0.009475
 Adjusted Kruskal-Wallis statistic (H') = 0.009475

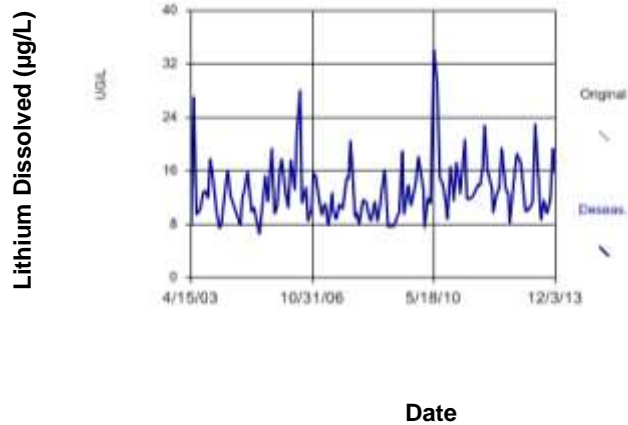


Figure E533 Red Deer River (AB-SK): Lithium Dissolved

Sen's Slope Estimator

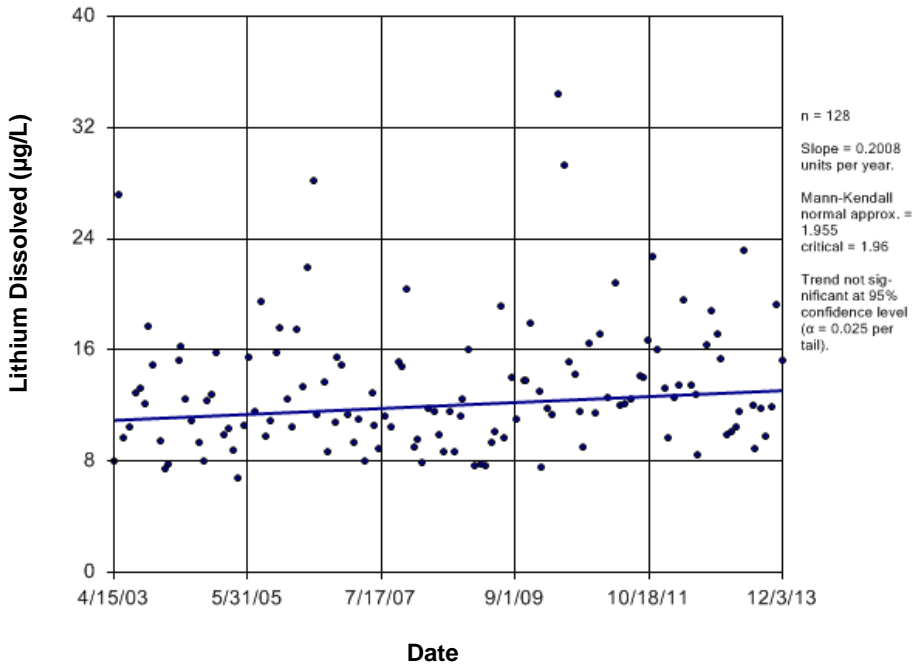


Figure E534 Red Deer River (AB-SK): Lithium Dissolved

Time Series

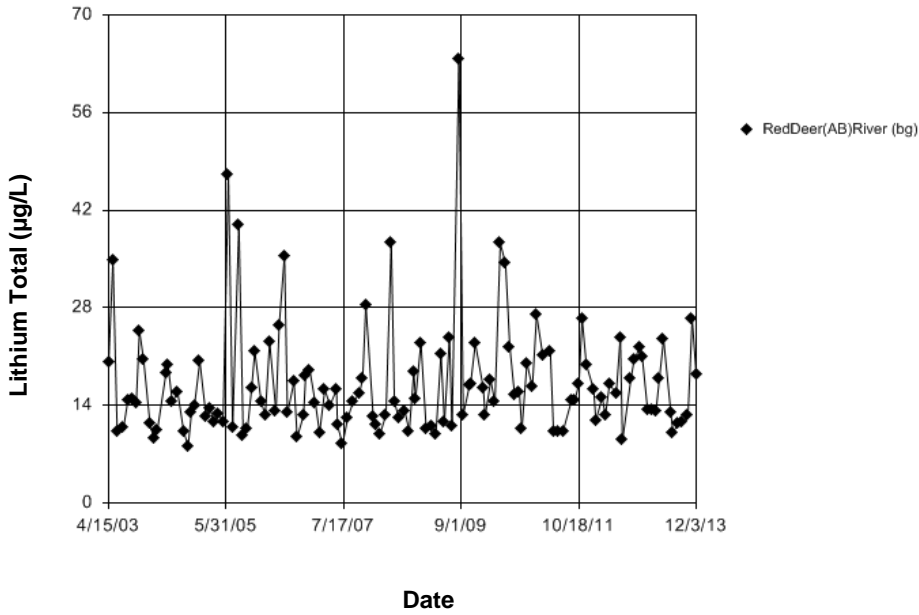


Figure E535 Red Deer River (AB-SK): Lithium Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 1.336
Tabulated Chi-squared value = 3.841 with 1 degree of freedom at the 5% significance level.
There were 5 groups of data in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 1.336
Adjusted Kruskal-Wallis statistic (H') = 1.336

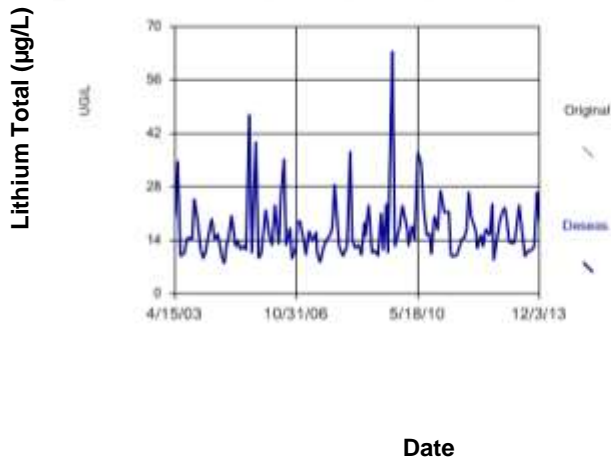


Figure E536 Red Deer River (AB-SK): Lithium Total

Sen's Slope Estimator

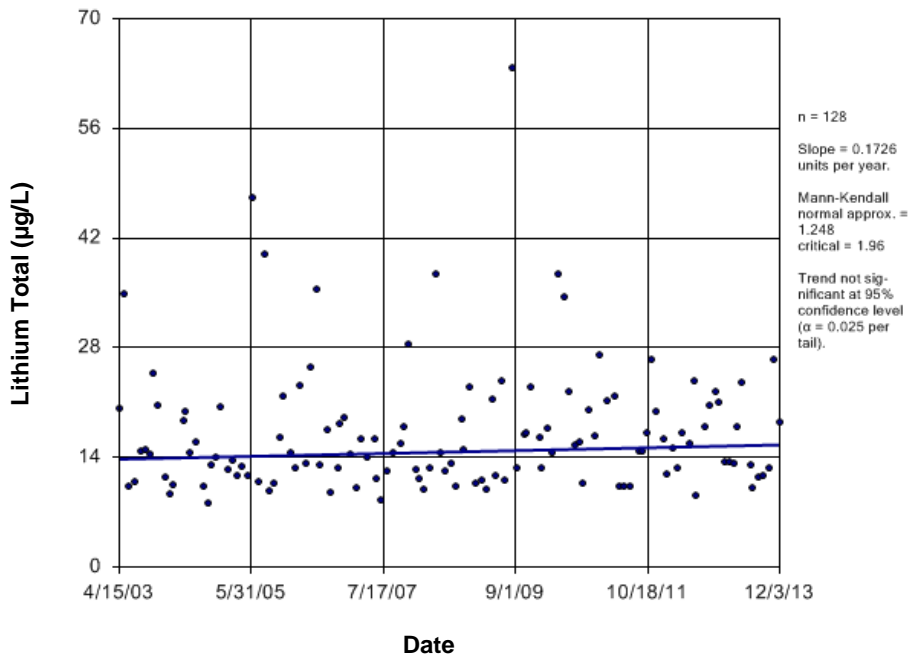


Figure E537 Red Deer River (AB-SK): Lithium Total

Time Series

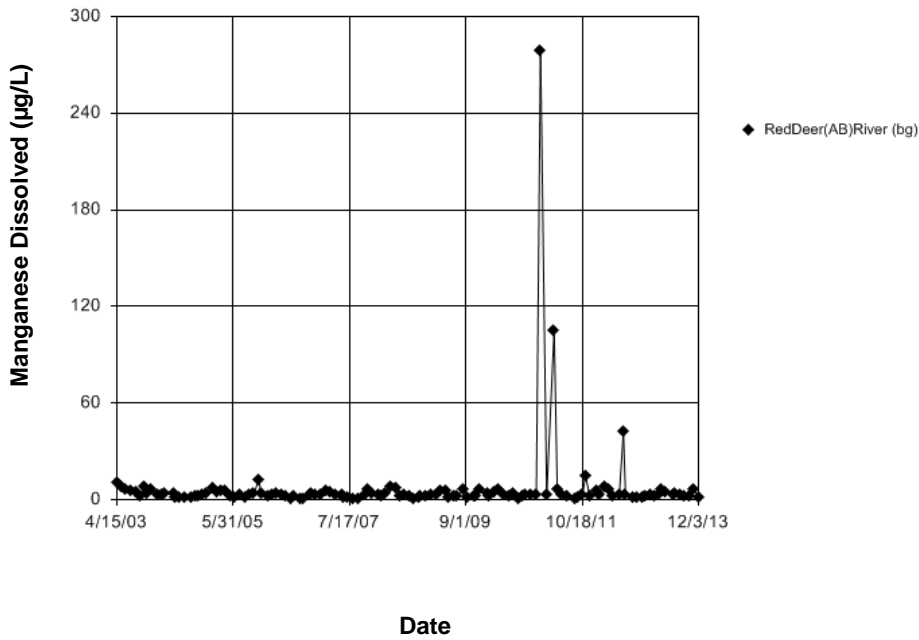


Figure E538 Red Deer River (AB-SK): Manganese Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-Squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 9.402
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 9.402
 Adjusted Kruskal-Wallis statistic (H') = 9.402

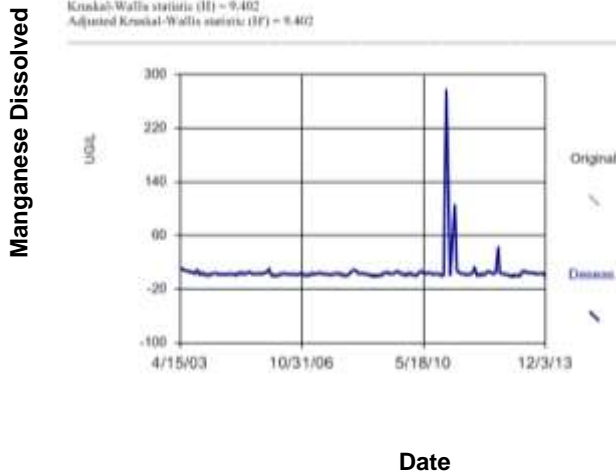


Figure E539 Red Deer River (AB-SK): Manganese Dissolved

Seasonal Kendall

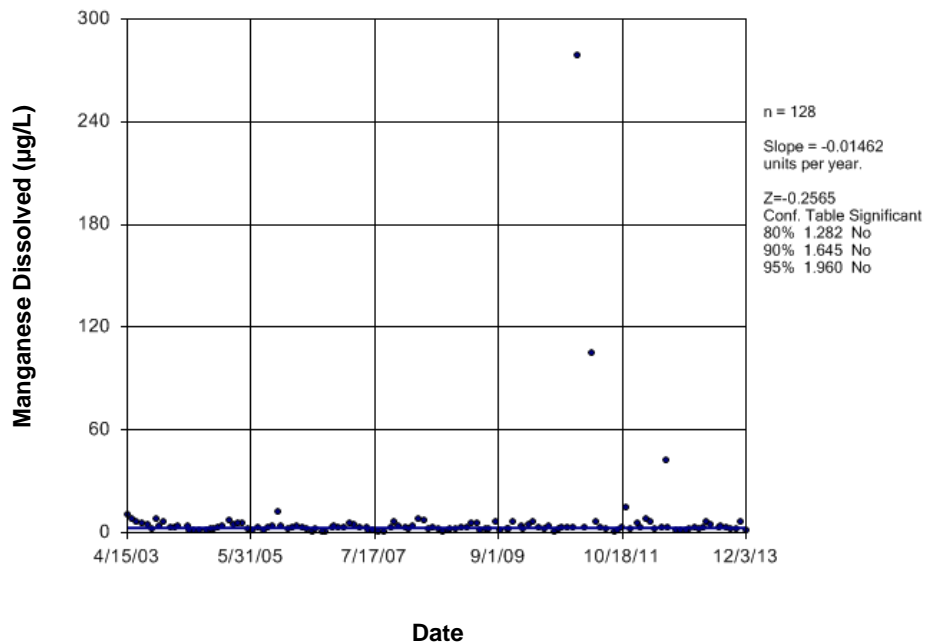


Figure E540 Red Deer River (AB-SK): Manganese Dissolved

Time Series

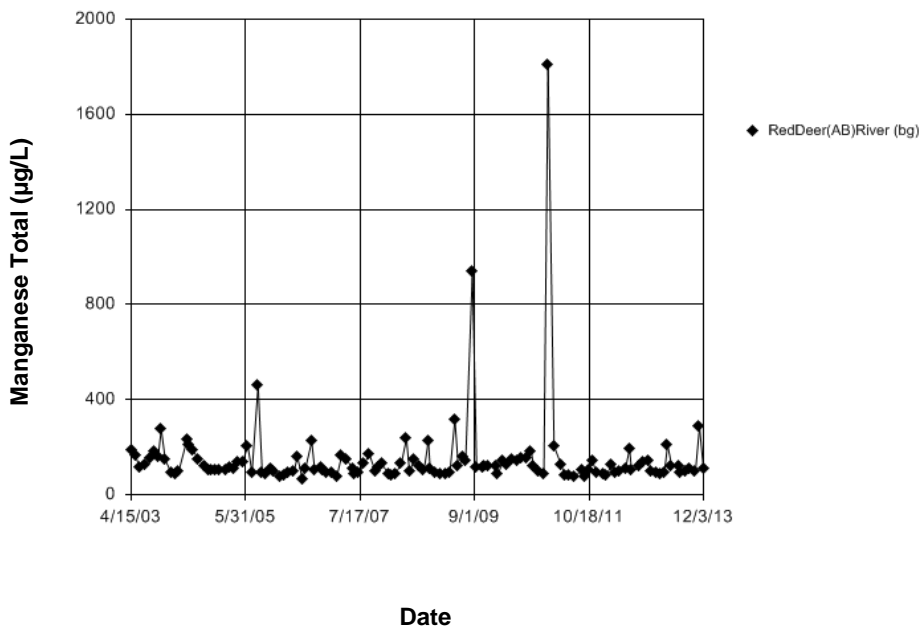


Figure E541 Red Deer River (AB-SK): Manganese Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
 Calculated Kruskal-Wallis statistic = 13.04
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 4 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 13.04
 Adjusted Kruskal-Wallis statistic (H') = 13.04

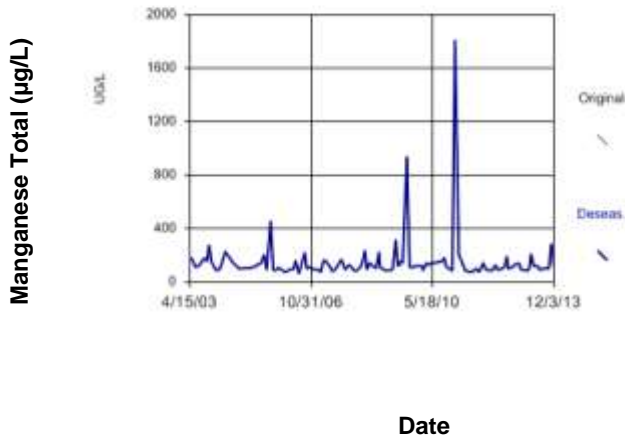


Figure E542 Red Deer River (AB-SK): Manganese Total

Seasonal Kendall

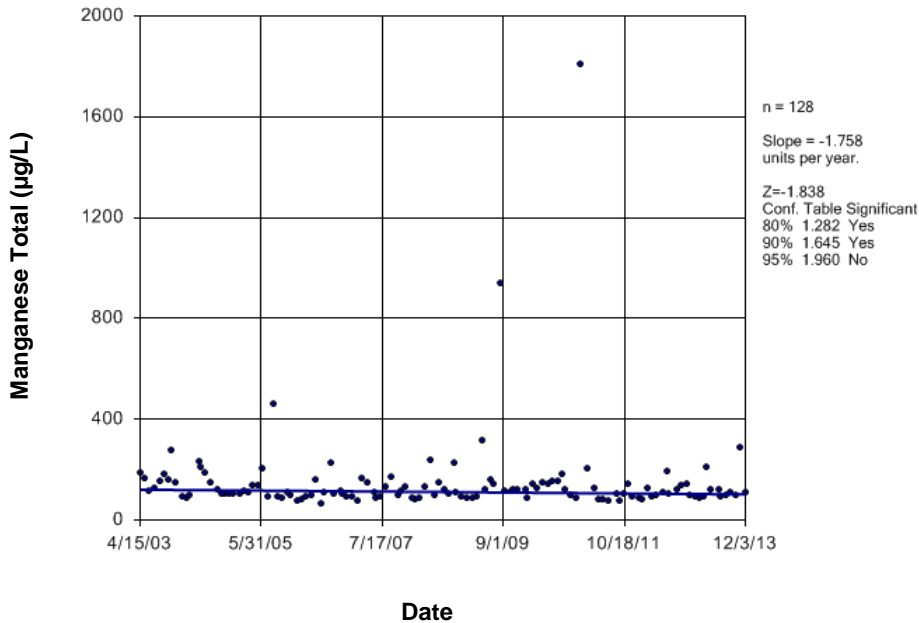


Figure E543 Red Deer River (AB-SK): Manganese Total

Time Series

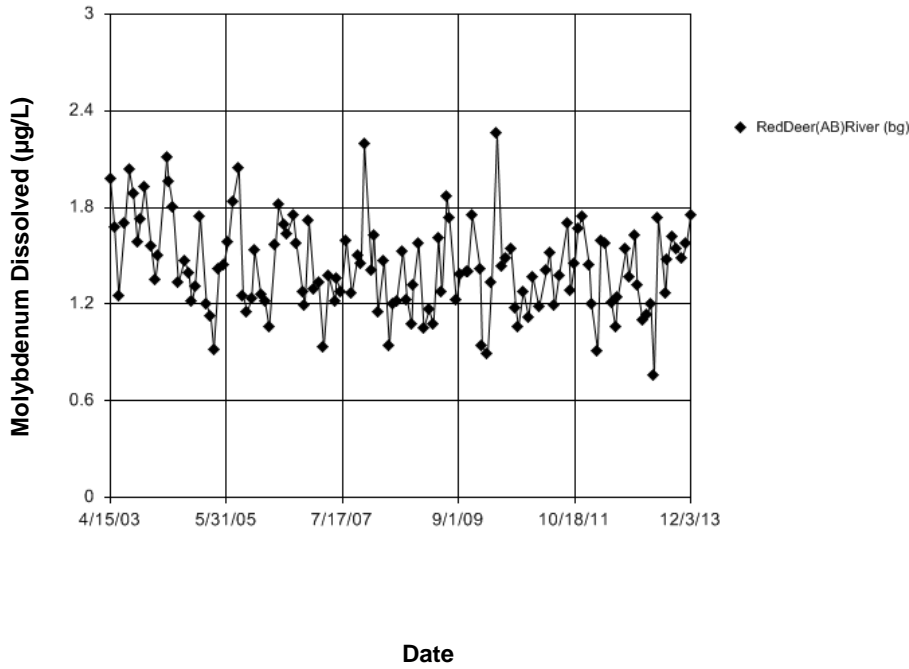


Figure E544 Red Deer River (AB-SK): Molybdenum Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 6.186. Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level. There were 10 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H*) was utilized to determine if the medians were equal. Kruskal-Wallis statistic (H*) = 6.183. Adjusted Kruskal-Wallis statistic (H*) = 6.186.

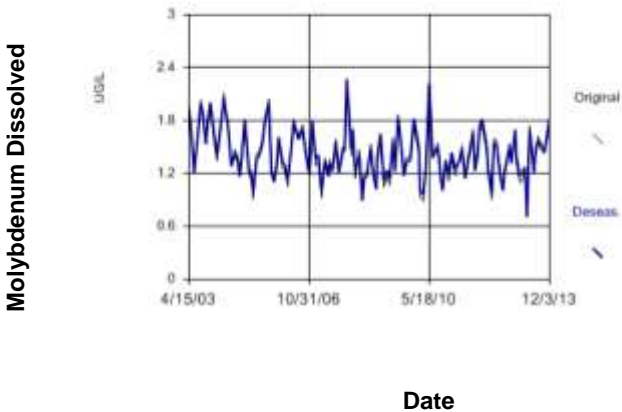


Figure E545 Red Deer River (AB-SK): Molybdenum Dissolved

Seasonal Kendall

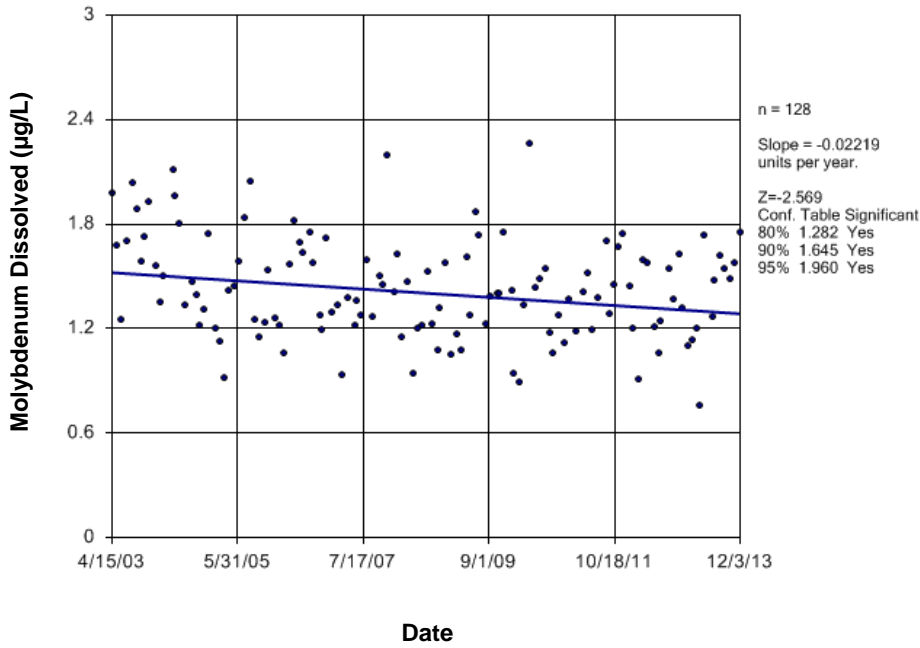


Figure E546 Red Deer River (AB-SK): Molybdenum Dissolved

Time Series

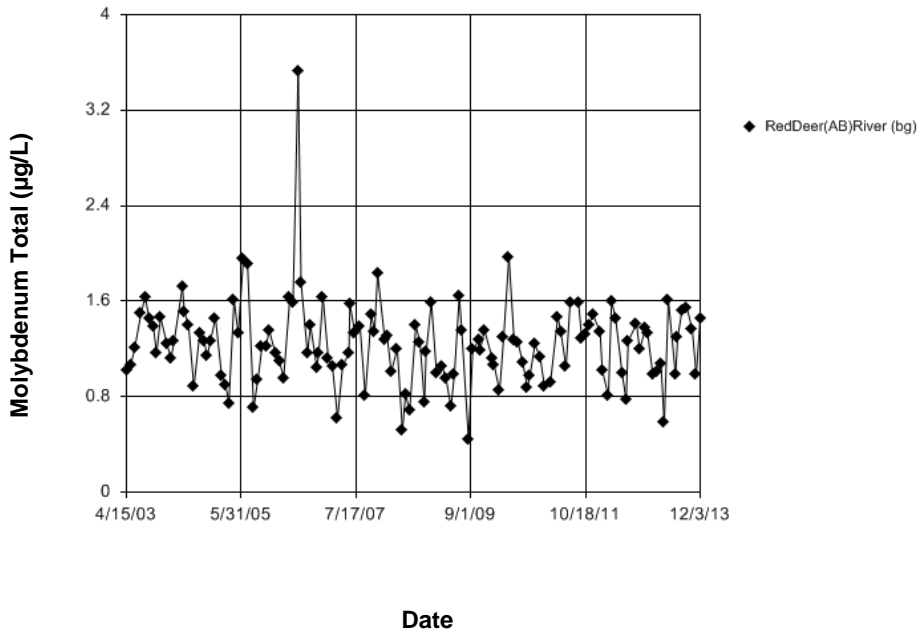
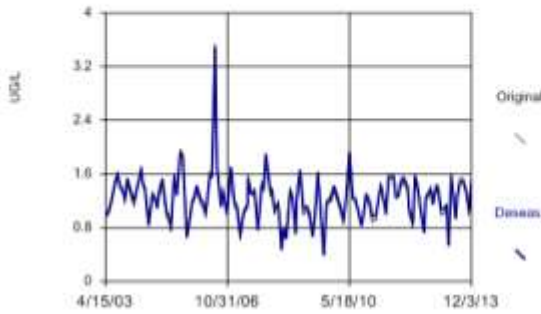


Figure E547 Red Deer River (AB-SK): Molybdenum Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 4.786
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 7 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H') = 4.786
 Adjusted Kruskal-Wallis statistic (H') = 4.786

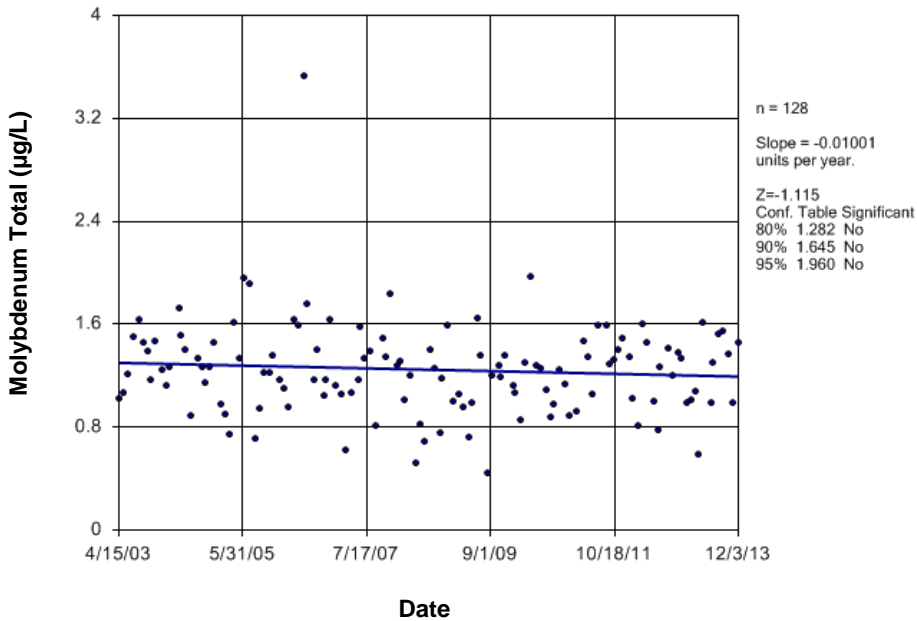
Molybdenum Total ($\mu\text{g/L}$)



Date

Figure E548 Red Deer River (AB-SK): Molybdenum Total

Seasonal Kendall



Date

Figure E549 Red Deer River (AB-SK): Molybdenum Total

Time Series

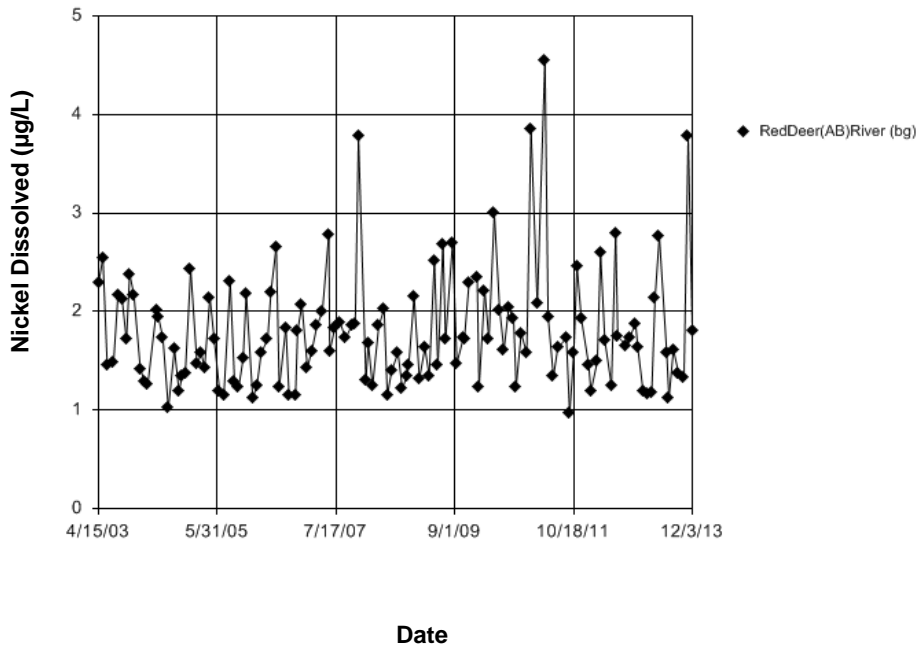


Figure E550 Red Deer River (AB-SK): Nickel Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.2892
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 3 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 0.2892
 Adjusted Kruskal-Wallis statistic (H') = 0.2892

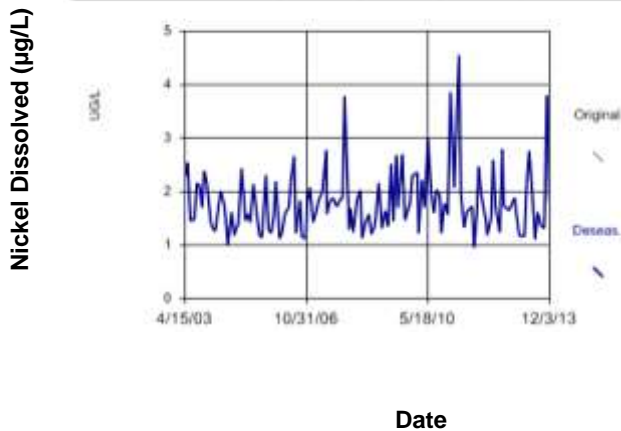


Figure E551 Red Deer River (AB-SK): Nickel Dissolved

Sen's Slope Estimator

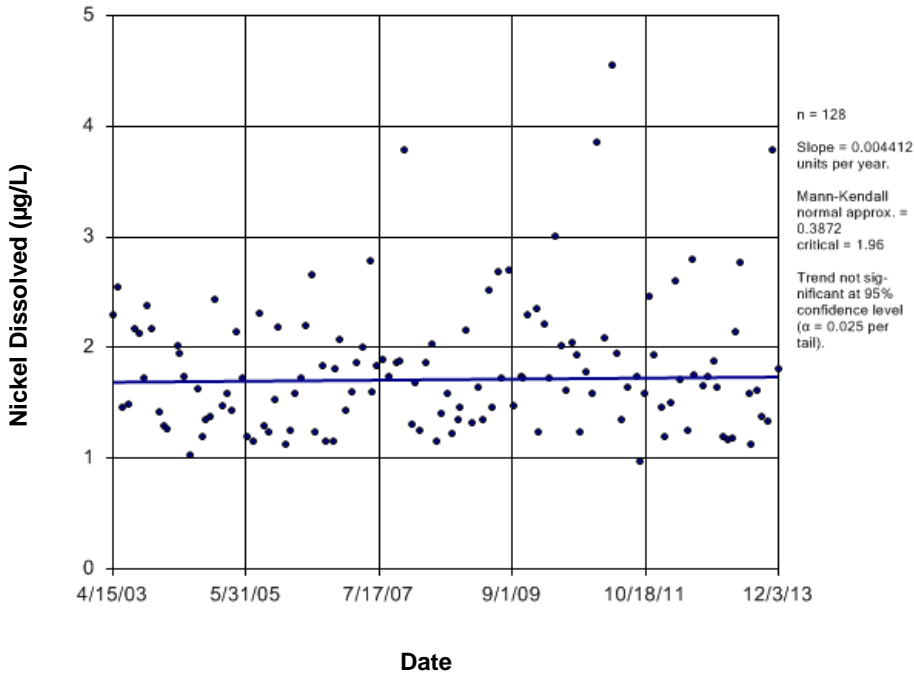


Figure E552 Red Deer River (AB-SK): Nickel Dissolved

Time Series

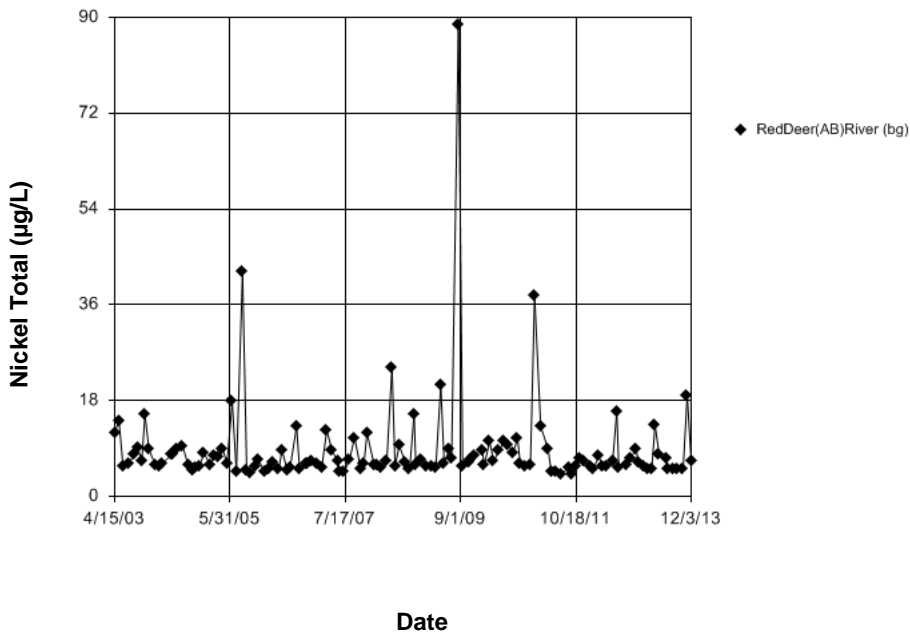


Figure E553 Red Deer River (AB-SK): Nickel Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.03511. Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level. There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

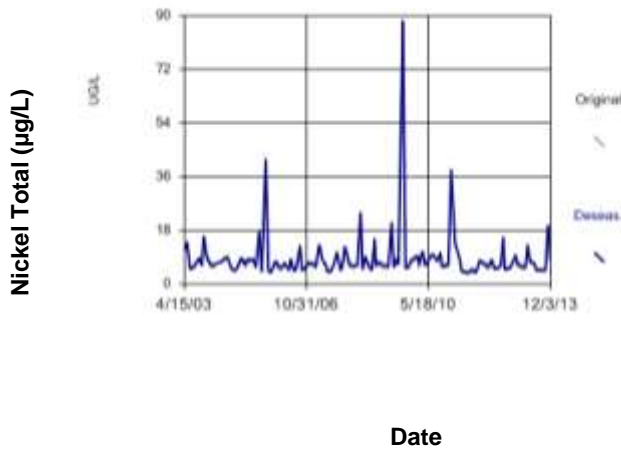


Figure E554 Red Deer River (AB-SK): Nickel Total

Sen's Slope Estimator

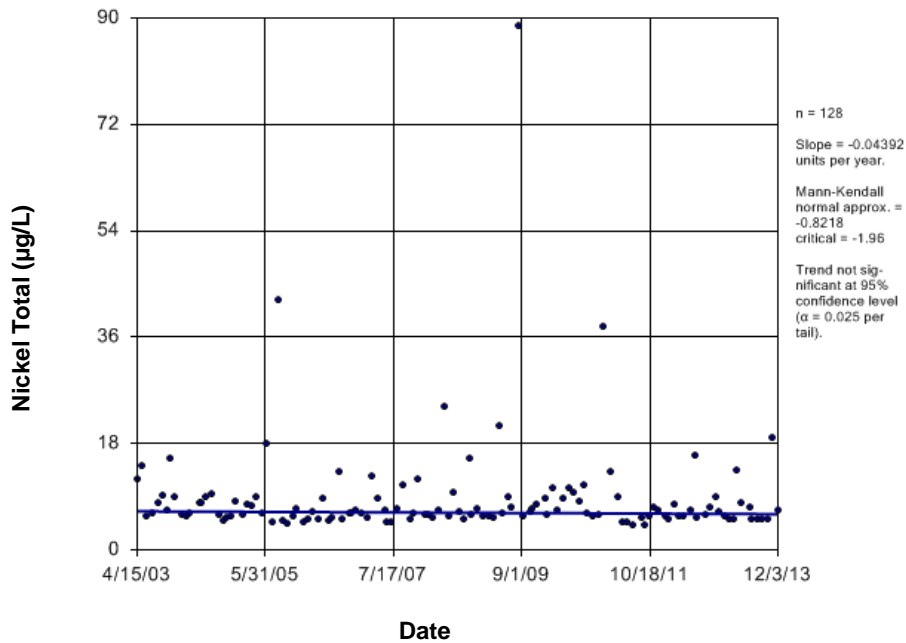


Figure E555 Red Deer River (AB-SK): Nickel Total

Time Series

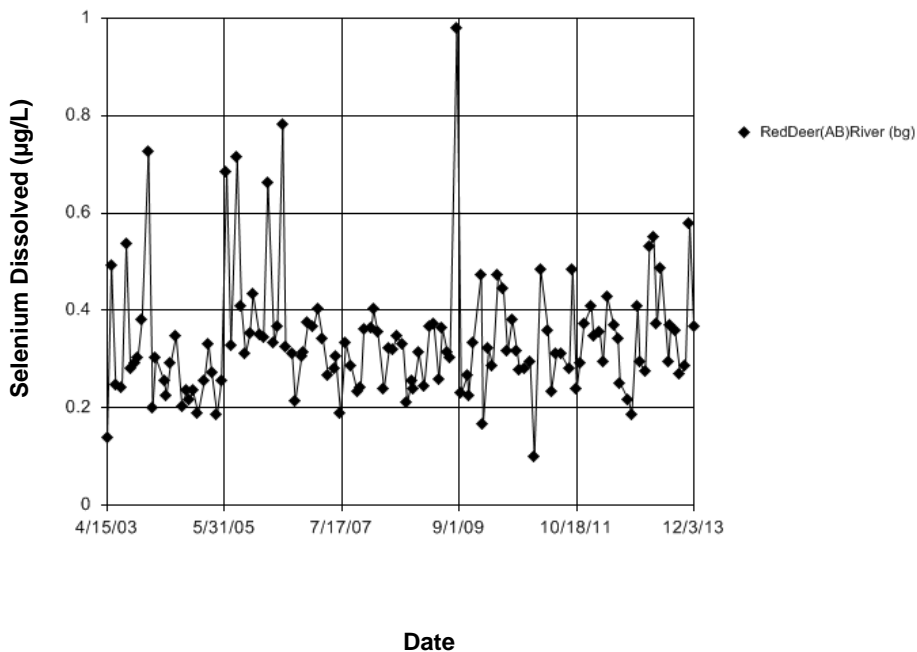


Figure E556 Red Deer River (AB-SK): Selenium Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 4.289. Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level. There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

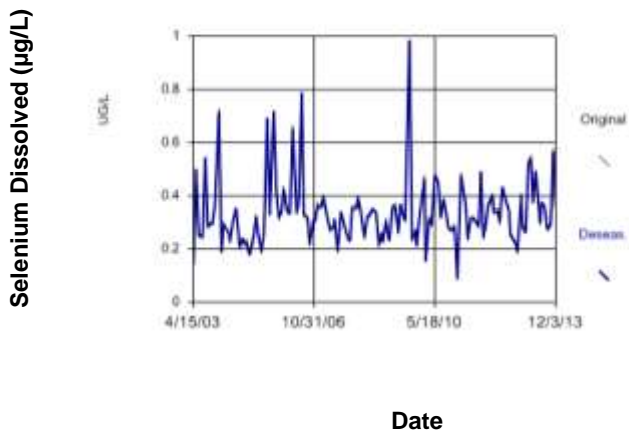


Figure E557 Red Deer River (AB-SK): Selenium Dissolved

Seasonal Kendall

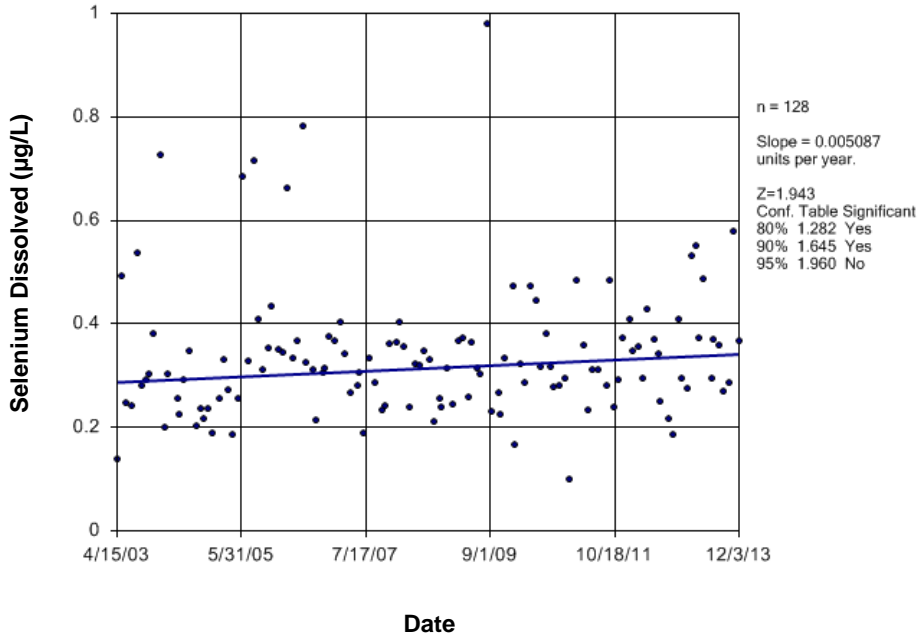


Figure E558 Red Deer River (AB-SK): Selenium Dissolved

Time Series

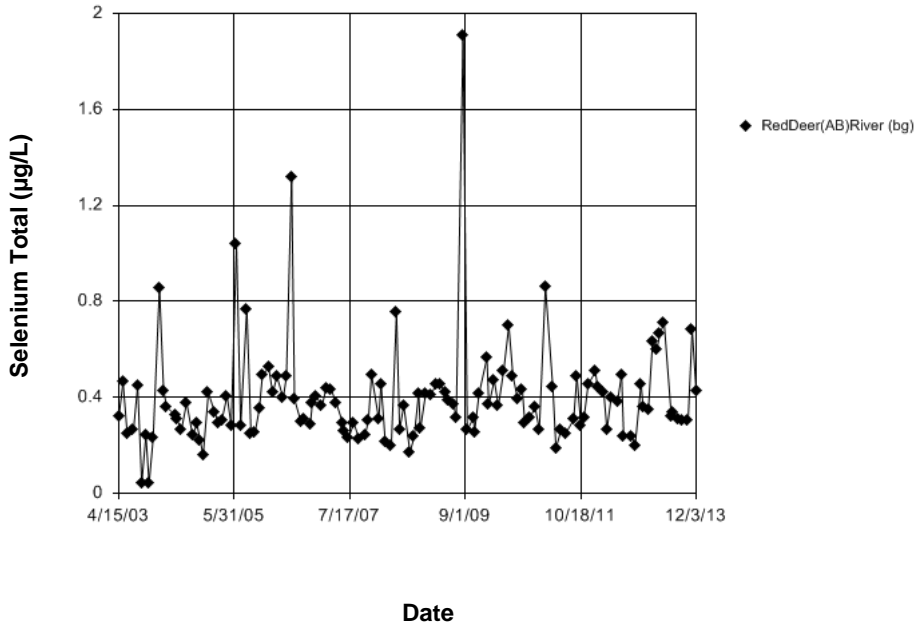


Figure E559 Red Deer River (AB-SK): Selenium Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates **SEASONALITY** at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 8.959
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 8.959
 Adjusted Kruskal-Wallis statistic (H') = 8.959

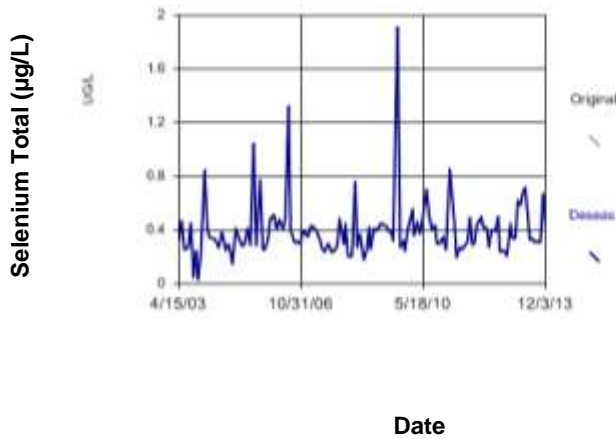


Figure E560 Red Deer River (AB-SK): Selenium Total

Seasonal Kendall

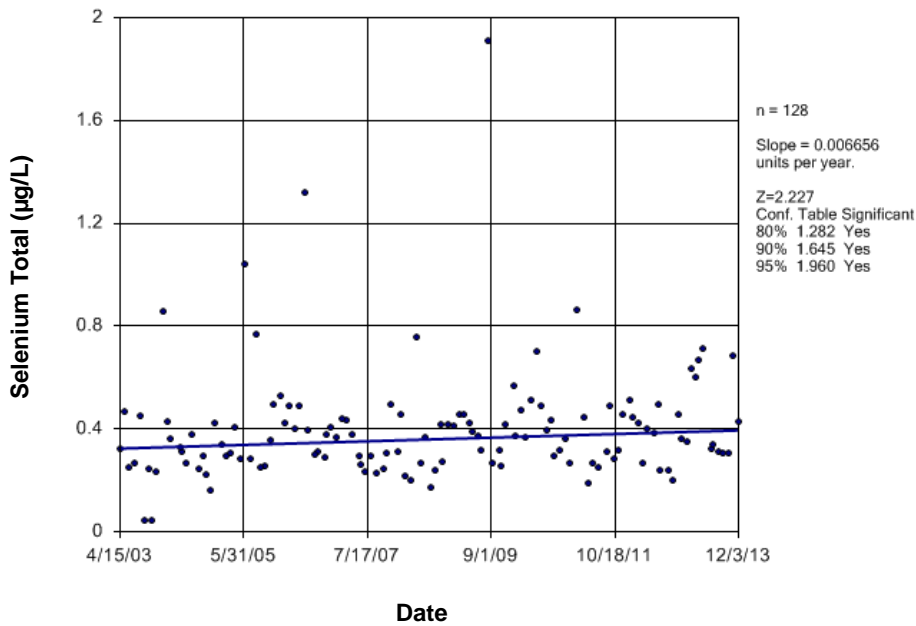


Figure E561 Red Deer River (AB-SK): Selenium Total

Time Series

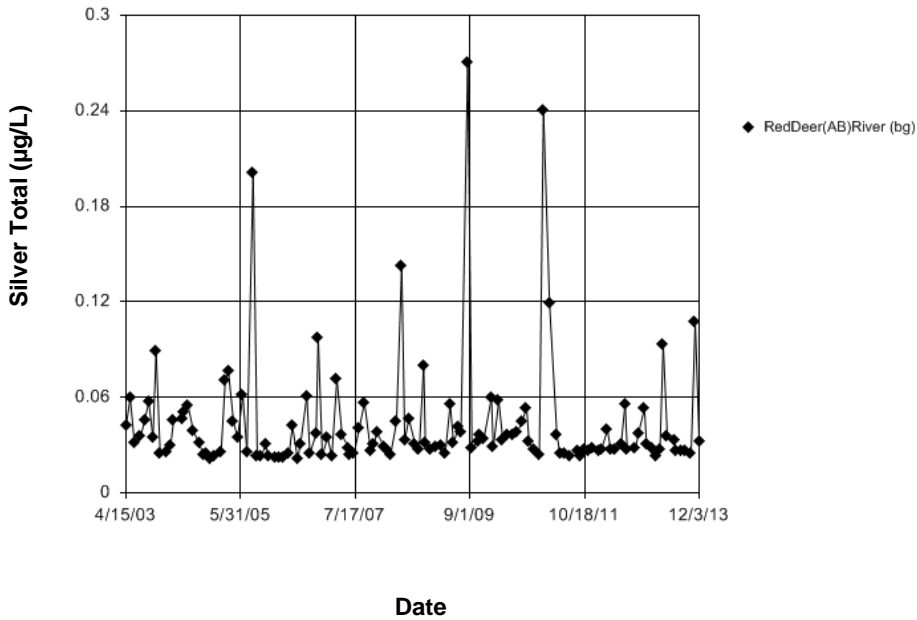


Figure E562 Red Deer River (AB-SK): Silver Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 2.373
Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
There were 3 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 2.373
Adjusted Kruskal-Wallis statistic (H') = 2.373

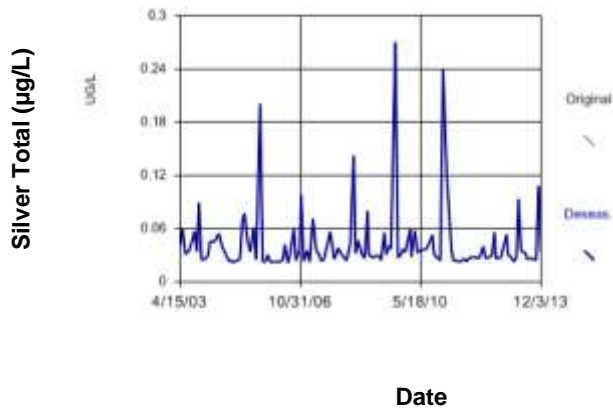


Figure E563 Red Deer River (AB-SK): Silver Total

Sen's Slope Estimator

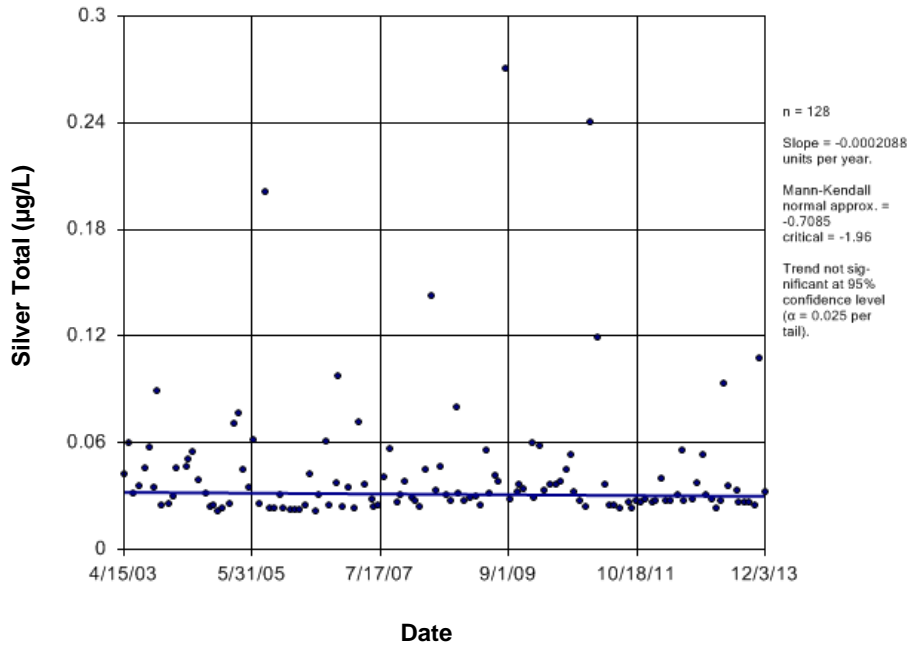


Figure E564 Red Deer River (AB-SK): Silver Total

Time Series

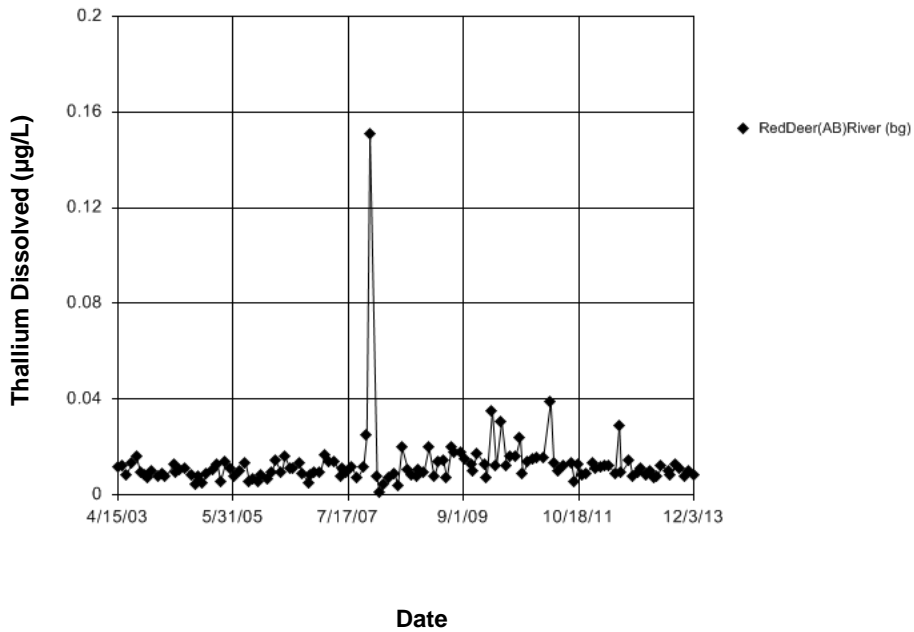


Figure E565 Red Deer River (AB-SK): Thallium Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 1.21
Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
There were 2 groups of data in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 1.21
Adjusted Kruskal-Wallis statistic (H') = 1.21

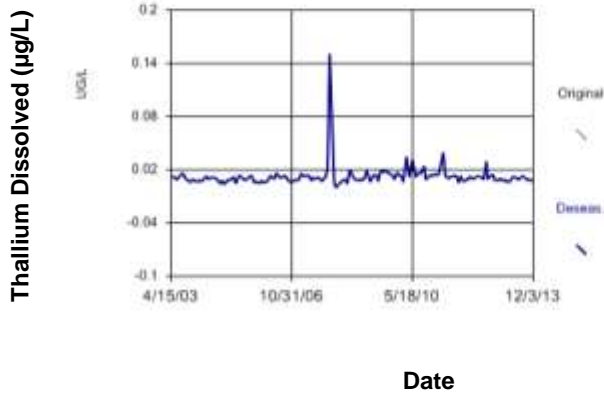


Figure E566 Red Deer River (AB-SK): Thallium Dissolved

Sen's Slope Estimator

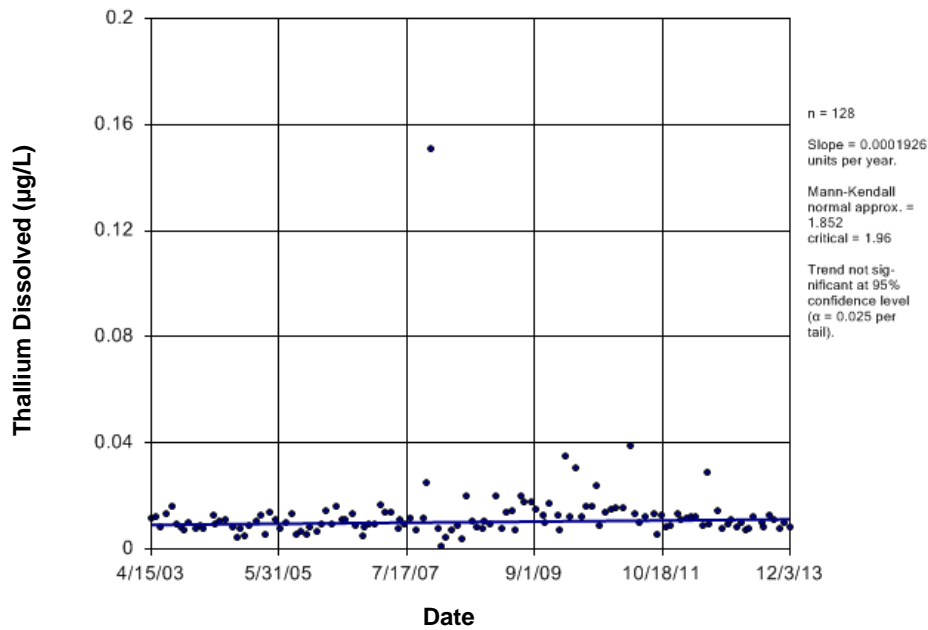


Figure E567 Red Deer River (AB-SK): Thallium Dissolved

Time Series

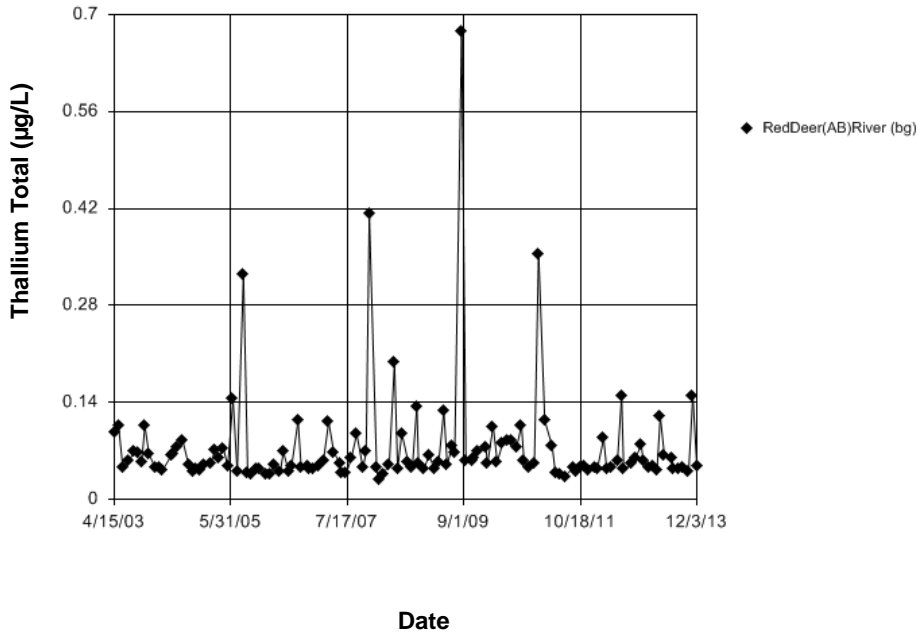


Figure E568 Red Deer River (AB-SK): Thallium Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 1.02. Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level. There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

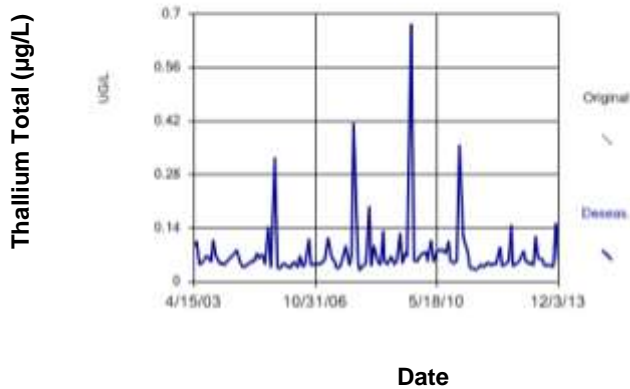


Figure E569 Red Deer River (AB-SK): Thallium Total

Sen's Slope Estimator

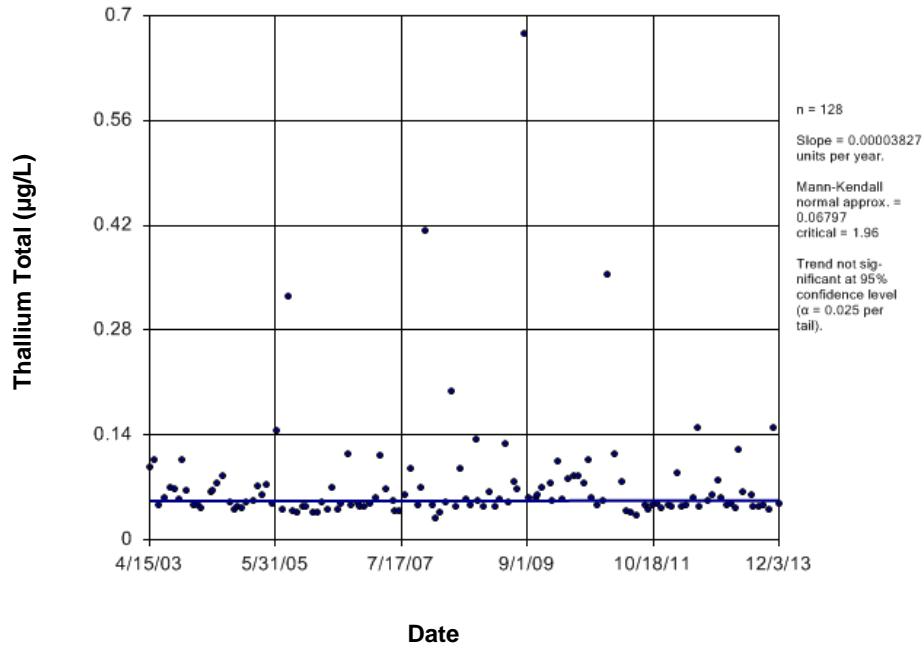


Figure E570 Red Deer River (AB-SK): Thallium Total

Time Series

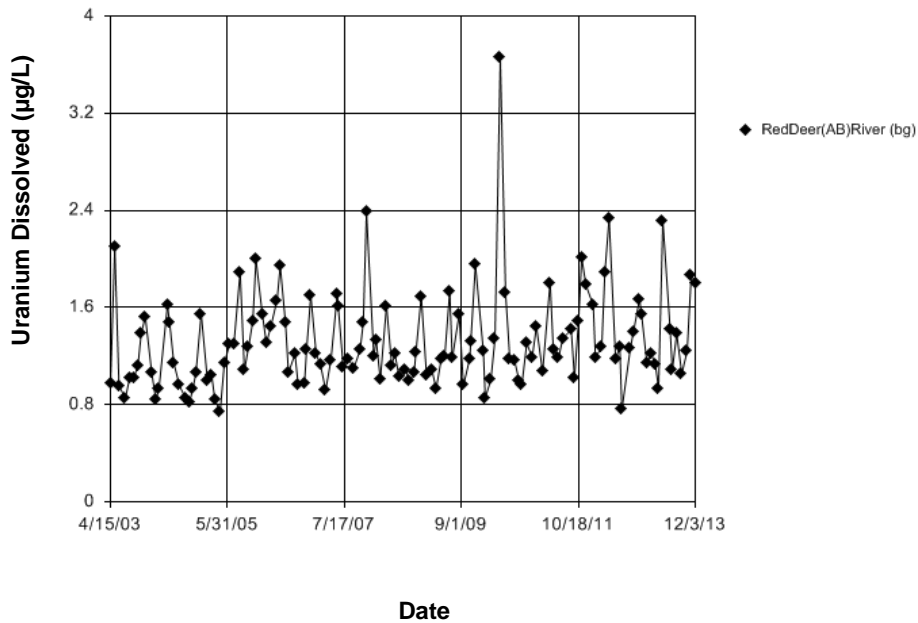
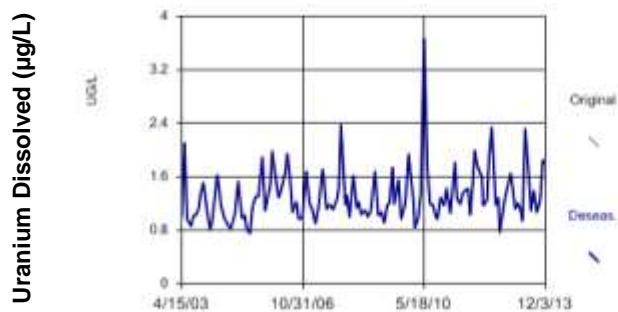


Figure E571 Red Deer River (AB-SK): Uranium Dissolved

Seasonality

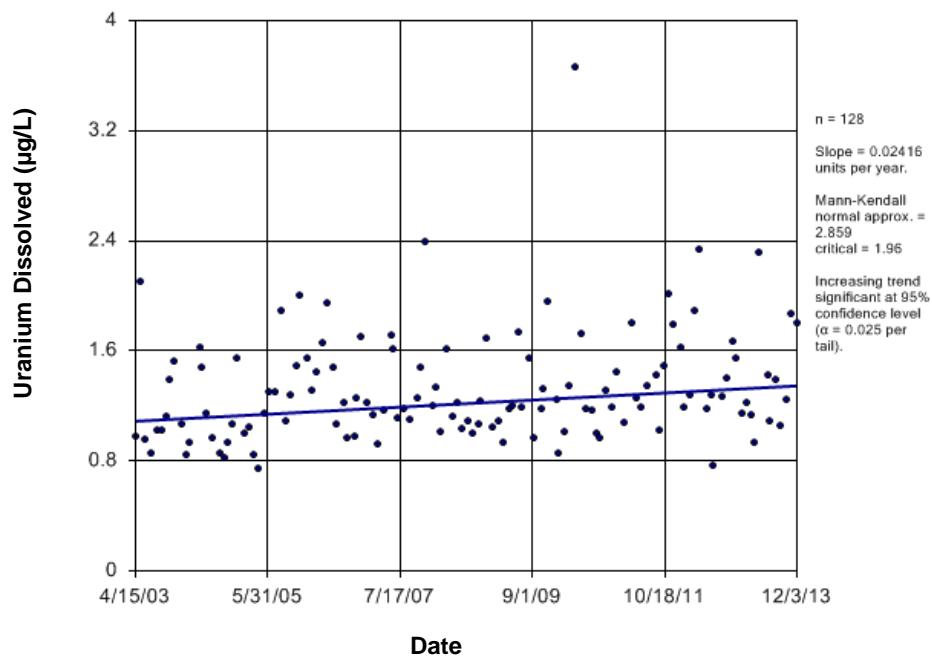
For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 1.275
 Tabulated Chi-Squared value = 5.841 with 1 degree of freedom at the 5% significance level.
 There were 11 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H_{adj}) was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 1.275
 Adjusted Kruskal-Wallis statistic (H_{adj}) = 1.275



Date

Figure E572 Red Deer River (AB-SK): Uranium Dissolved

Sen's Slope Estimator



Date

Figure E573 Red Deer River (AB-SK): Uranium Dissolved

Time Series

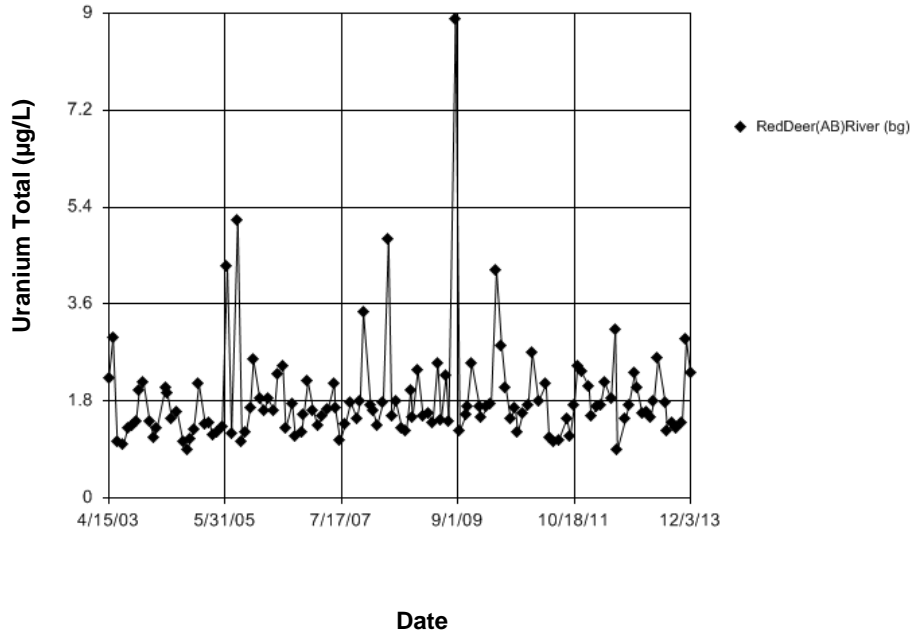


Figure E574 Red Deer River (AB-SK): Uranium Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
 Calculated Kruskal-Wallis statistic = 3.972
 Tabulated Chi-squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 3.972
 Adjusted Kruskal-Wallis statistic (H') = 3.972

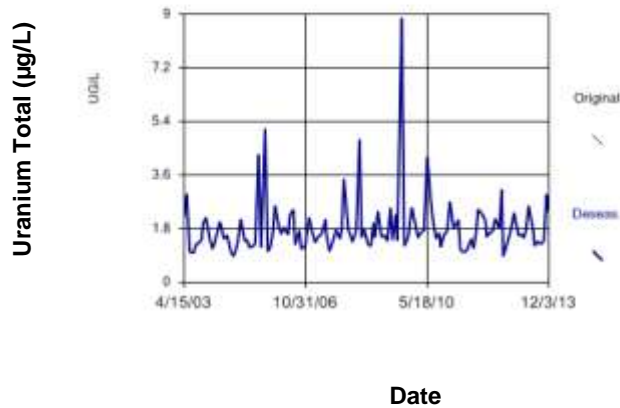


Figure E575 Red Deer River (AB-SK): Uranium Total

Seasonal Kendall

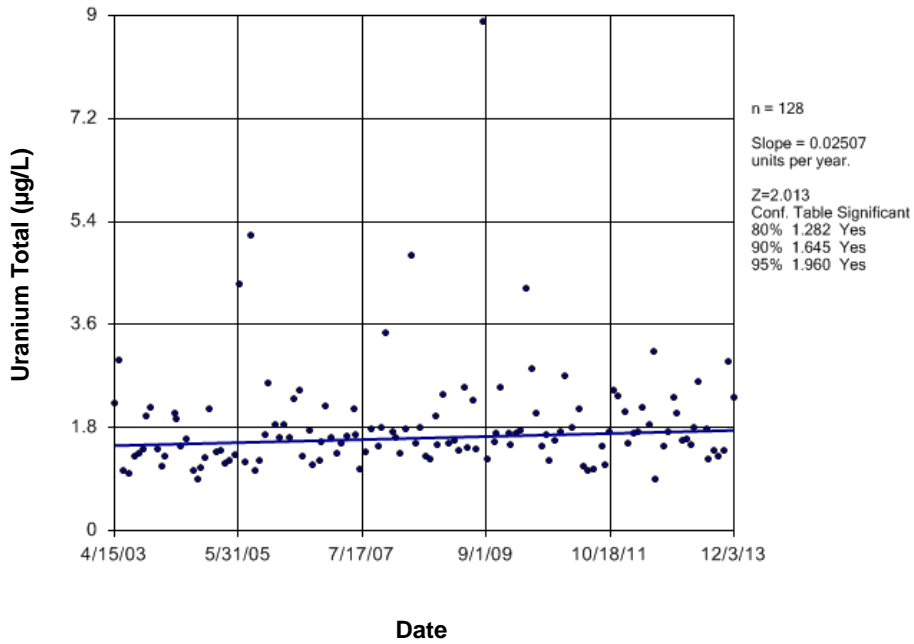


Figure E576 Red Deer River (AB-SK): Uranium Total

Time Series

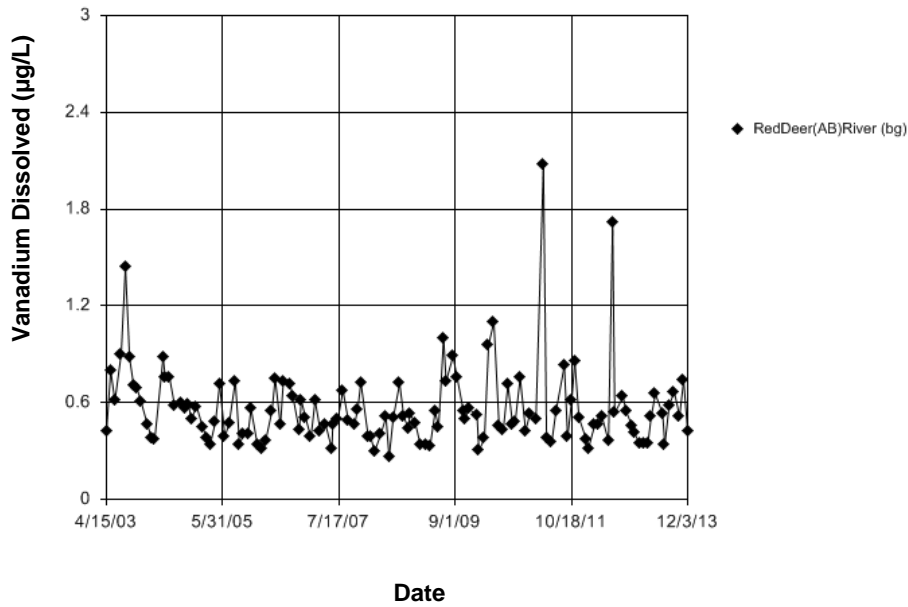


Figure E577 Red Deer River (AB-SK): Vanadium Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 17.93
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 17.93
 Adjusted Kruskal-Wallis statistic (H') = 17.93

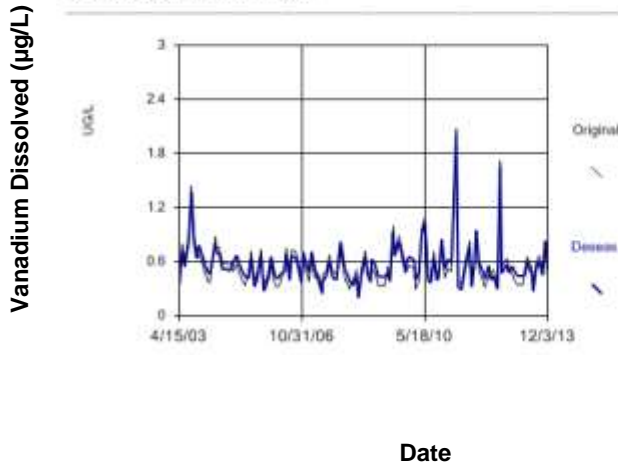


Figure E578 Red Deer River (AB-SK): Vanadium Dissolved

Seasonal Kendall

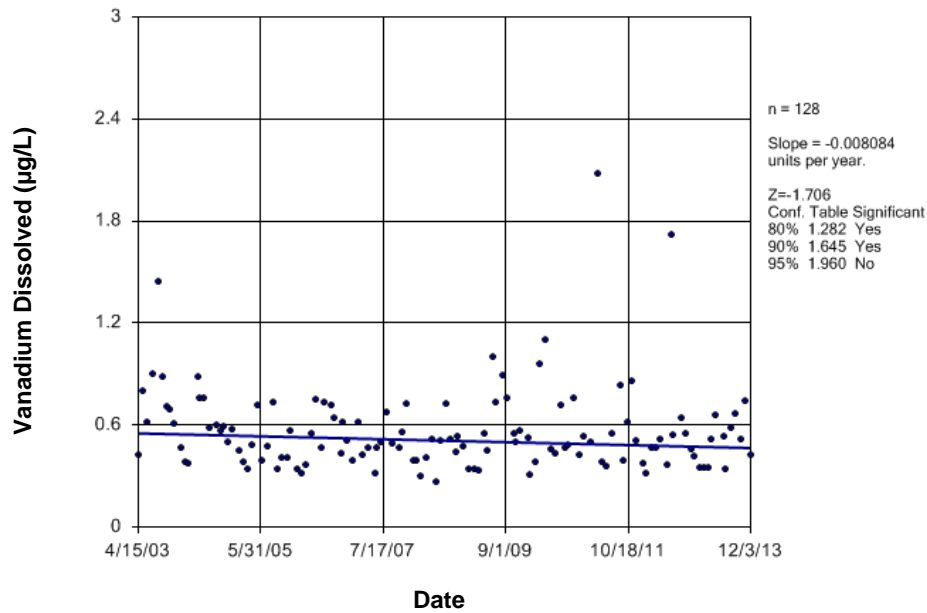


Figure E579 Red Deer River (AB-SK): Vanadium Dissolved

Time Series

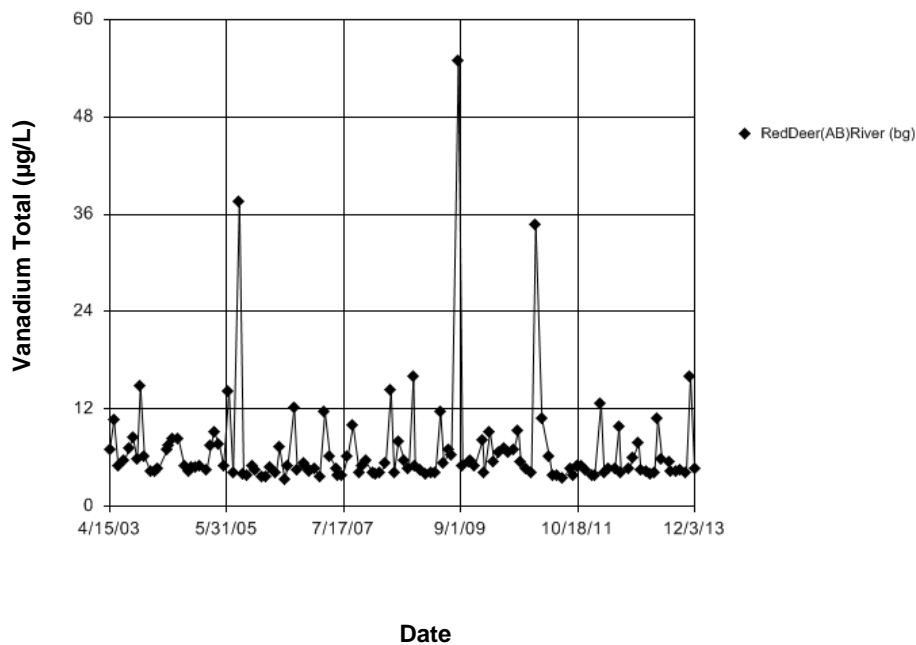


Figure E580 Red Deer River (AB-SK): Vanadium Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
 Calculated Kruskal-Wallis statistic = 4.218
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 4.218
 Adjusted Kruskal-Wallis statistic (H') = 4.218

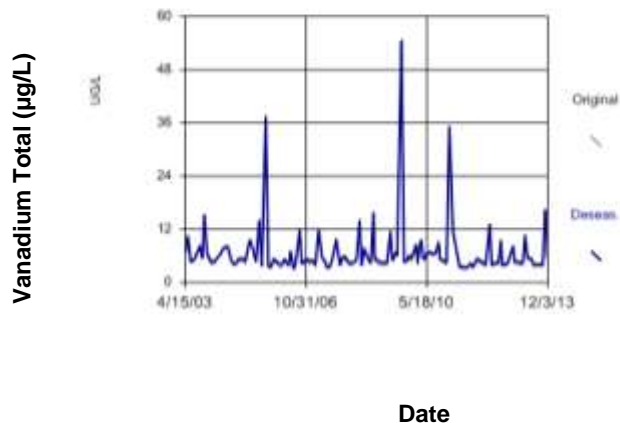


Figure E581 Red Deer River (AB-SK): Vanadium Total

Seasonal Kendall

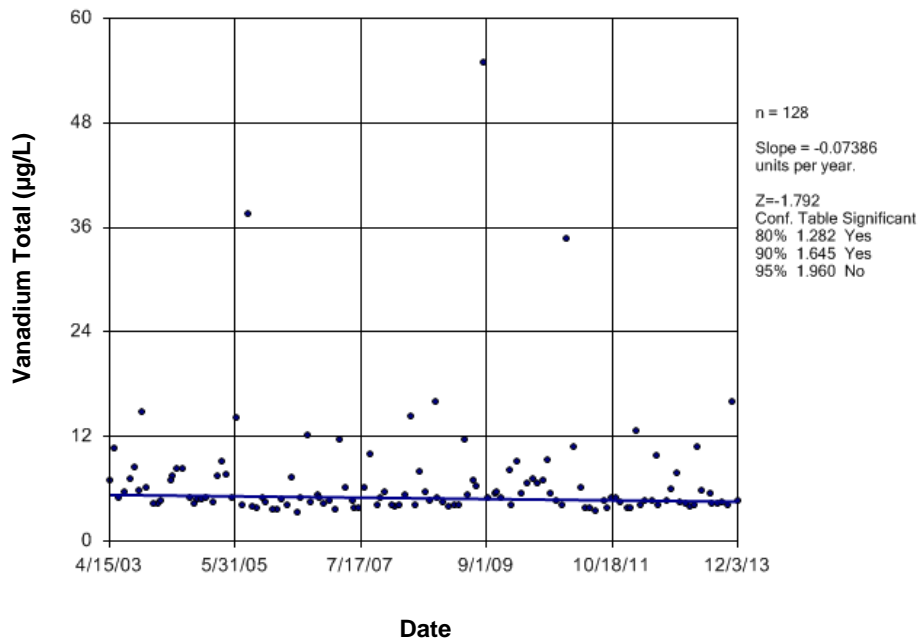


Figure E582 Red Deer River (AB-SK): Vanadium Total

Time Series

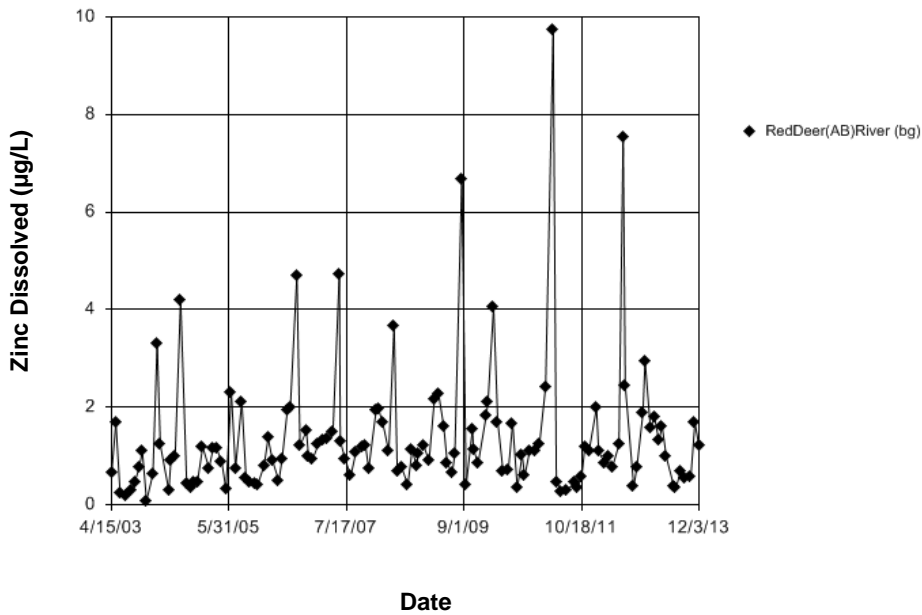


Figure E583 Red Deer River (AB-SK): Zinc Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-Squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 10.87
Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

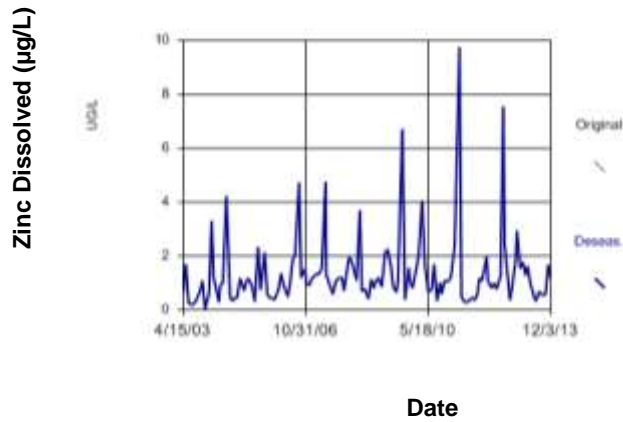


Figure E584 Red Deer River (AB-SK): Zinc Dissolved

Seasonal Kendall

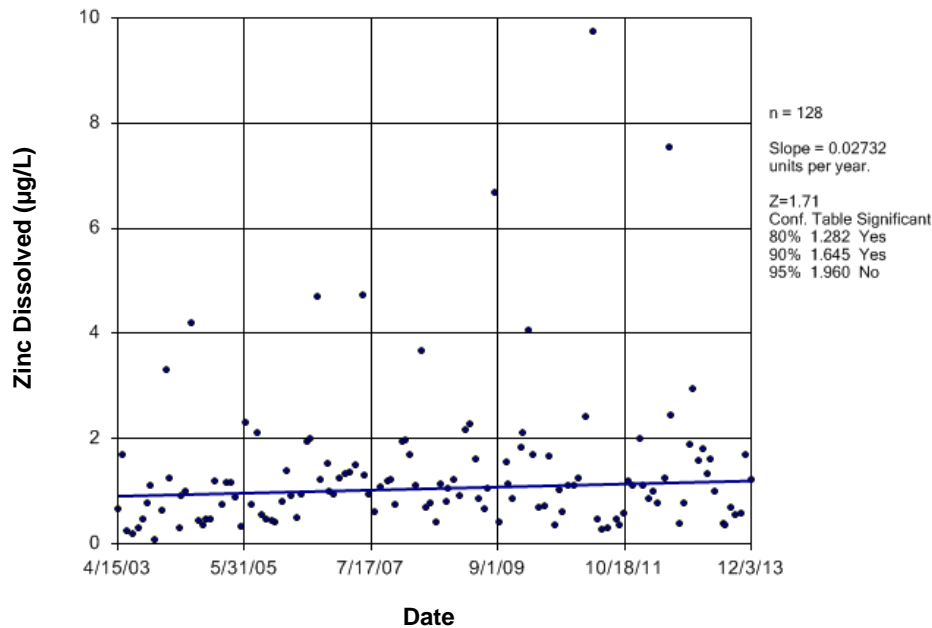


Figure E585 Red Deer River (AB-SK): Zinc Dissolved

Time Series

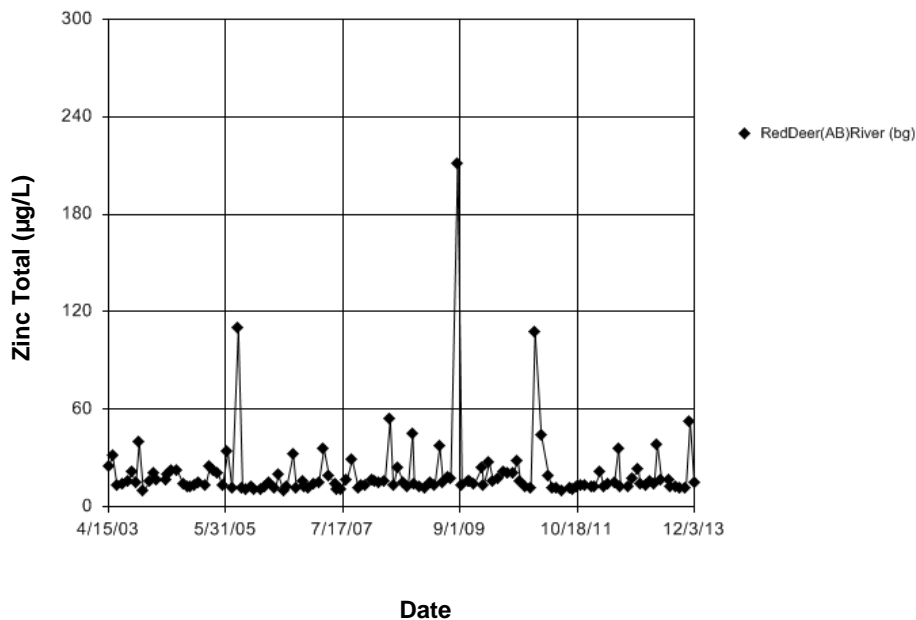


Figure E586 Red Deer River (AB-SK): Zinc Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates **NO SEASONALITY** at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.1386
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 5 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 0.1386
 Adjusted Kruskal-Wallis statistic (H') = 0.1386

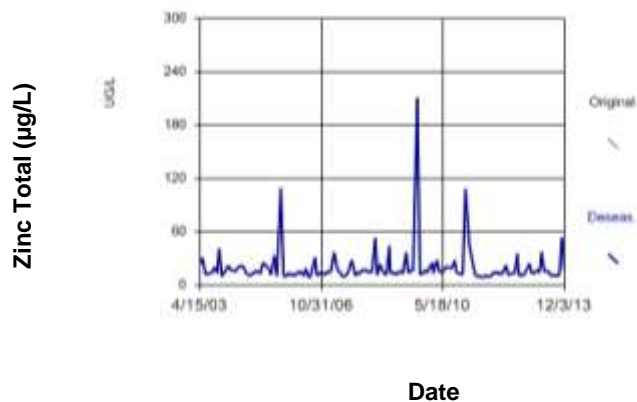


Figure E587 Red Deer River (AB-SK): Zinc Total

Sen's Slope Estimator

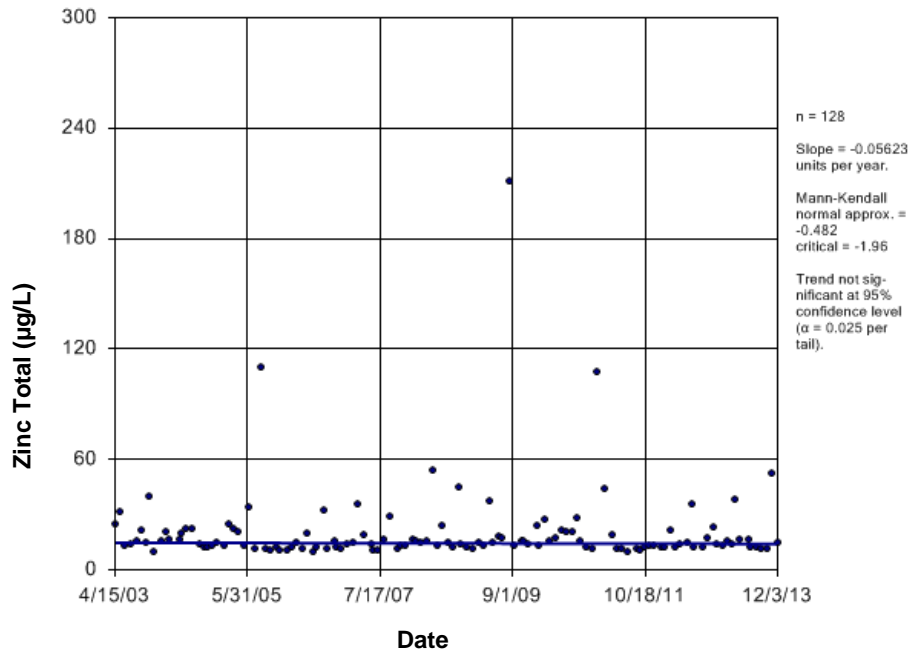


Figure E588 Red Deer River (AB-SK): Zinc Total

Time Series

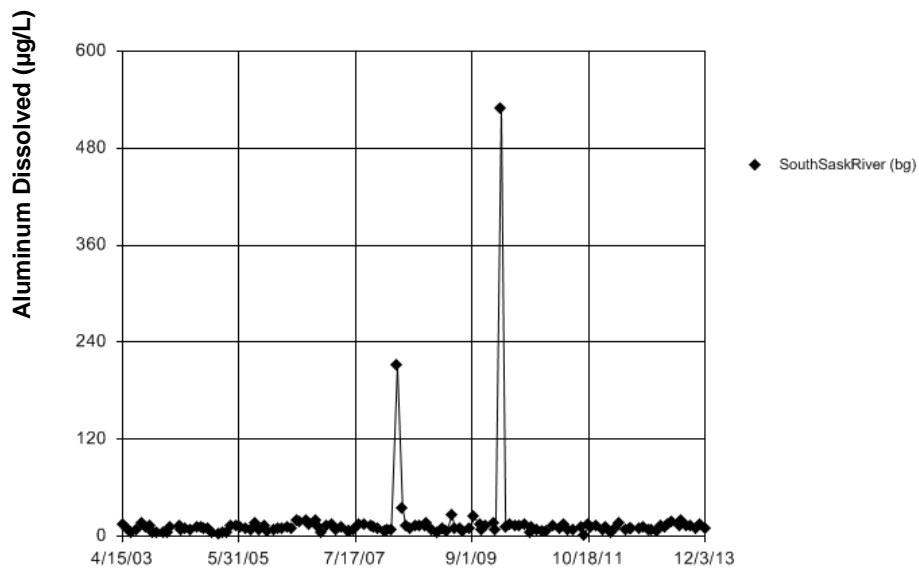


Figure E589 South Saskatchewan River: Aluminum Dissolved

Seasonality

Aluminum Dissolved (µg/L)

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 17.54. Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level. There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

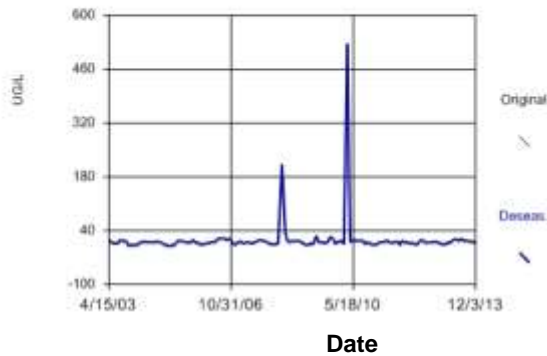


Figure E590 South Saskatchewan River: Aluminum Dissolved

Seasonal Kendall

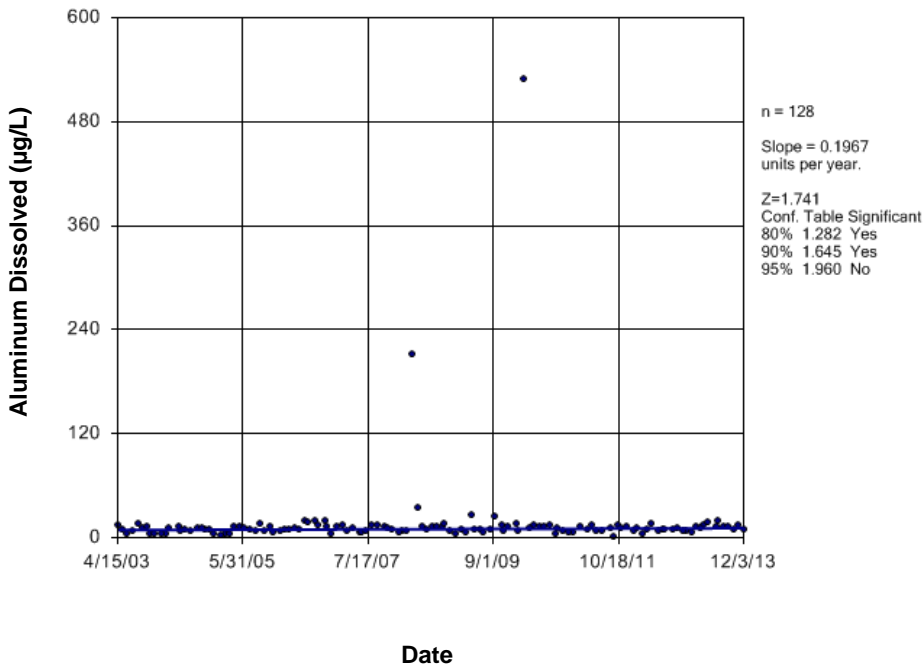


Figure E591 South Saskatchewan River: Aluminum Dissolved

Time Series

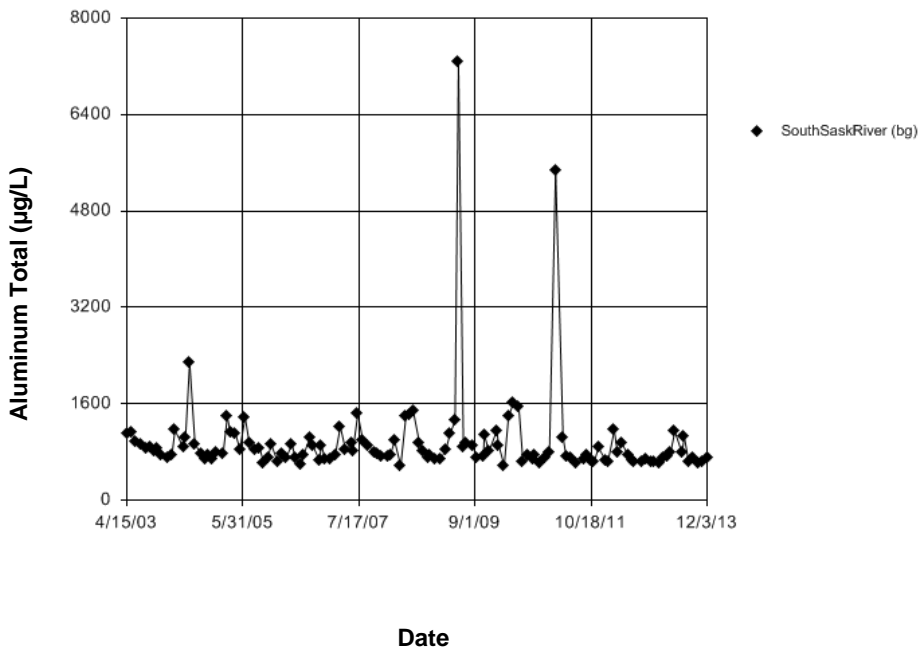


Figure E592 South Saskatchewan River: Aluminum Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 3.828
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 3 groups of data in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 3.828
 Adjusted Kruskal-Wallis statistic (H') = 3.828

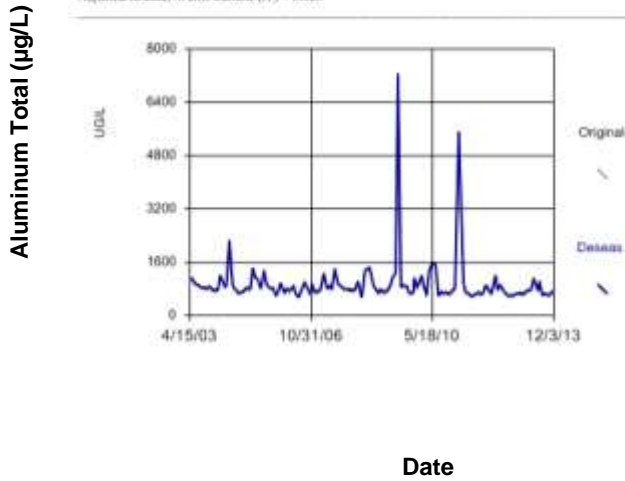


Figure E593 South Saskatchewan River: Aluminum Total

Seasonal Kendall

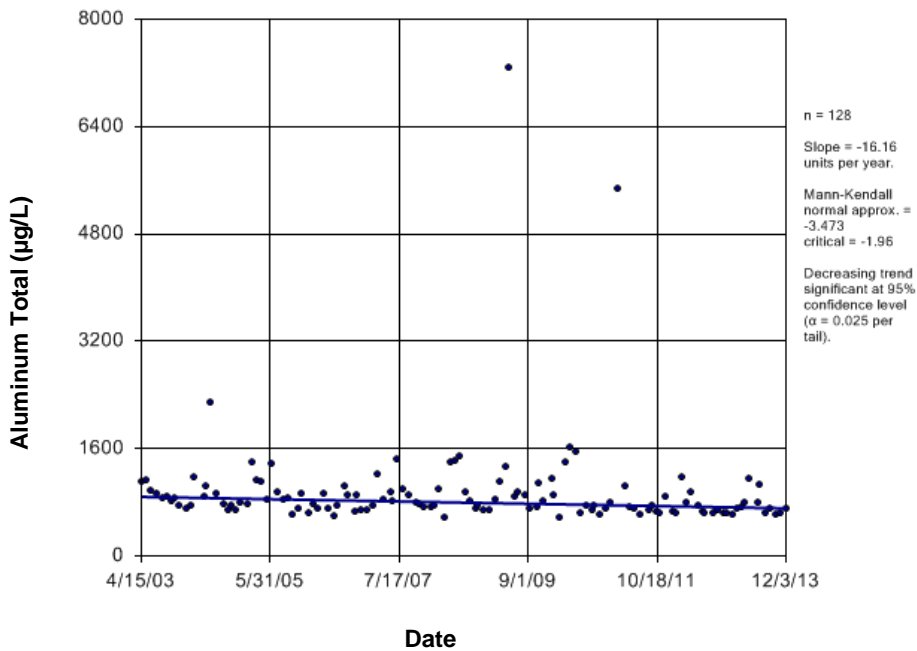


Figure E594 South Saskatchewan River: Aluminum Total

Time Series

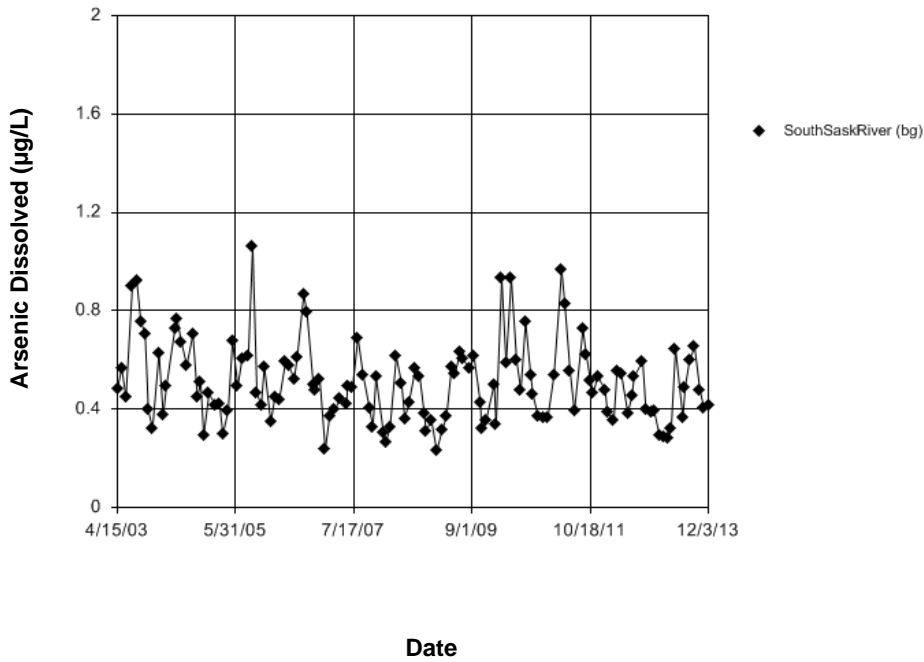


Figure E595 South Saskatchewan River: Arsenic Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates **SEASONALITY** at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
 Calculated Kruskal-Wallis statistic = 47.23
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 3 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 47.23
 Adjusted Kruskal-Wallis statistic (H') = 47.23

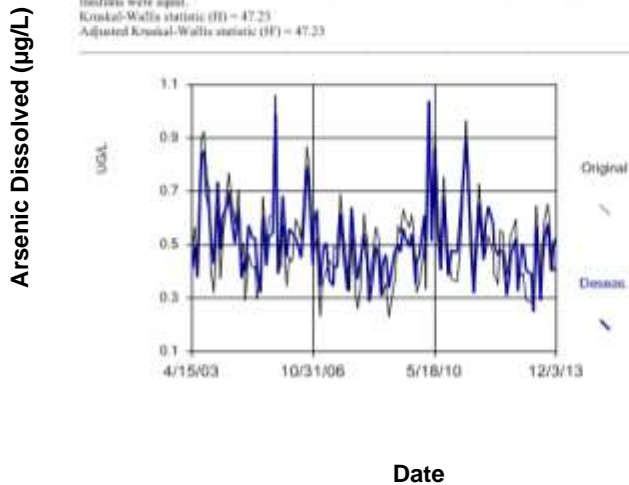


Figure E596 South Saskatchewan River: Arsenic Dissolved

Seasonal Kendall

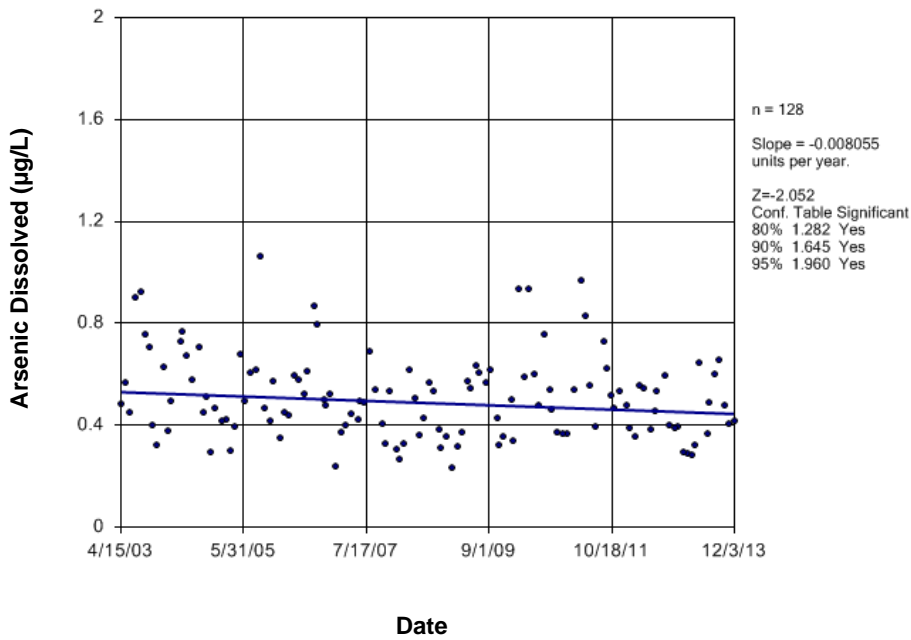


Figure E597 South Saskatchewan River: Arsenic Dissolved

Time Series

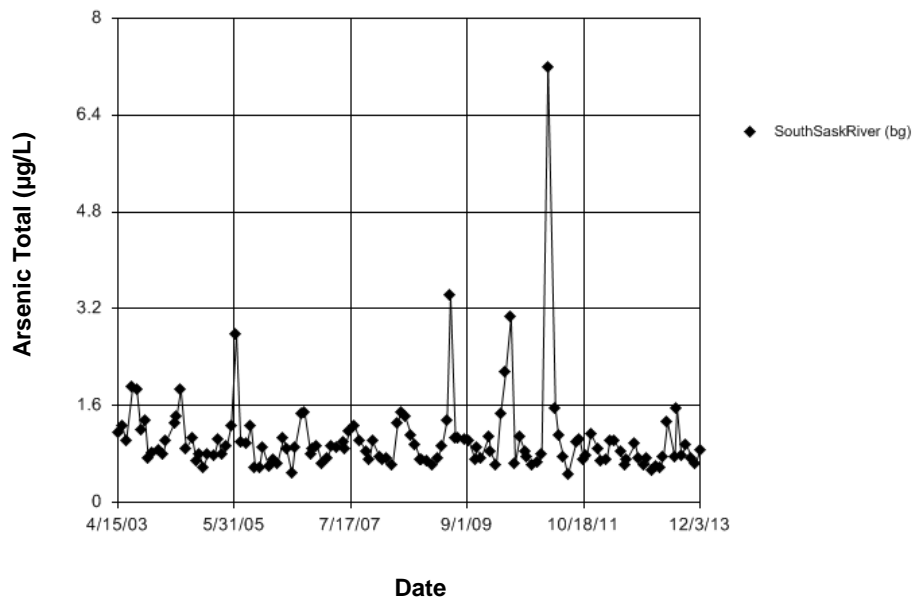


Figure E598 South Saskatchewan River: Arsenic Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 28.53
Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 28.53
Adjusted Kruskal-Wallis statistic (H') = 28.53

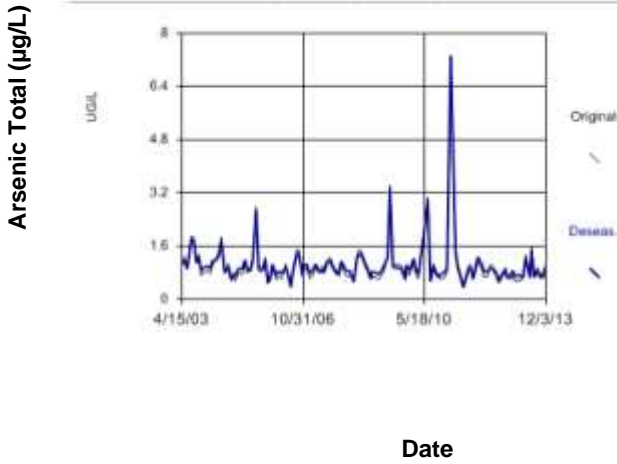


Figure E599 South Saskatchewan River: Arsenic Total

Seasonal Kendall

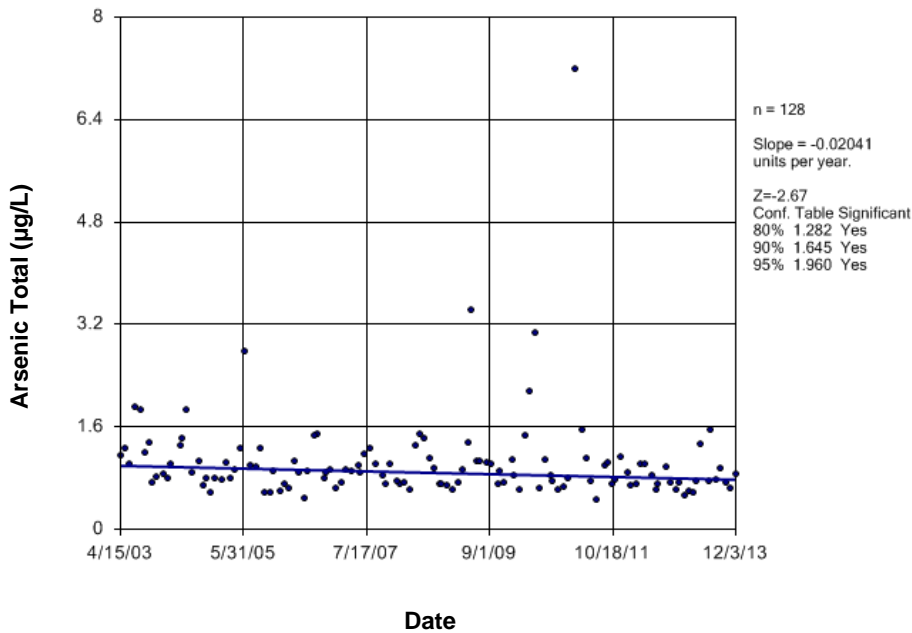


Figure E600 South Saskatchewan River: Arsenic Total

Time Series

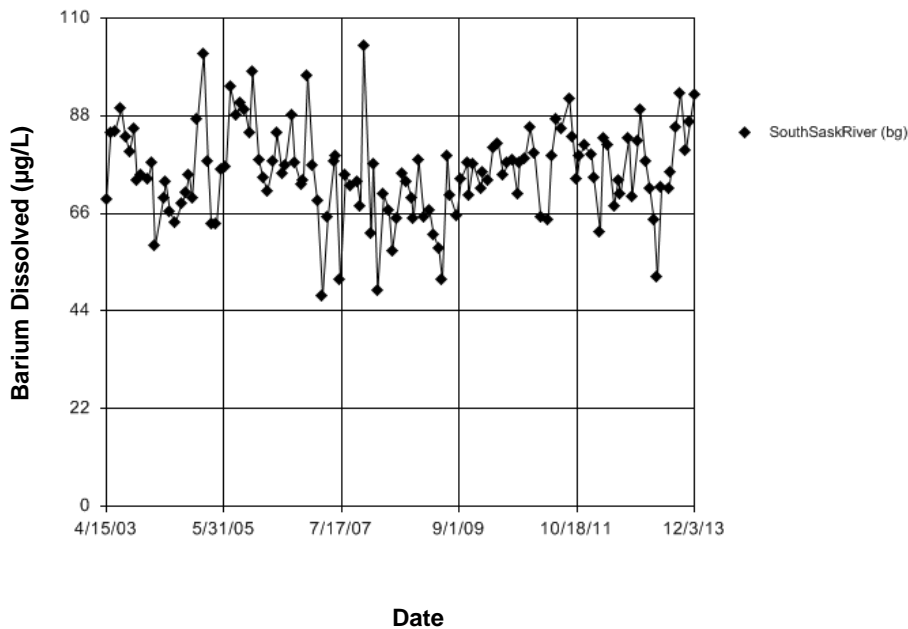


Figure E601 South Saskatchewan River: Barium Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates **NO SEASONALITY** at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.1297
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the residues were equal.
 Kruskal-Wallis statistic (H) = 0.1297
 Adjusted Kruskal-Wallis statistic (H') = 0.1297

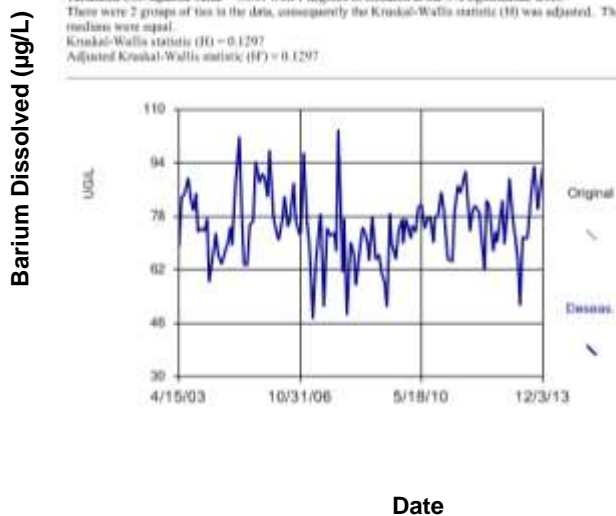


Figure E602 South Saskatchewan River: Barium Dissolved

Sen's Slope Estimator

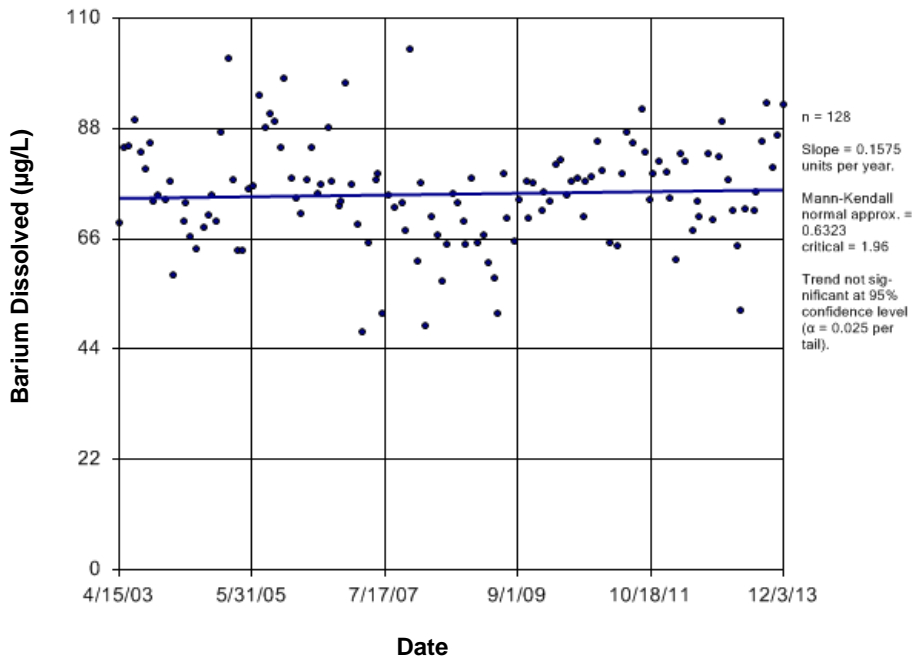


Figure E603 South Saskatchewan River: Barium Dissolved

Time Series

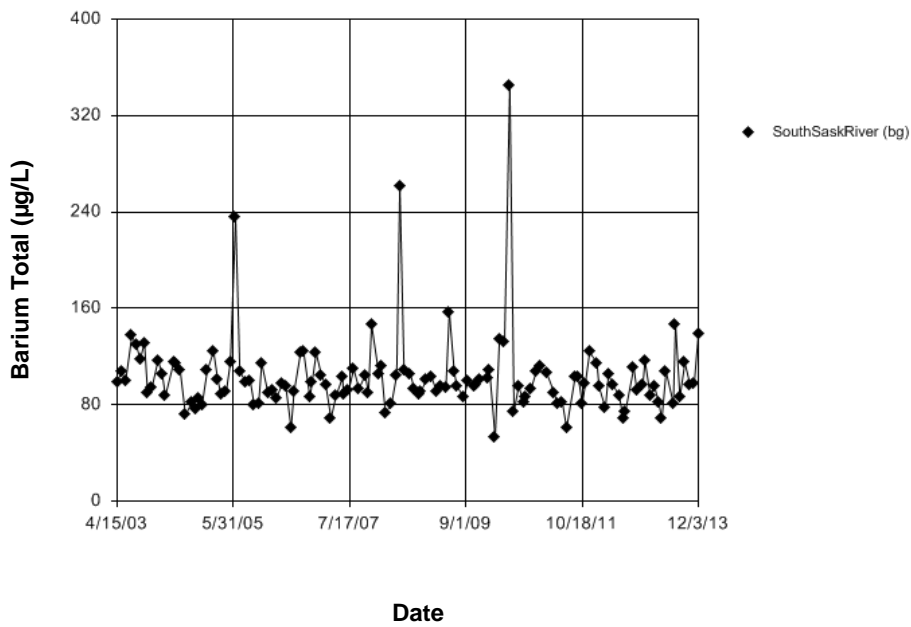
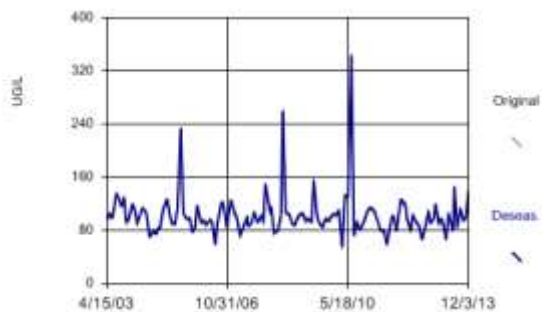


Figure E604 South Saskatchewan River: Barium Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.02985
Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
There were 8 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 0.02985
Adjusted Kruskal-Wallis statistic (H') = 0.02985

Barium Total ($\mu\text{g/L}$)



Date

Figure E605 South Saskatchewan River: Barium Total

Sen's Slope Estimator

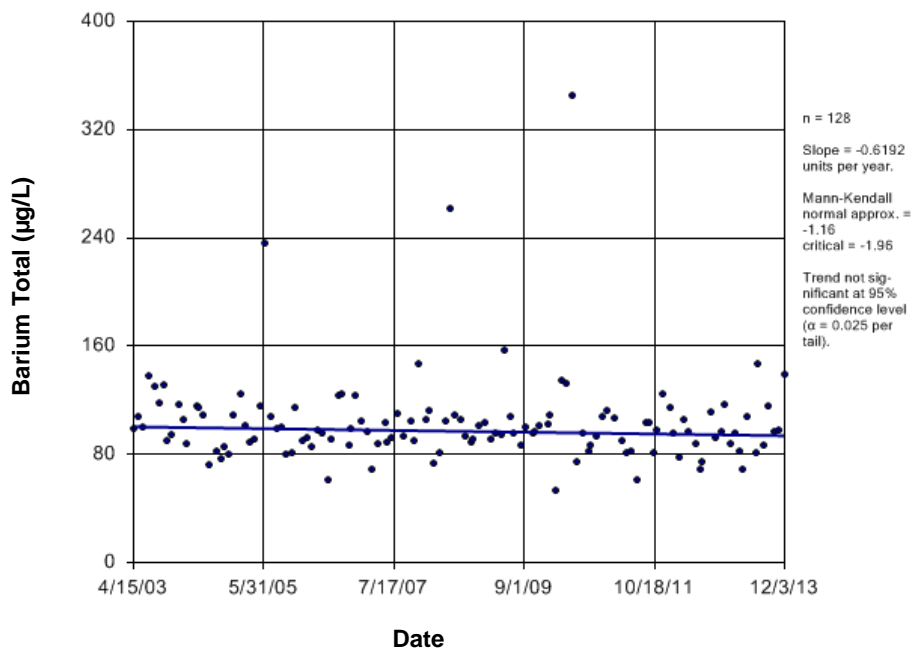


Figure E606 South Saskatchewan River: Barium Total

Time Series

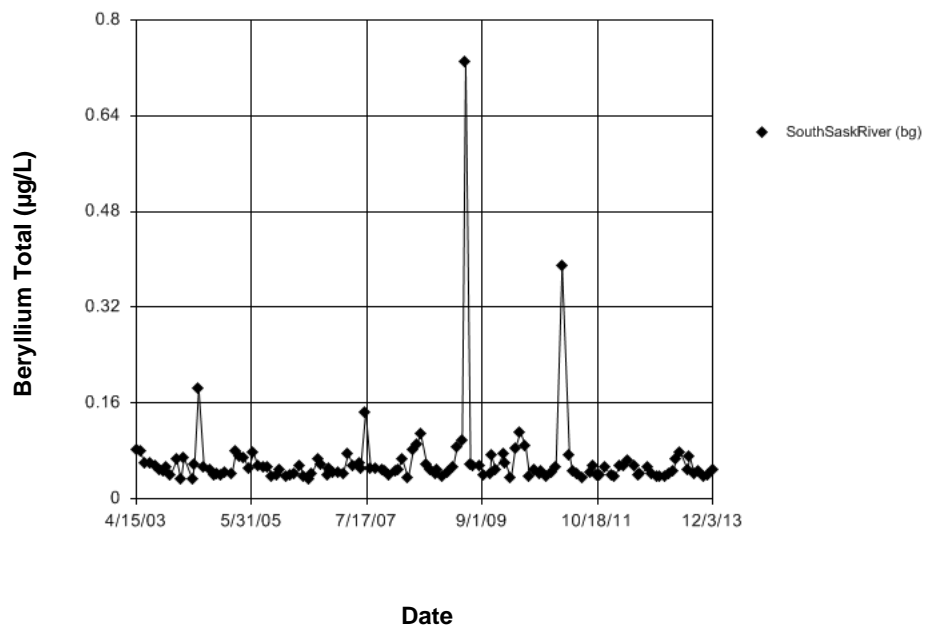


Figure E607 South Saskatchewan River: Beryllium Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 6.183. Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level. There were 4 groups of data in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal. Kruskal-Wallis statistic (H) = 6.183. Adjusted Kruskal-Wallis statistic (H') = 6.183.

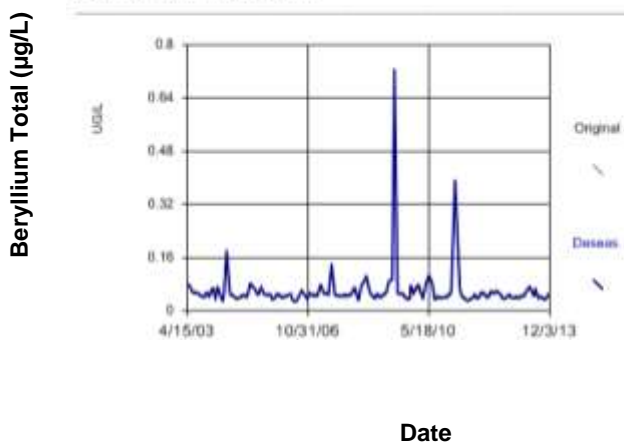


Figure E608 South Saskatchewan River: Beryllium Total

Seasonal Kendall

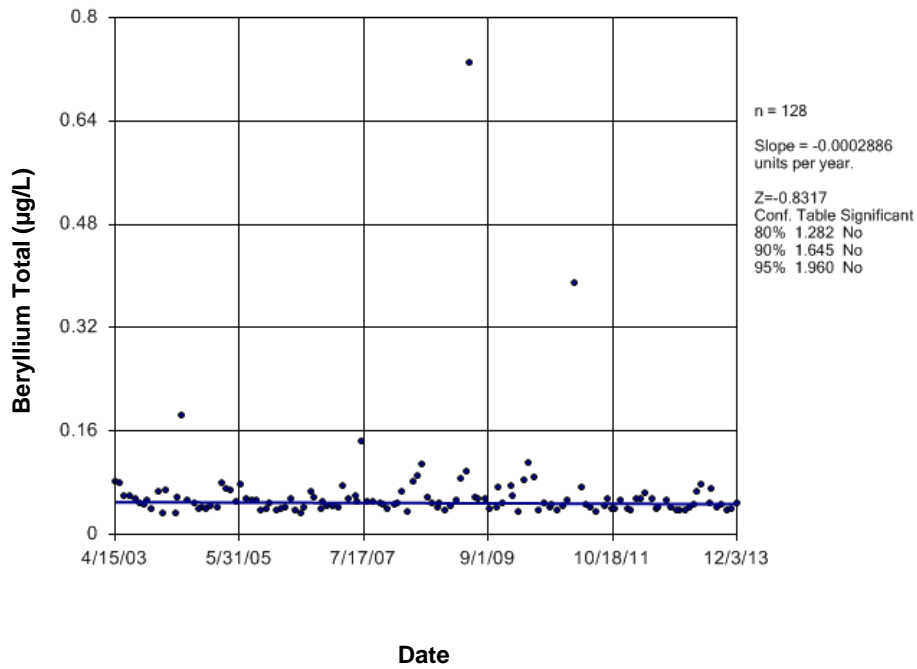


Figure E609 South Saskatchewan River: Beryllium Total

Time Series

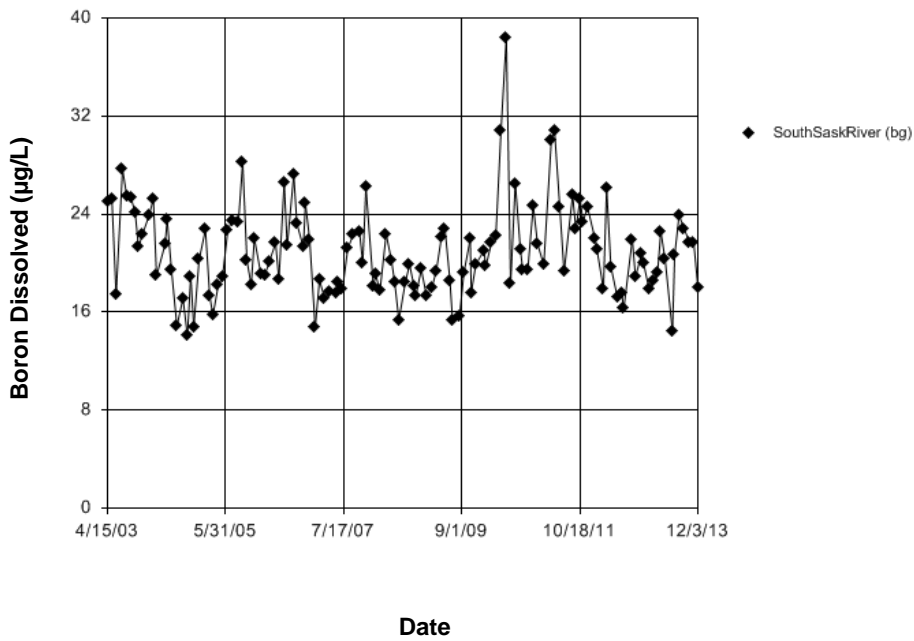


Figure E610 South Saskatchewan River: Boron Dissolved

Seasonality

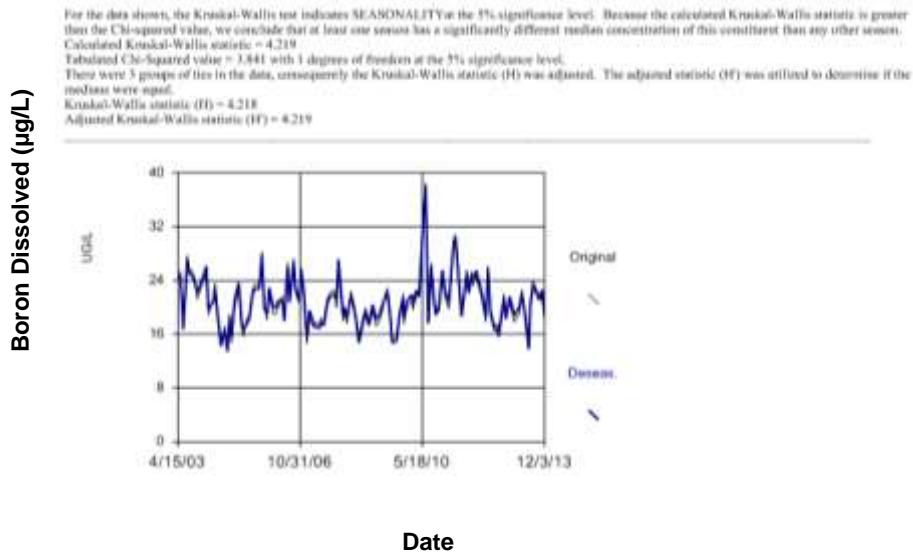


Figure E611 South Saskatchewan River: Boron Dissolved

Seasonal Kendall

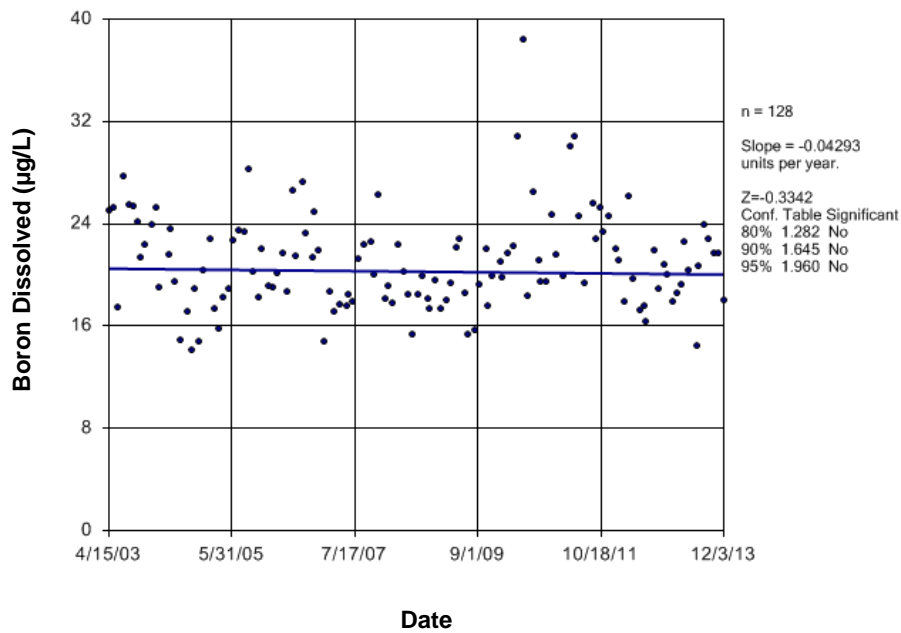


Figure E612 South Saskatchewan River: Boron Dissolved

Time Series

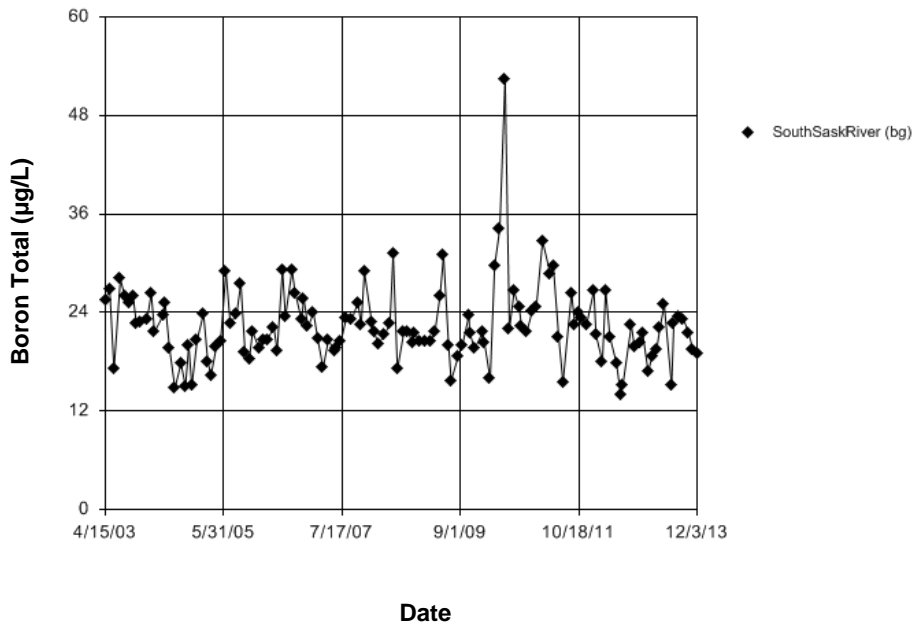


Figure E613 South Saskatchewan River: Boron Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 4.269. Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level. There were 5 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H_{adj}) was utilized to determine if the medians were equal. Kruskal-Wallis statistic (H) = 4.269. Adjusted Kruskal-Wallis statistic (H_{adj}) = 4.269.

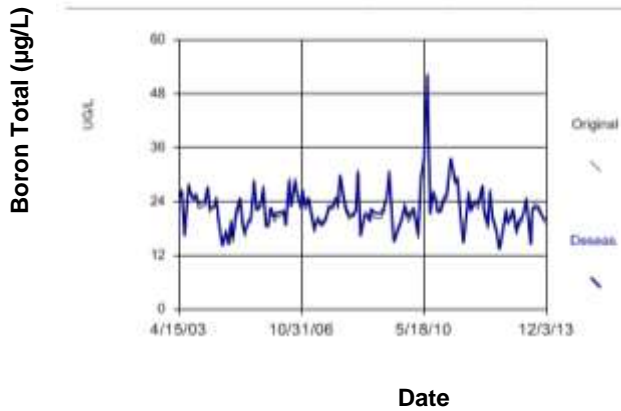


Figure E614 South Saskatchewan River: Boron Total

Seasonal Kendall

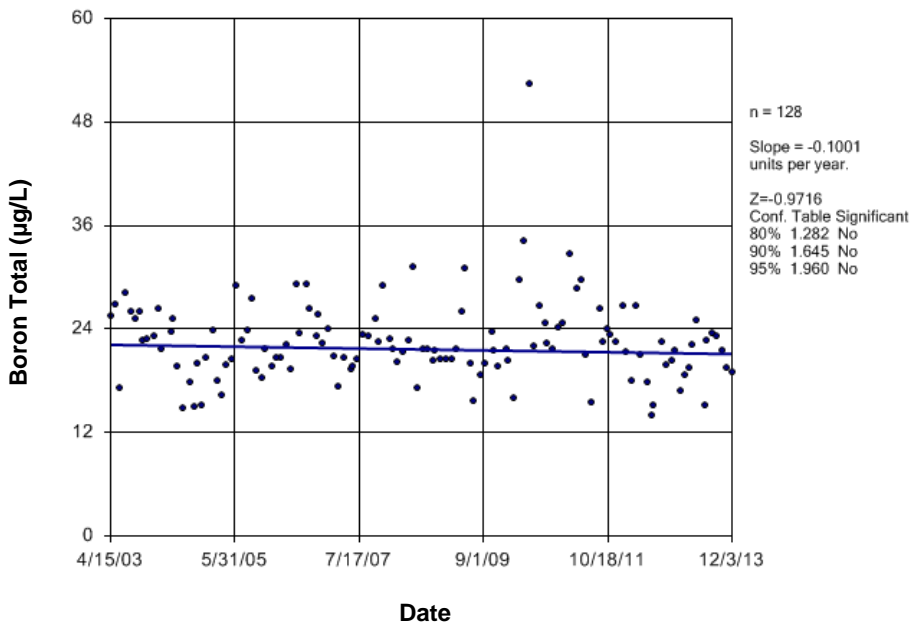


Figure E615 South Saskatchewan River: Boron Total

Time Series

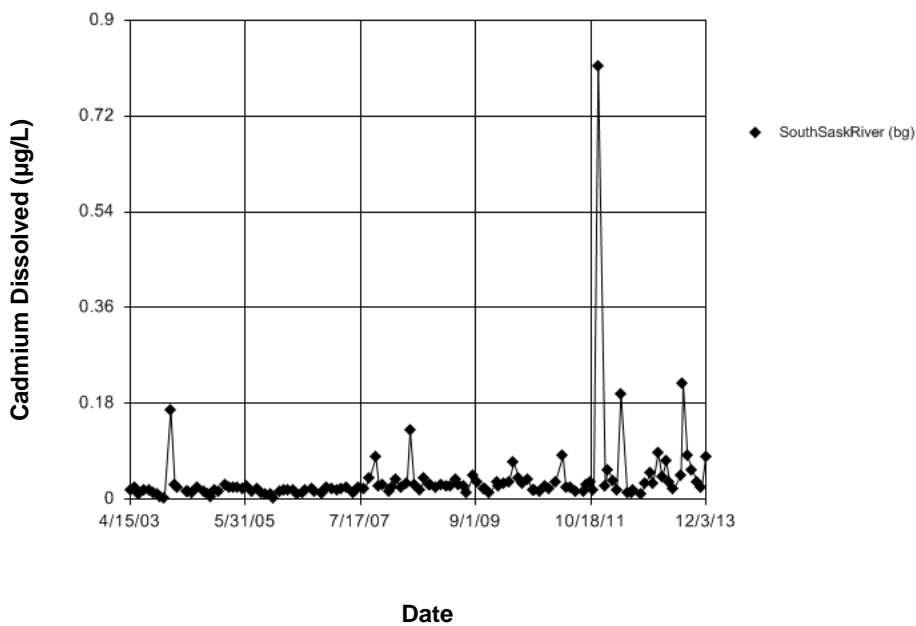


Figure E616 South Saskatchewan River: Cadmium Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates **NO SEASONALITY** at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 1.403
Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
There were 3 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 1.403
Adjusted Kruskal-Wallis statistic (H') = 1.403

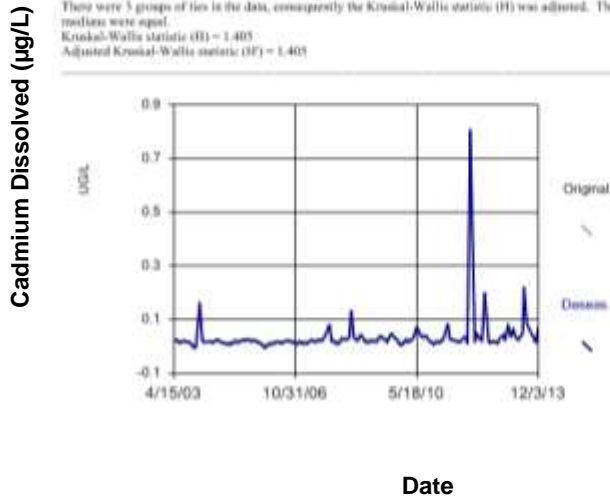


Figure E617 South Saskatchewan River: Cadmium Dissolved

Sen's Slope Estimator

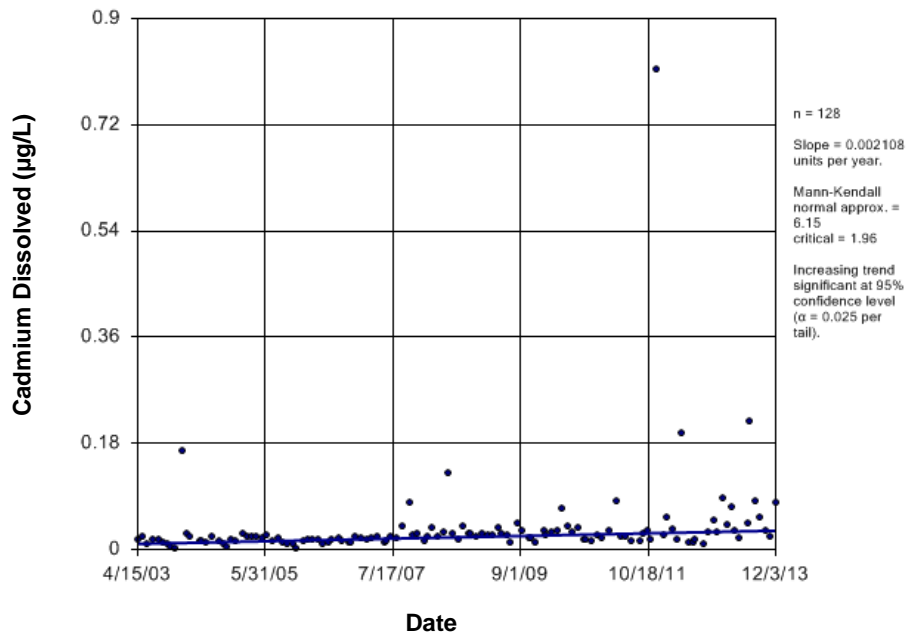


Figure E618 South Saskatchewan River: Cadmium Dissolved

Time Series

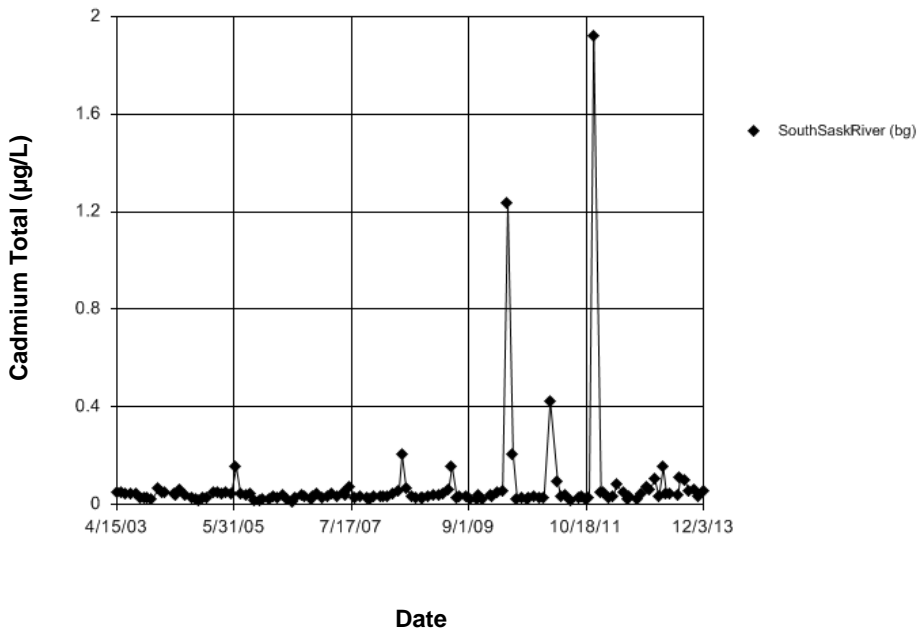


Figure E619 South Saskatchewan River: Cadmium Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.001133
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 3 groups of data in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 0.001133
 Adjusted Kruskal-Wallis statistic (H') = 0.001133

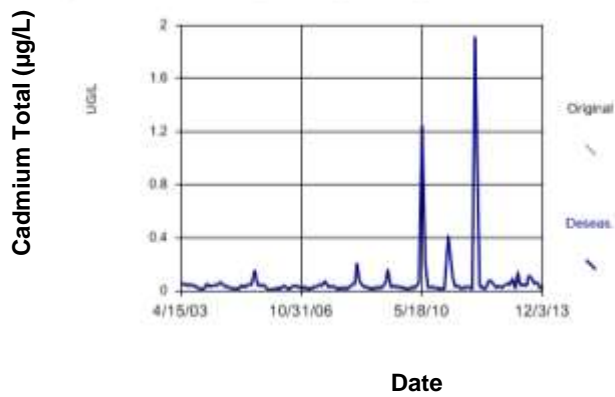


Figure E620 South Saskatchewan River: Cadmium Total

Sen's Slope Estimator

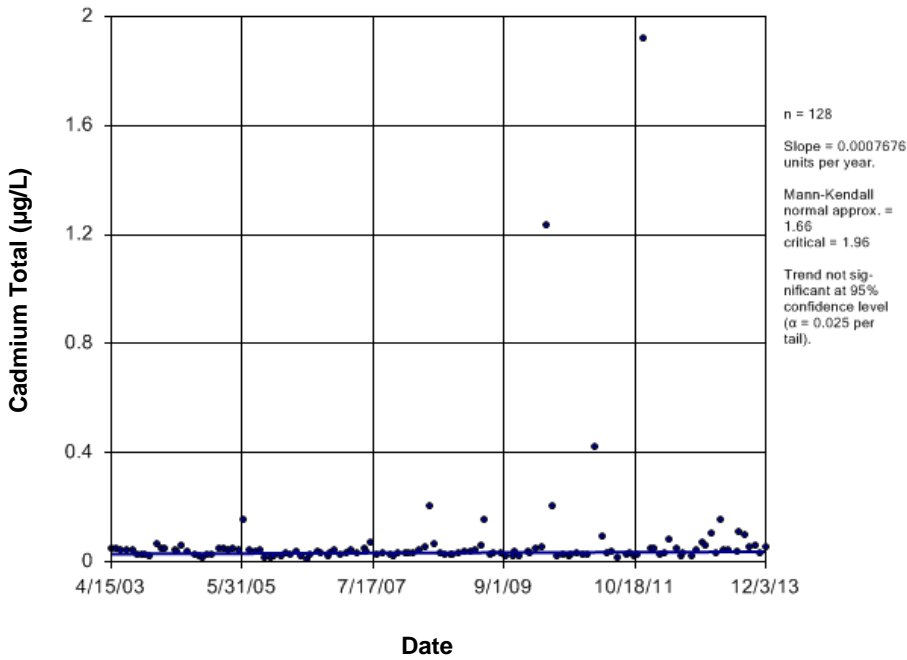


Figure E621 South Saskatchewan River: Cadmium Total

Time Series

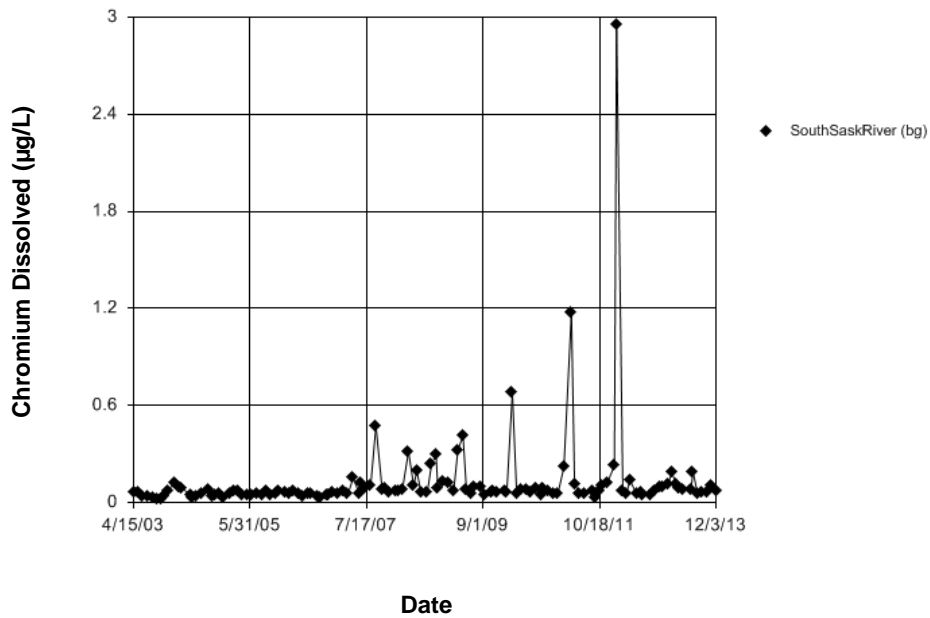


Figure E622 South Saskatchewan River: Chromium Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 7.982. Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level. There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal. Kruskal-Wallis statistic (H) = 7.982. Adjusted Kruskal-Wallis statistic (H') = 7.982.

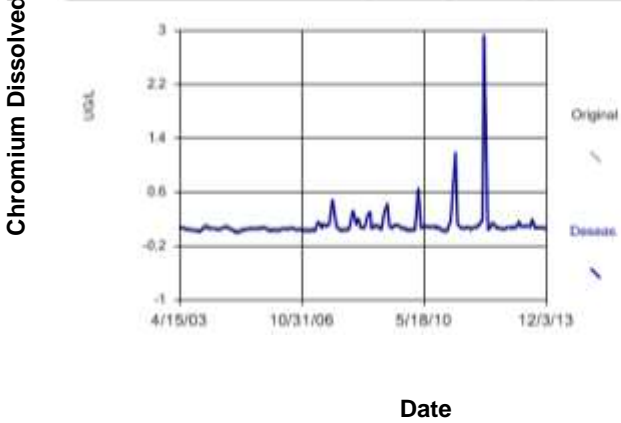


Figure E623 South Saskatchewan River: Chromium Dissolved

Seasonal Kendall

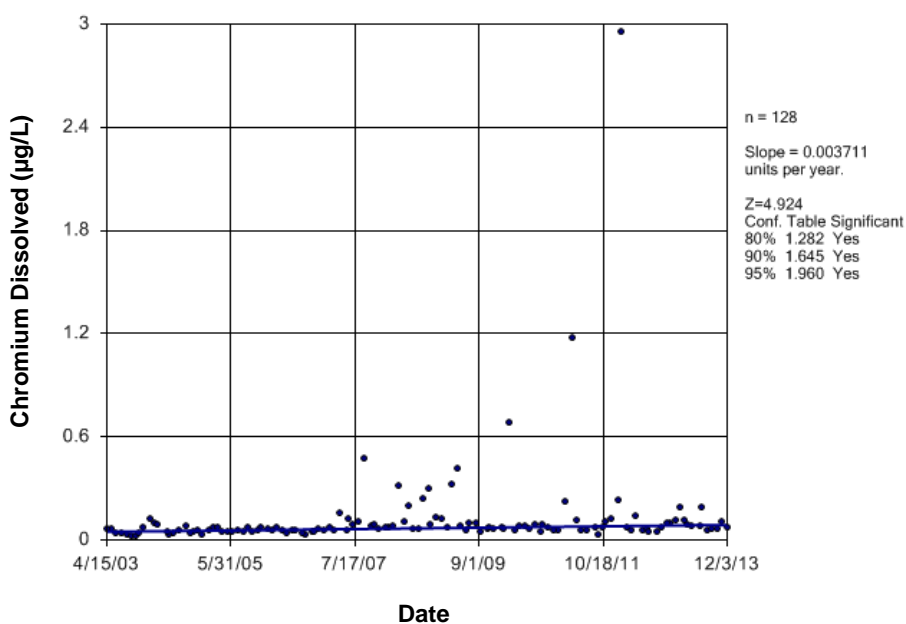


Figure E624 South Saskatchewan River: Chromium Dissolved

Time Series

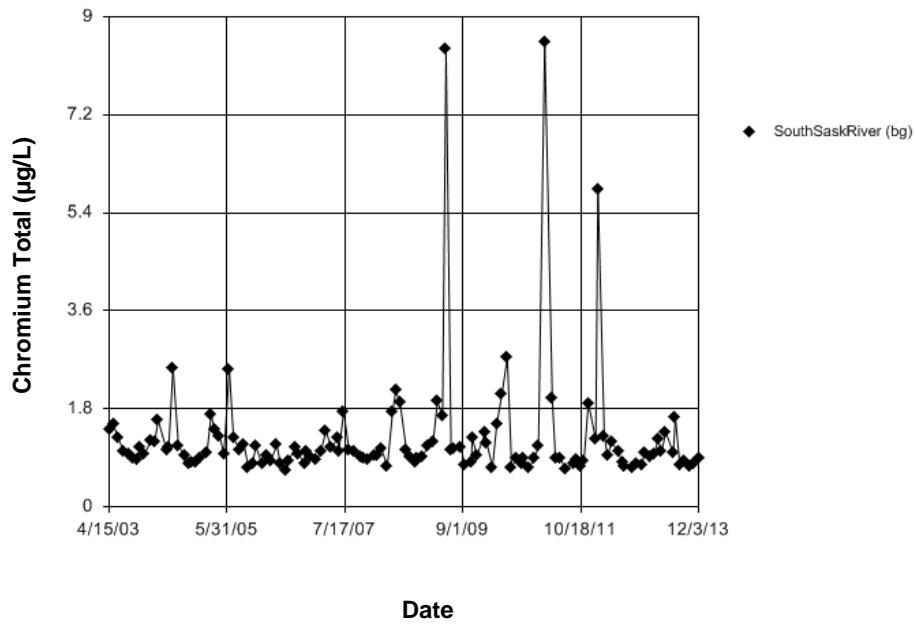


Figure E625 South Saskatchewan River: Chromium Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.3326. Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level. There were 8 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

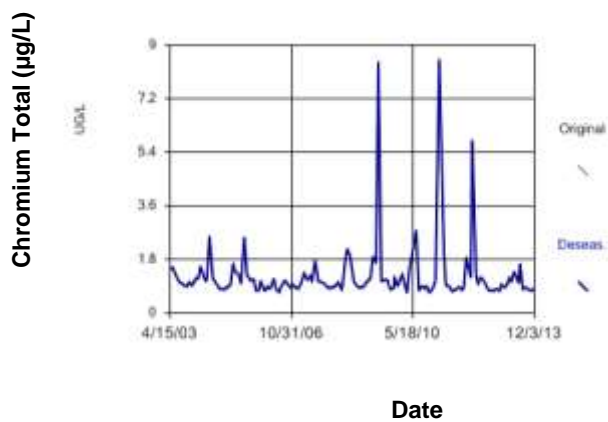


Figure E626 South Saskatchewan River: Chromium Total

Sen's Slope Estimator

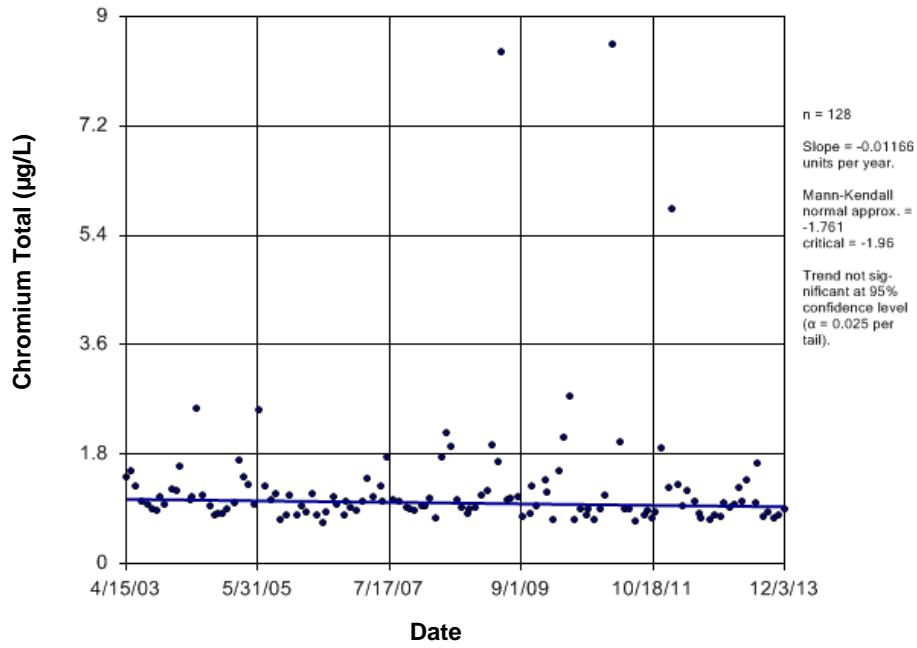


Figure E627 South Saskatchewan River: Chromium Total

Time Series

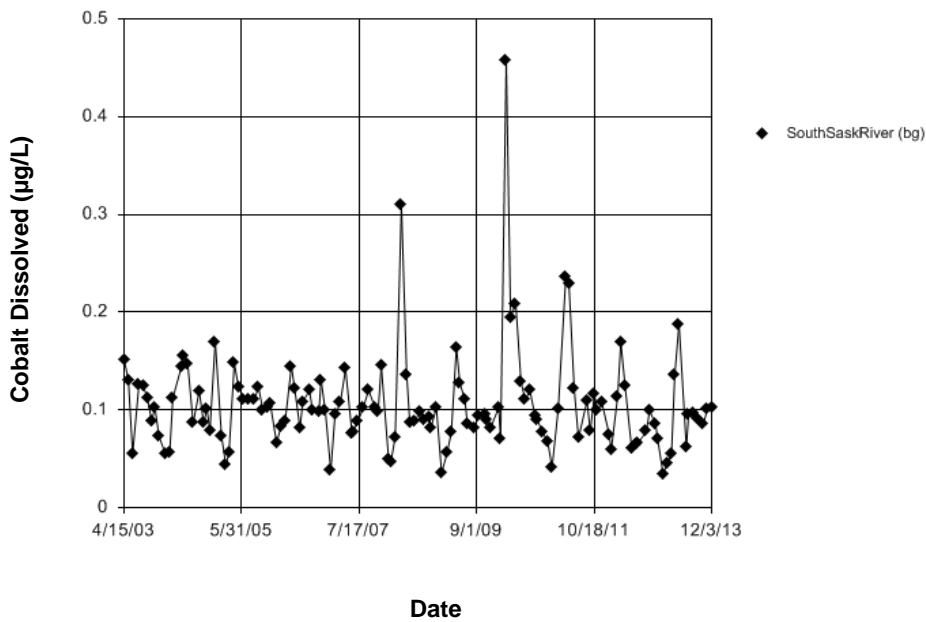


Figure E628 South Saskatchewan River: Cobalt Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 21.92. Tabulated Chi-squared value = 3.841 with 1 degree of freedom at the 5% significance level. There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal. Kruskal-Wallis statistic (H) = 21.92. Adjusted Kruskal-Wallis statistic (H') = 21.92

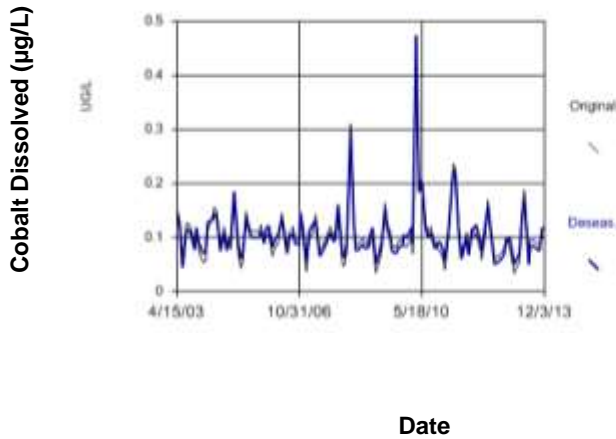


Figure E629 South Saskatchewan River: Cobalt Dissolved

Seasonal Kendall

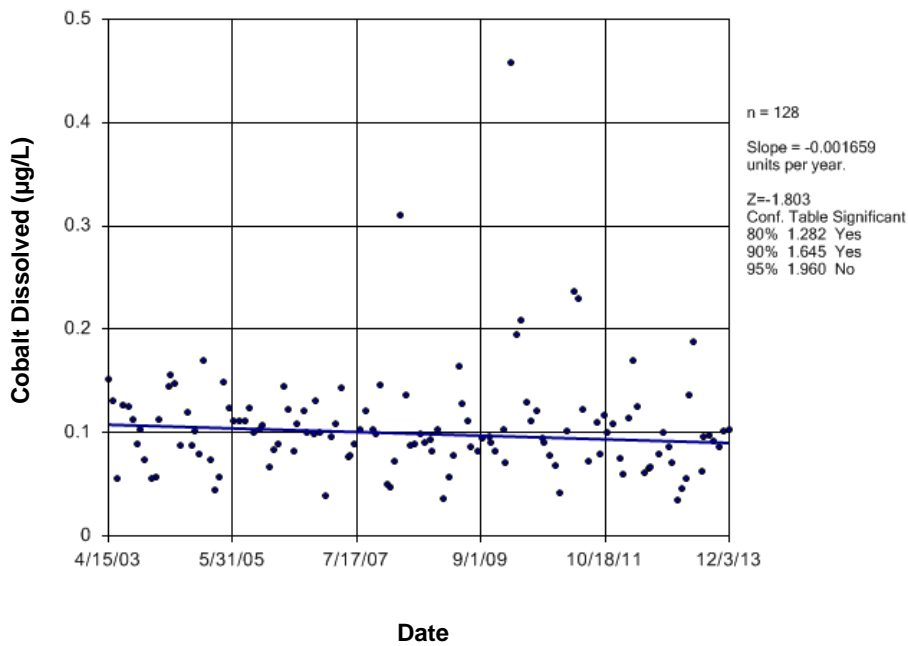


Figure E630 South Saskatchewan River: Cobalt Dissolved

Time Series

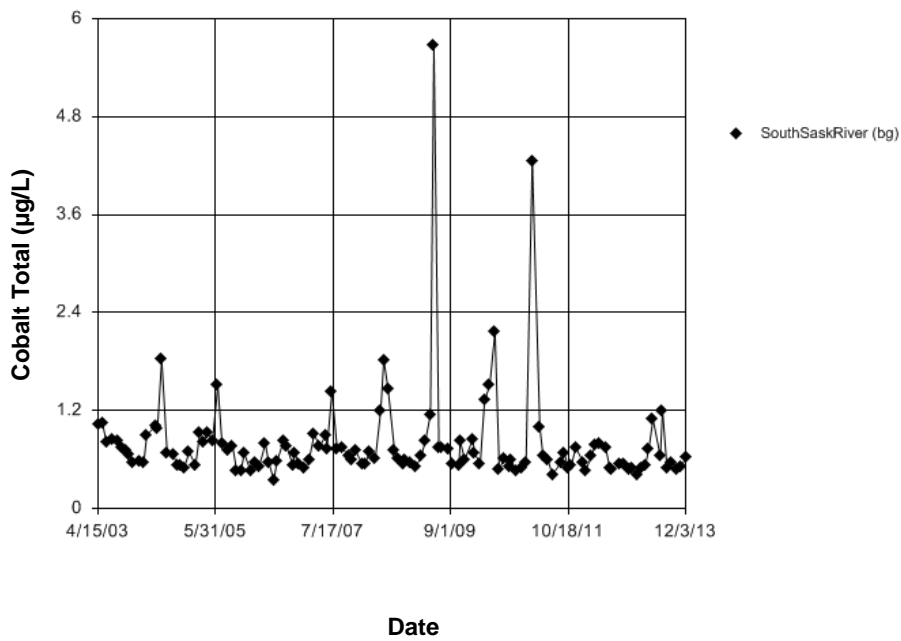


Figure E631 South Saskatchewan River: Cobalt Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
 Calculated Kruskal-Wallis statistic = 12.92
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 6 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

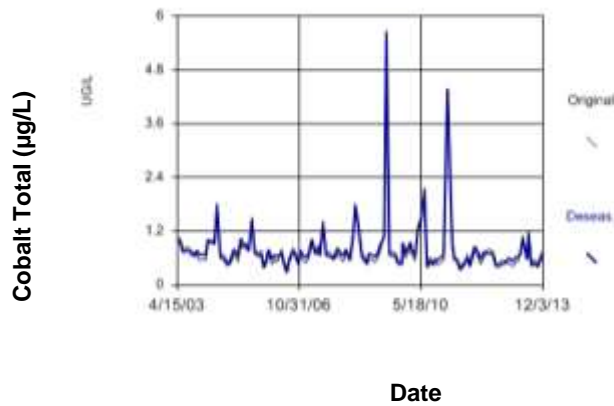


Figure E632 South Saskatchewan River: Cobalt Total

Seasonal Kendall

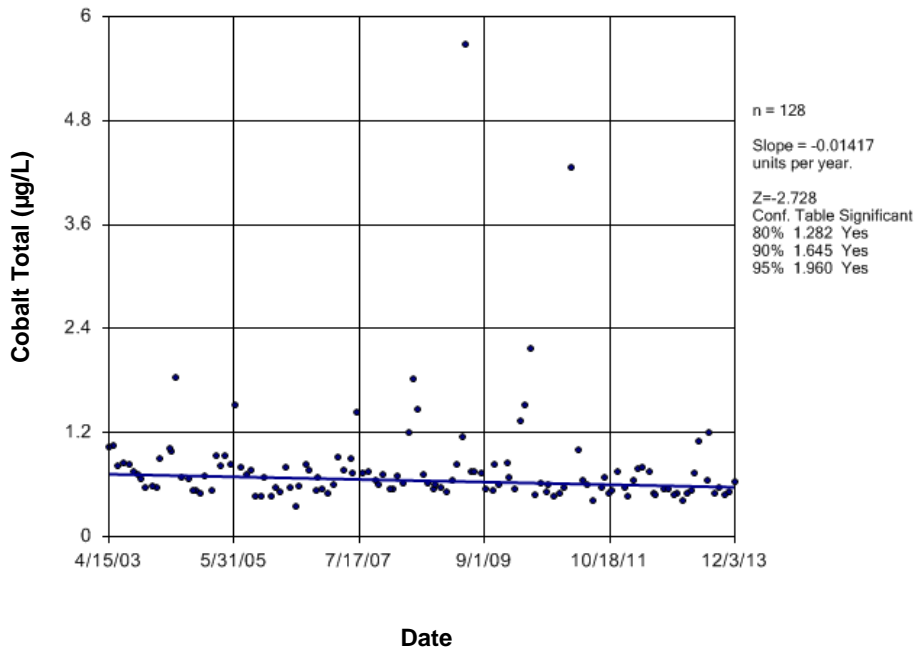


Figure E633 South Saskatchewan River: Cobalt Total

Time Series

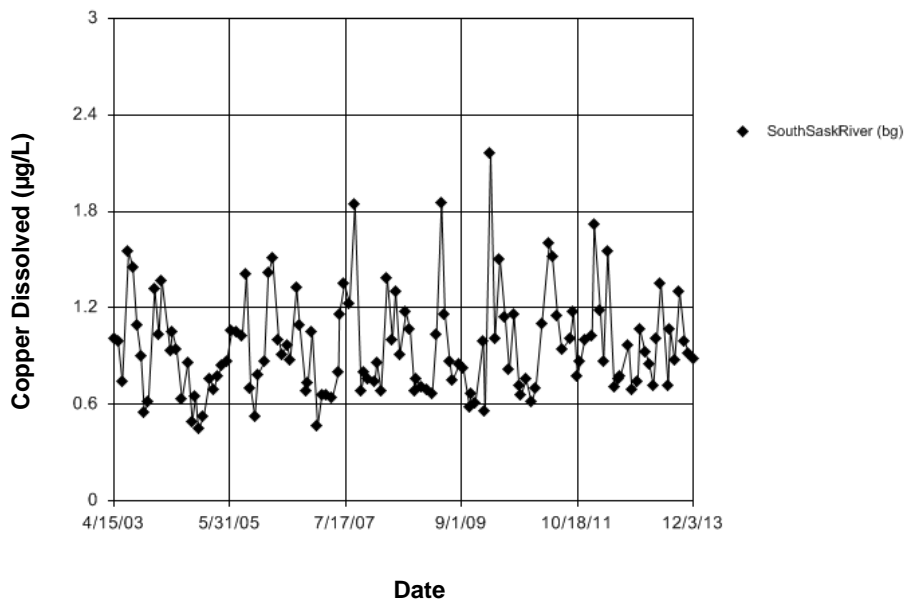


Figure E634 South Saskatchewan River: Copper Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 10.04
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 3 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 10.04
 Adjusted Kruskal-Wallis statistic (H') = 10.04

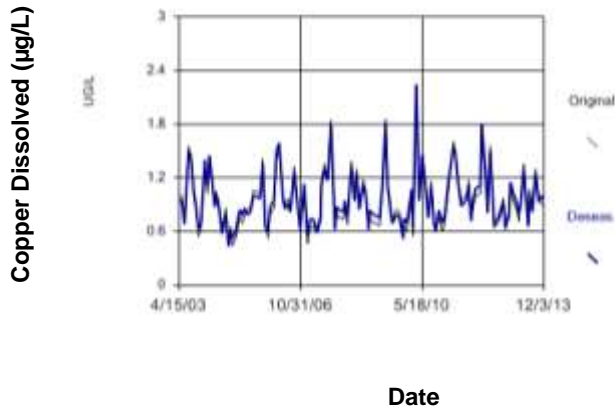


Figure E635 South Saskatchewan River: Copper Dissolved

Seasonal Kendall

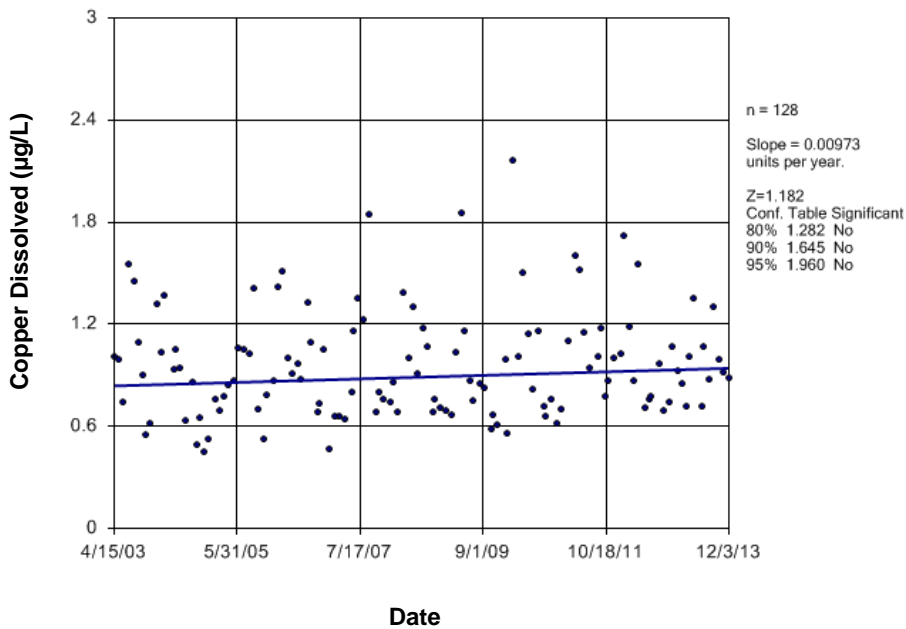


Figure E636 South Saskatchewan River: Copper Dissolved

Time Series

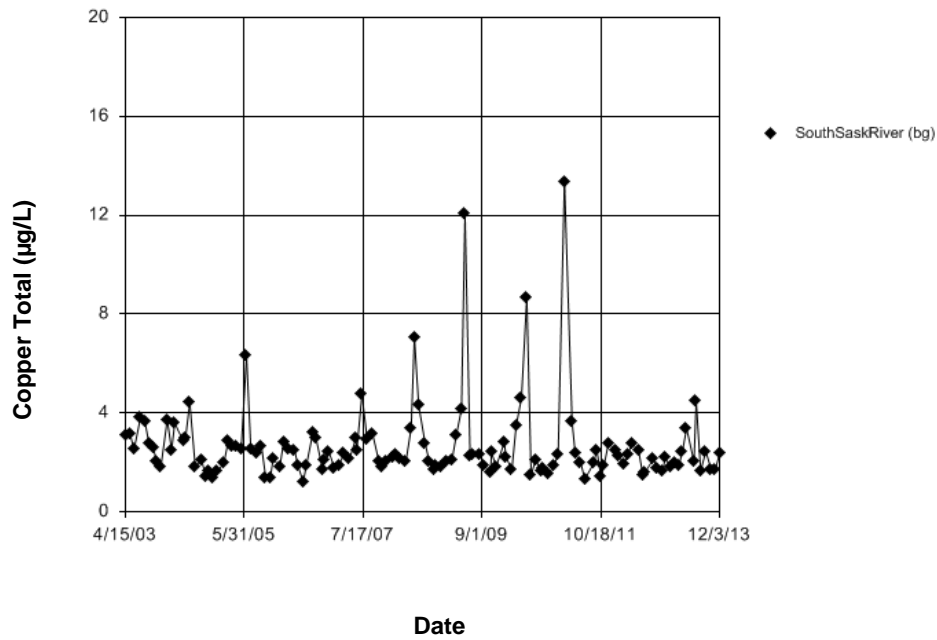


Figure E637 South Saskatchewan River: Copper Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-Squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 4.555
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 3 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H*) was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 4.555
 Adjusted Kruskal-Wallis statistic (H*) = 4.555

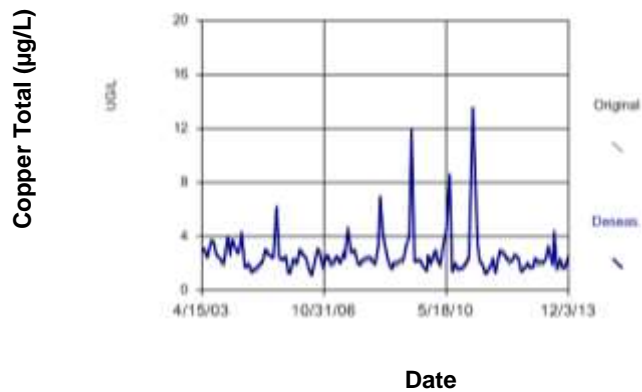


Figure E638 South Saskatchewan River: Copper Total

Seasonal Kendall

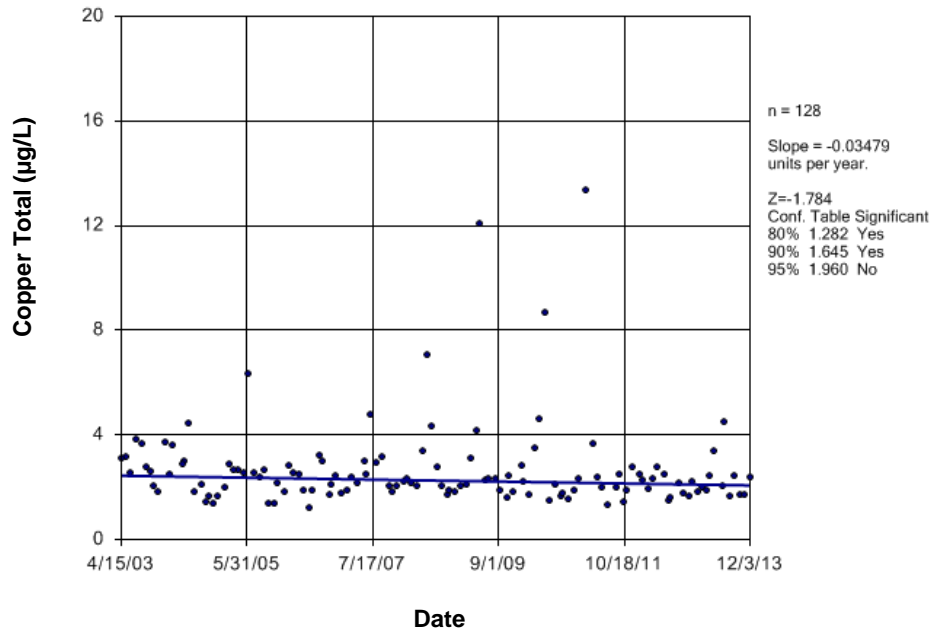


Figure E639 South Saskatchewan River: Copper Total

Time Series

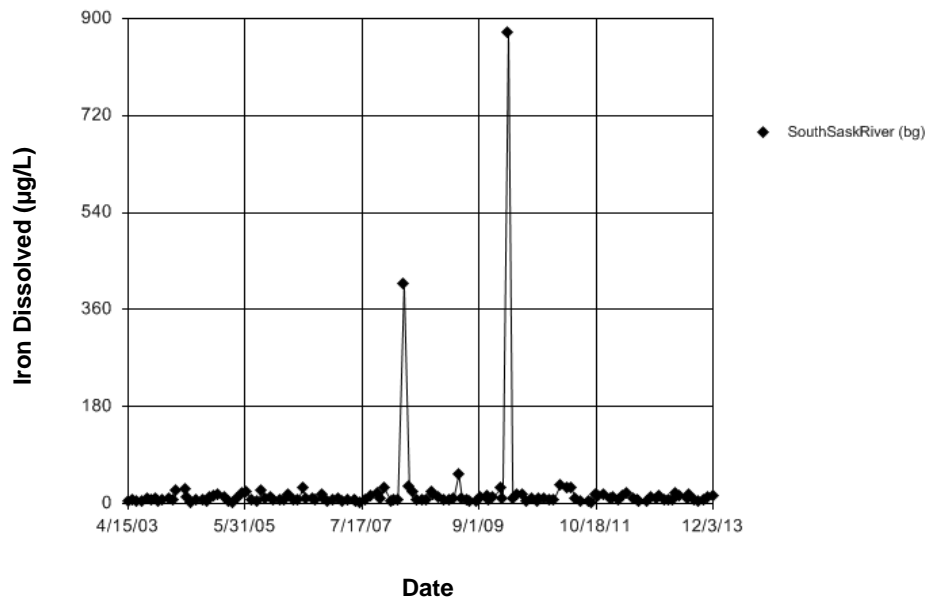


Figure E640 South Saskatchewan River: Iron Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.3701
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 3 groups of data in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 0.3701
 Adjusted Kruskal-Wallis statistic (H') = 0.3701

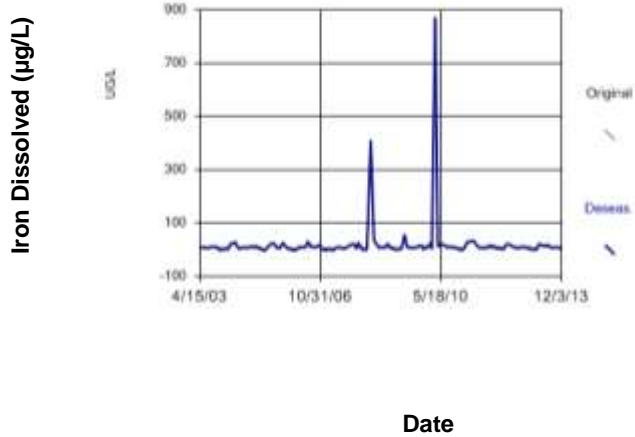


Figure E641 South Saskatchewan River: Iron Dissolved

Sen's Slope Estimator

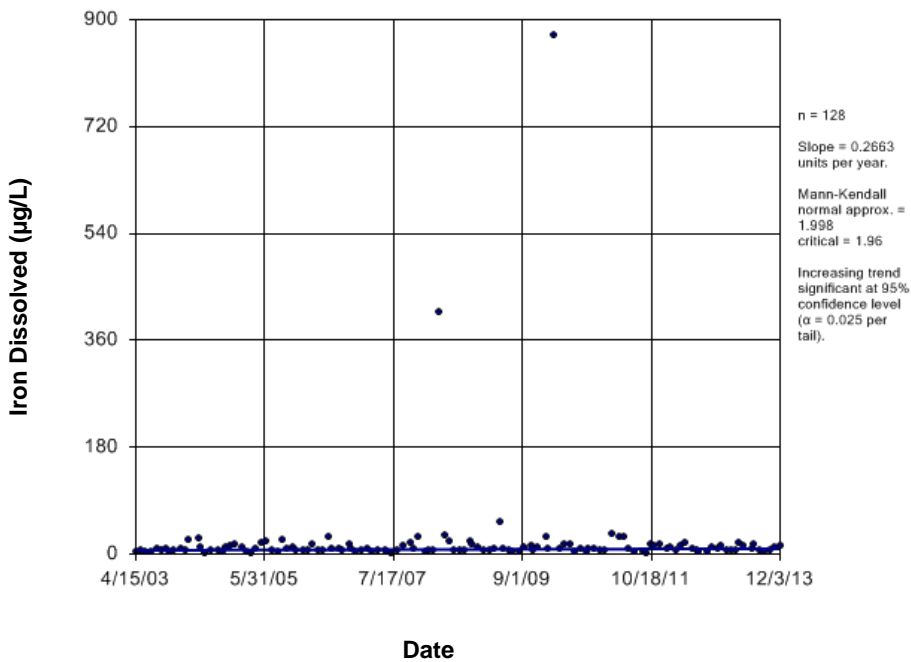


Figure E642 South Saskatchewan River: Iron Dissolved

Time Series

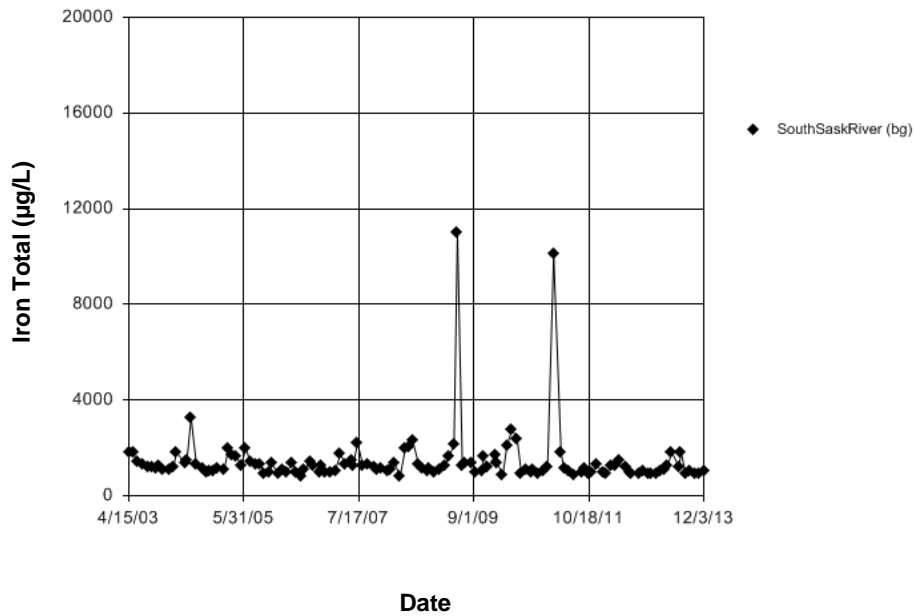


Figure E643 South Saskatchewan River: Iron Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
 Calculated Kruskal-Wallis statistic = 4.705
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 8 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 4.705
 Adjusted Kruskal-Wallis statistic (H') = 4.765

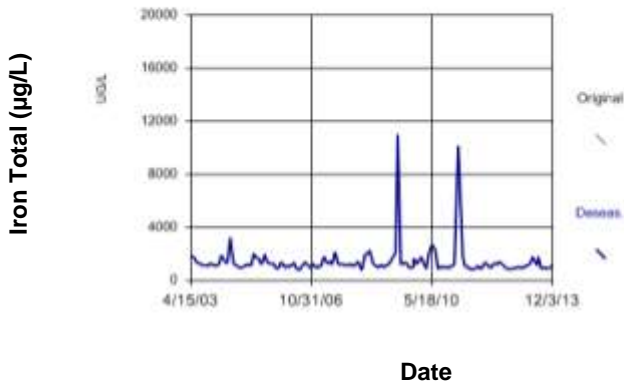


Figure E644 South Saskatchewan River: Iron Total

Seasonal Kendall

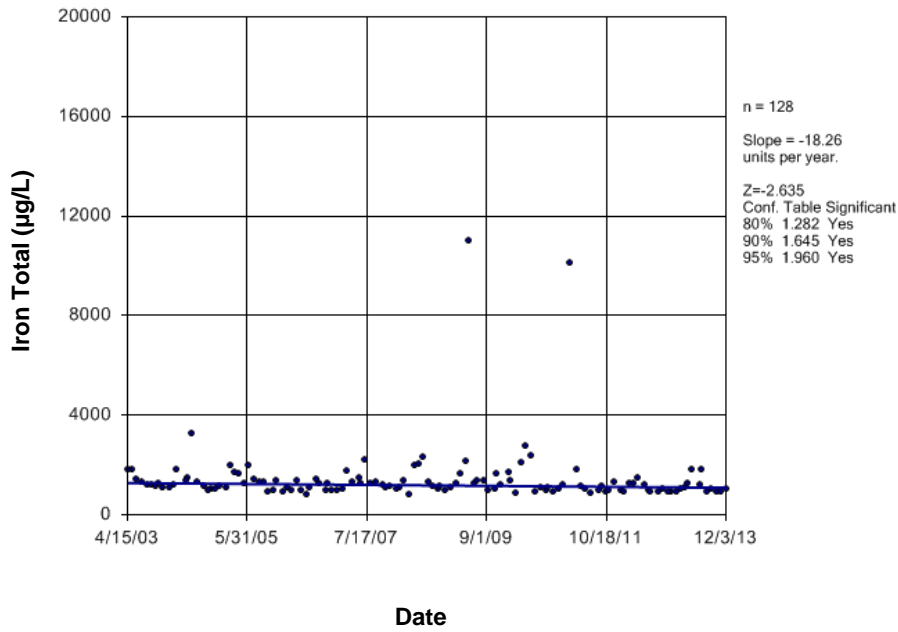


Figure E645 South Saskatchewan River: Iron Total

Time Series

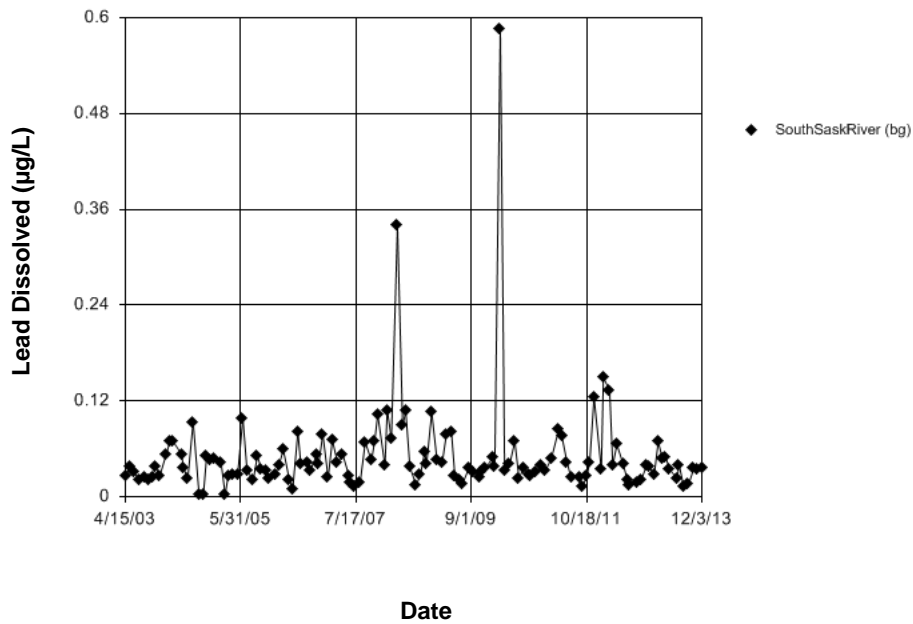


Figure E646 South Saskatchewan River: Lead Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 14.45
Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
There were 3 groups of data in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 14.45
Adjusted Kruskal-Wallis statistic (H') = 14.45

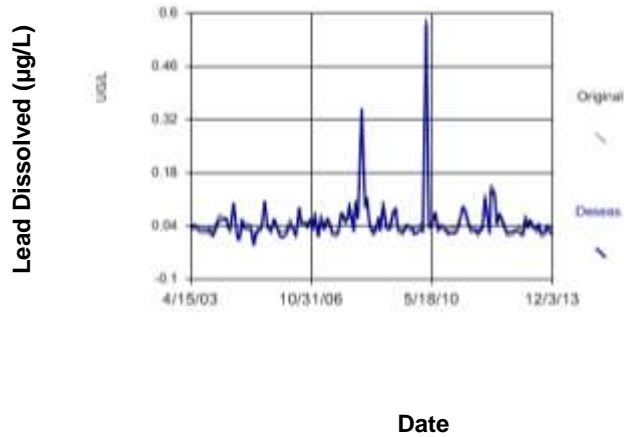


Figure E647 South Saskatchewan River: Lead Dissolved

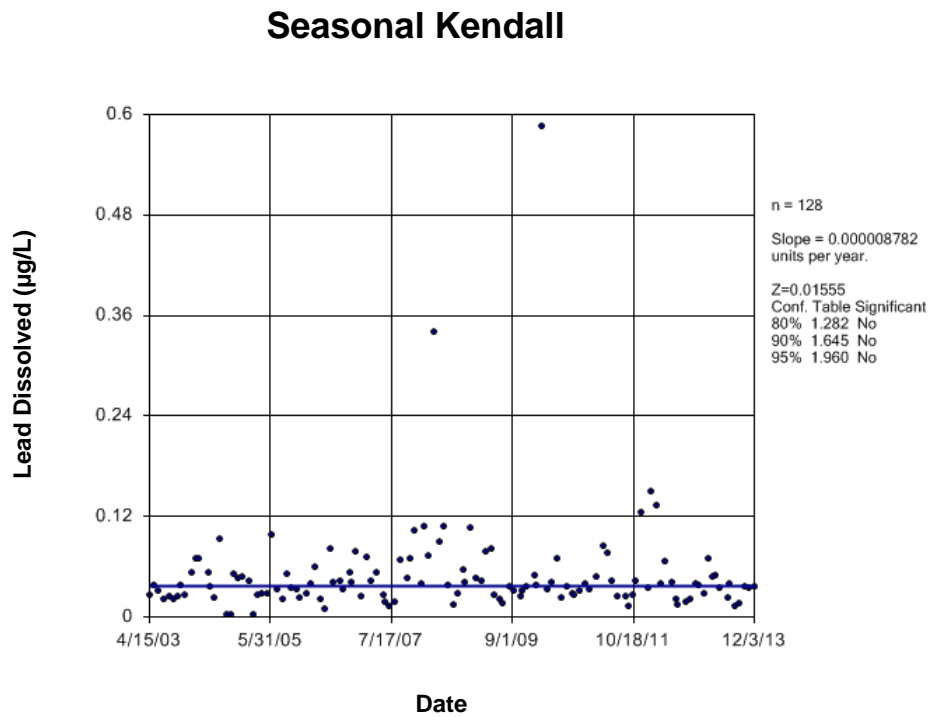


Figure E648 South Saskatchewan River: Lead Dissolved

Time Series

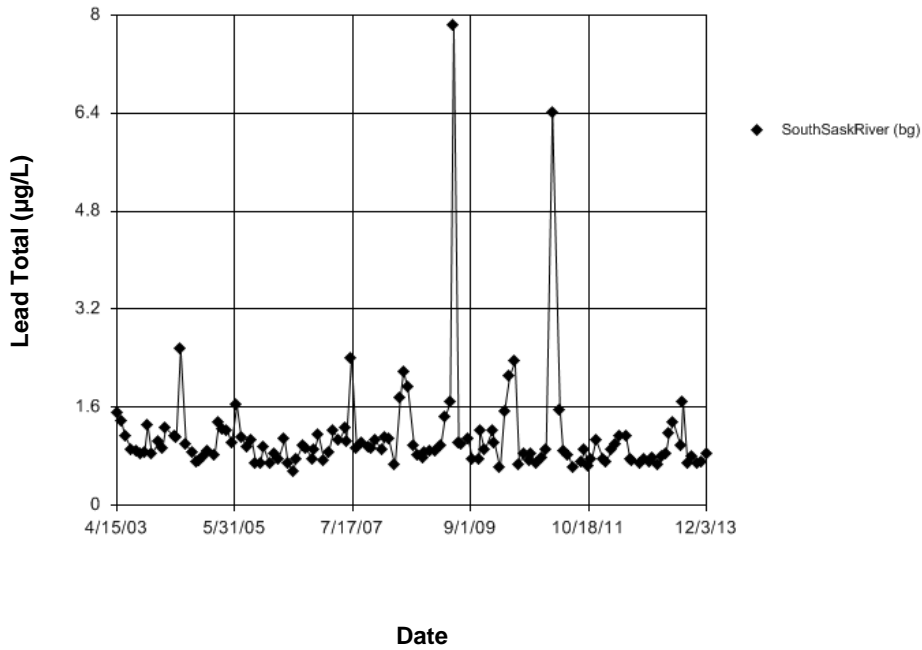


Figure E649 South Saskatchewan River: Lead Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 1.54
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 4 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 1.54
 Adjusted Kruskal-Wallis statistic (H') = 1.34

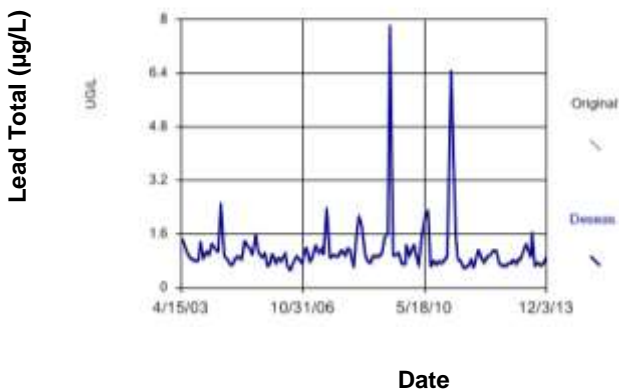


Figure E650 South Saskatchewan River: Lead Total

Sen's Slope Estimator

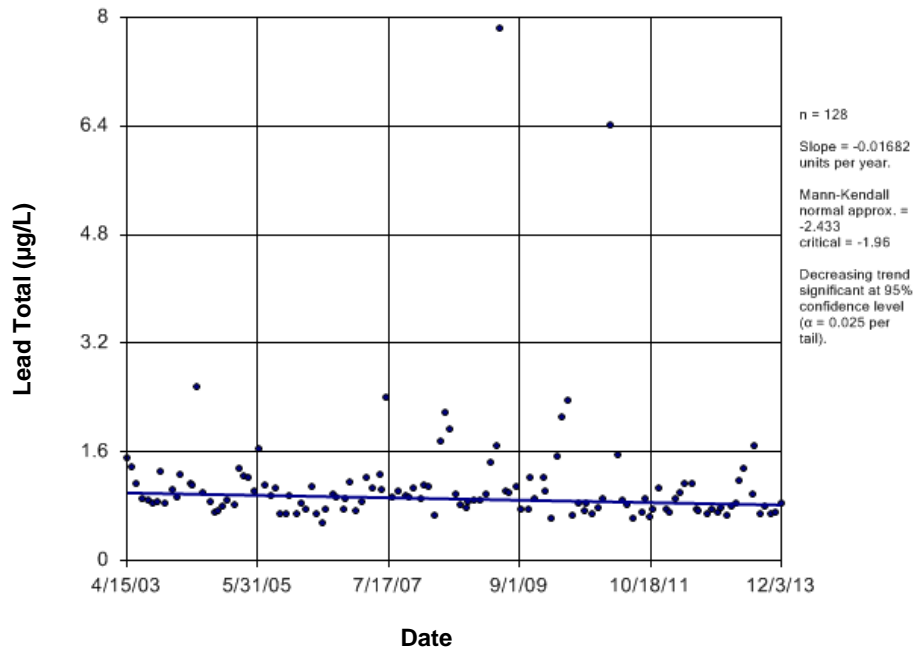


Figure E651 South Saskatchewan River: Lead Total

Time Series

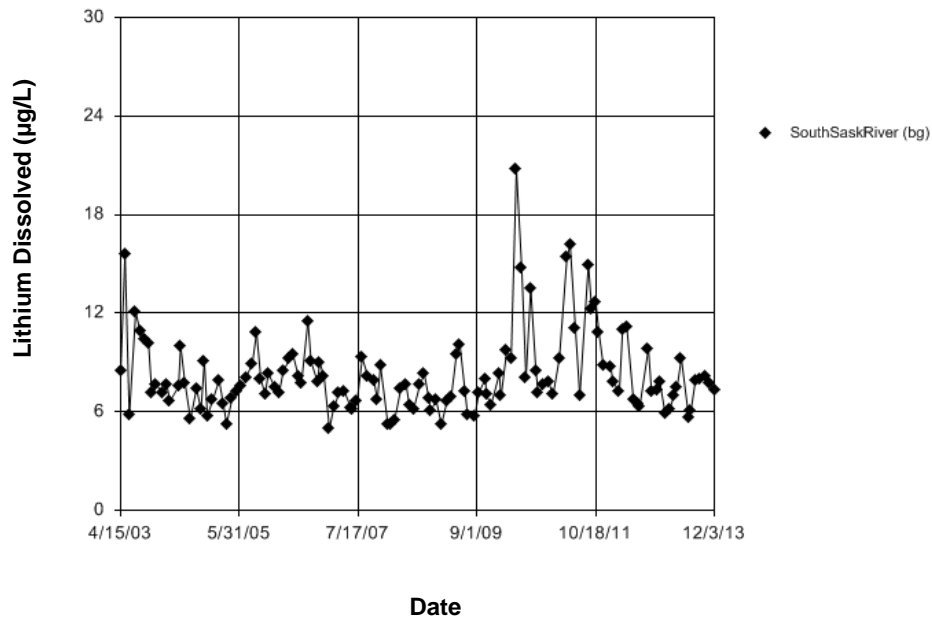


Figure E652 South Saskatchewan River: Lithium Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 14.14
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 14.14
 Adjusted Kruskal-Wallis statistic (H') = 14.14

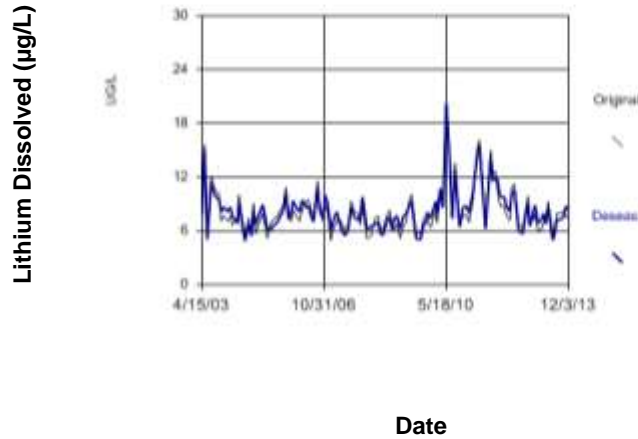


Figure E653 South Saskatchewan River: Lithium Dissolved

Seasonal Kendall

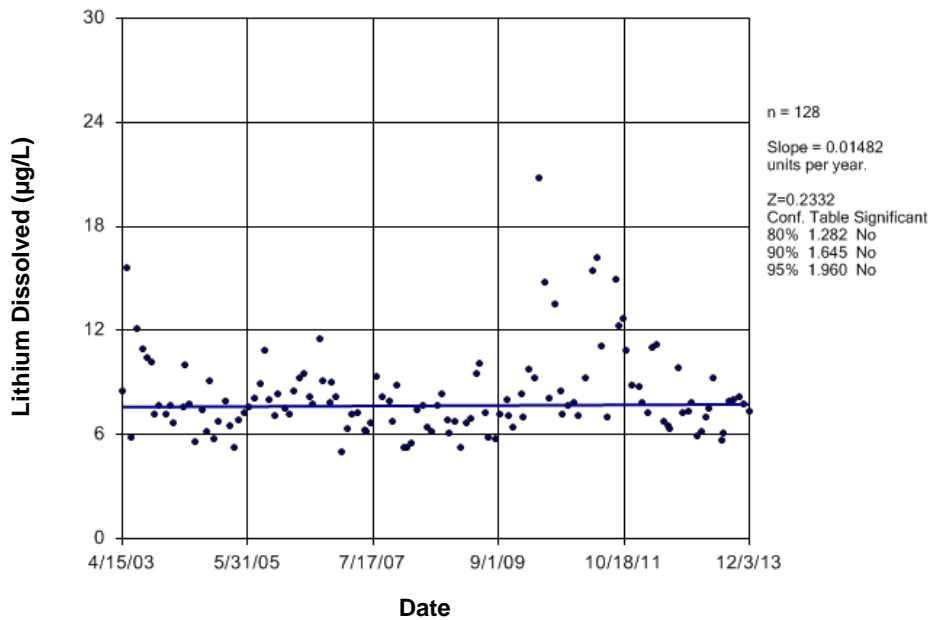


Figure E654 South Saskatchewan River: Lithium Dissolved

Time Series

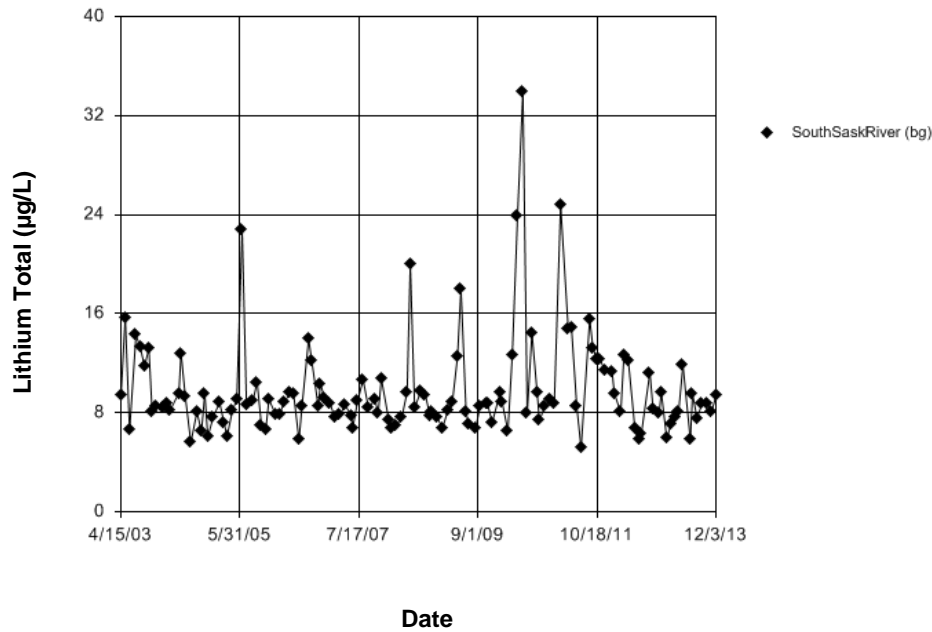


Figure E655 South Saskatchewan River: Lithium Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates **SEASONALITY** at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
 Calculated Kruskal-Wallis statistic = 7.764
 Tabulated Chi-Squared value = 3.841, with 1 degree of freedom at the 5% significance level.
 There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

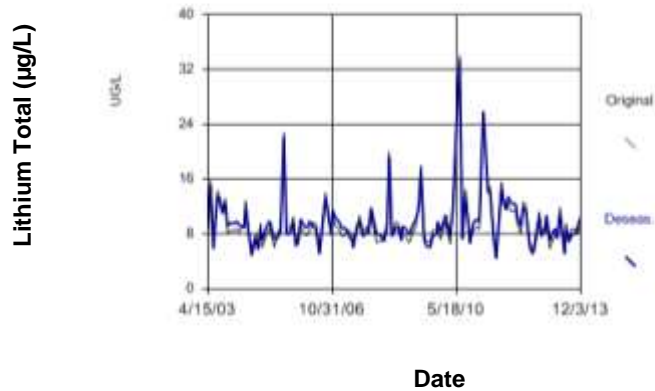


Figure E656 South Saskatchewan River: Lithium Total

Seasonal Kendall

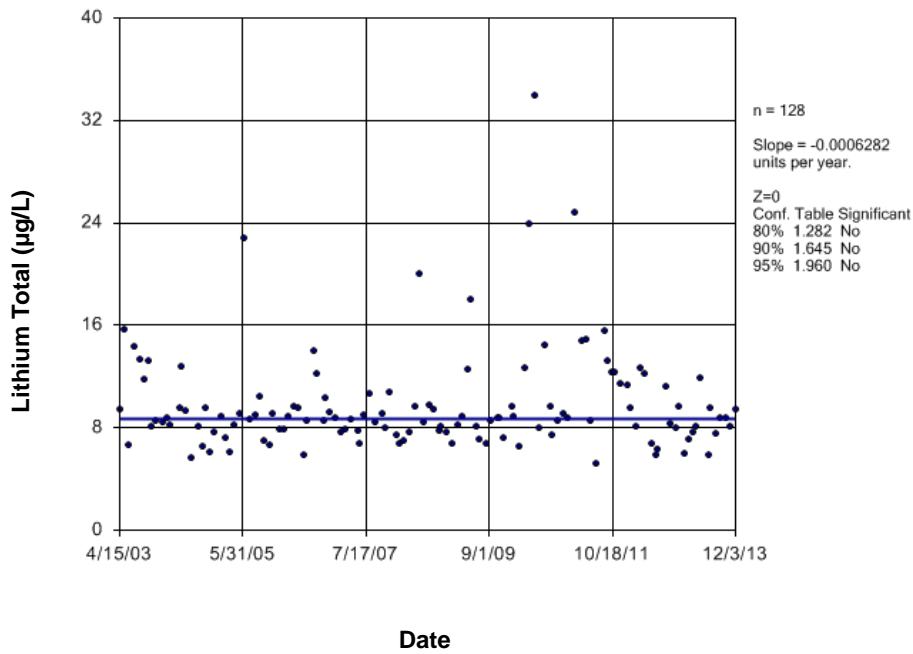


Figure E657 South Saskatchewan River: Lithium Total

Time Series

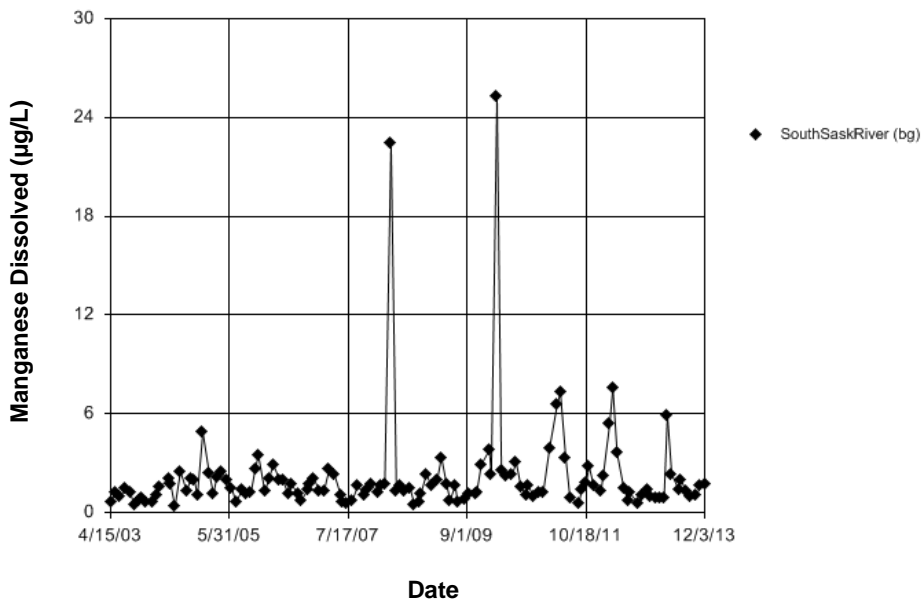


Figure E658 South Saskatchewan River: Manganese Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 4.349
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 4.349
 Adjusted Kruskal-Wallis statistic (H') = 4.549

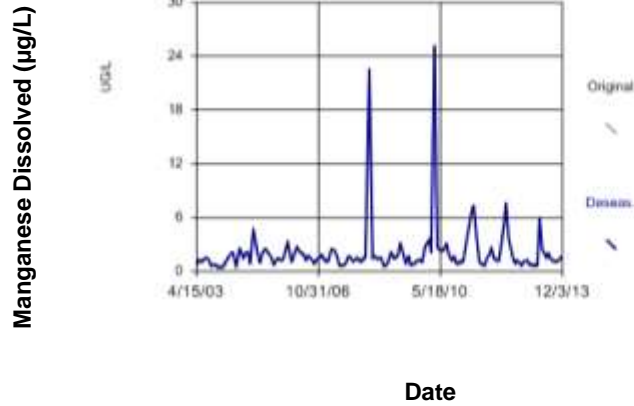


Figure E659 South Saskatchewan River: Manganese Dissolved

Seasonal Kendall

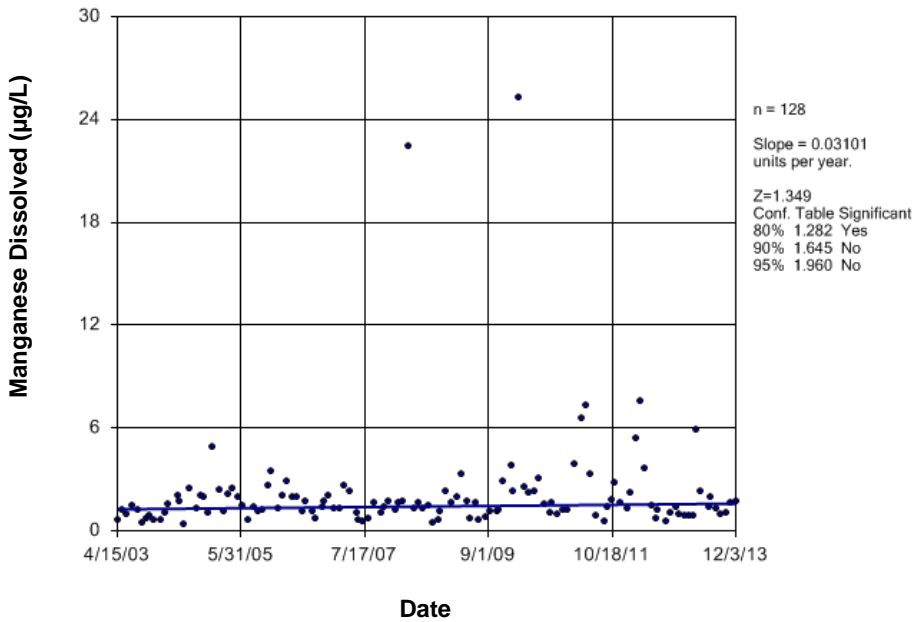


Figure E660 South Saskatchewan River: Manganese Dissolved

Time Series

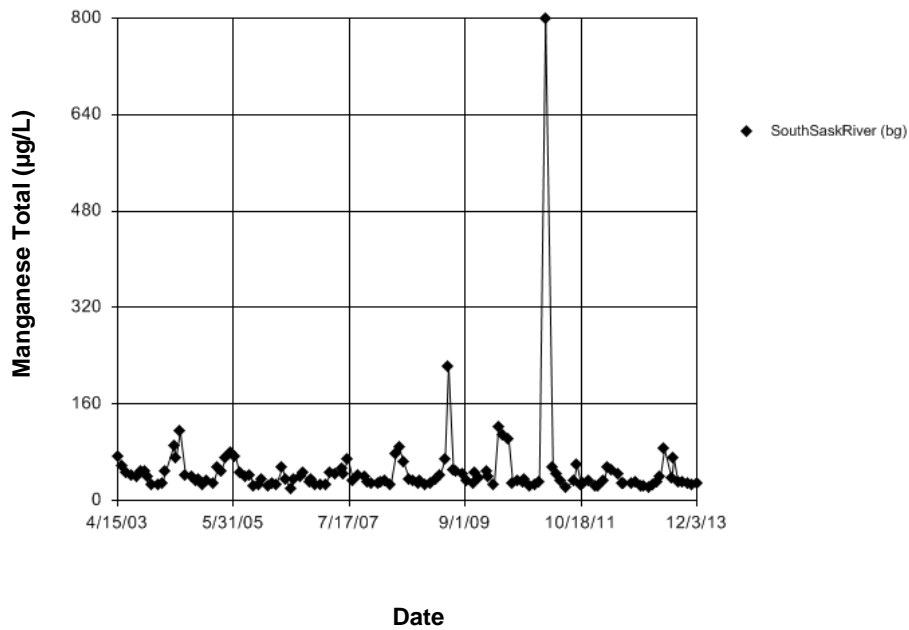


Figure E661 South Saskatchewan River: Manganese Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 27.96
 Calculated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

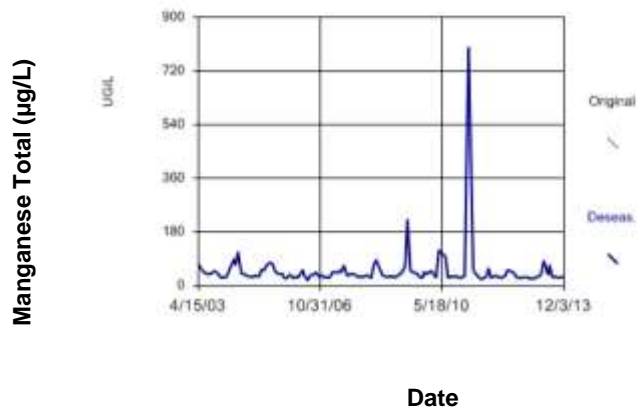


Figure E662 South Saskatchewan River: Manganese Total

Seasonal Kendall

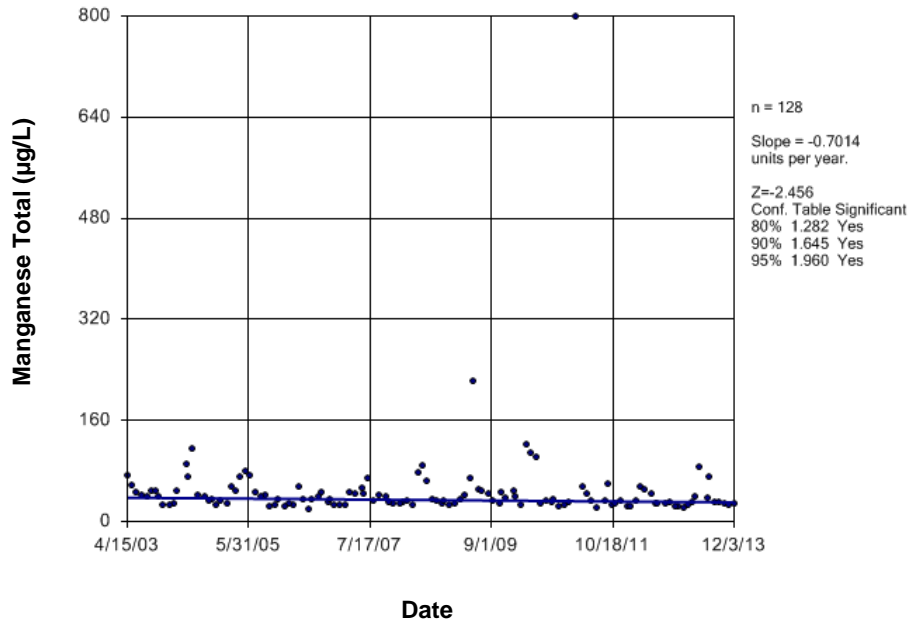


Figure E663 South Saskatchewan River: Manganese Total

Time Series

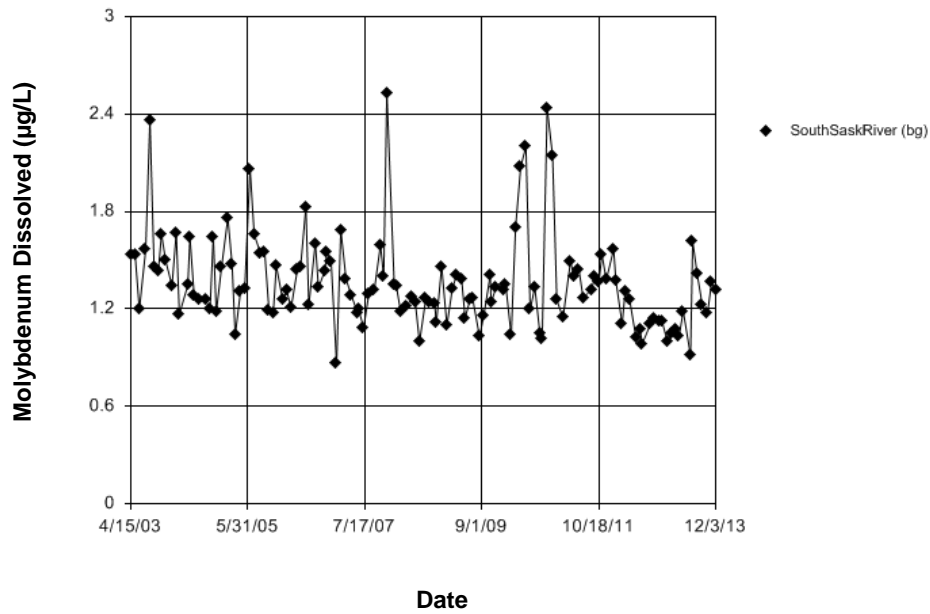


Figure E664 South Saskatchewan River: Molybdenum Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.05698.
Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
There were 10 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 0.05698
Adjusted Kruskal-Wallis statistic (H') = 0.05698

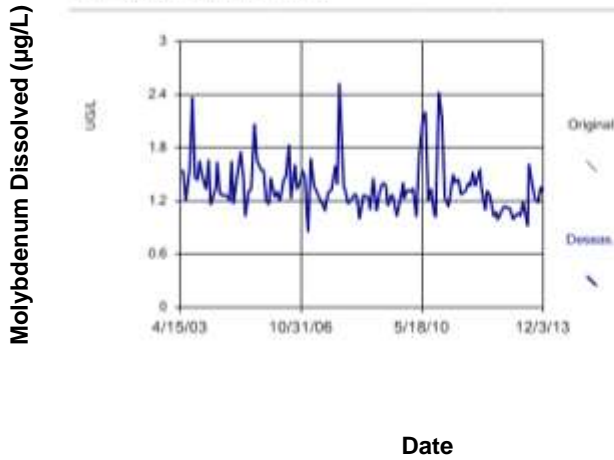


Figure E665 South Saskatchewan River: Molybdenum Dissolved

Sen's Slope Estimator

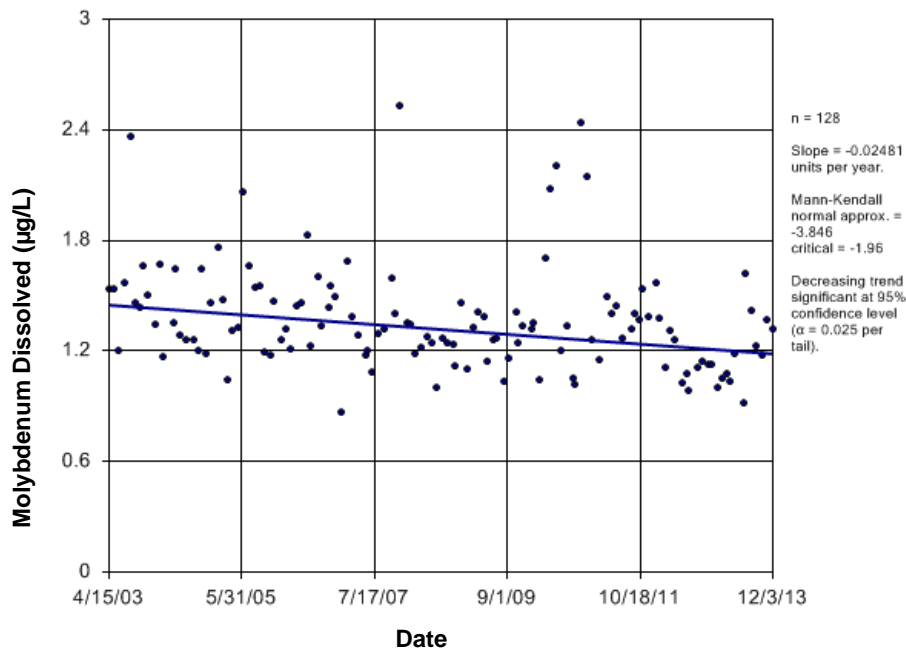


Figure E666 South Saskatchewan River: Molybdenum Dissolved

Time Series

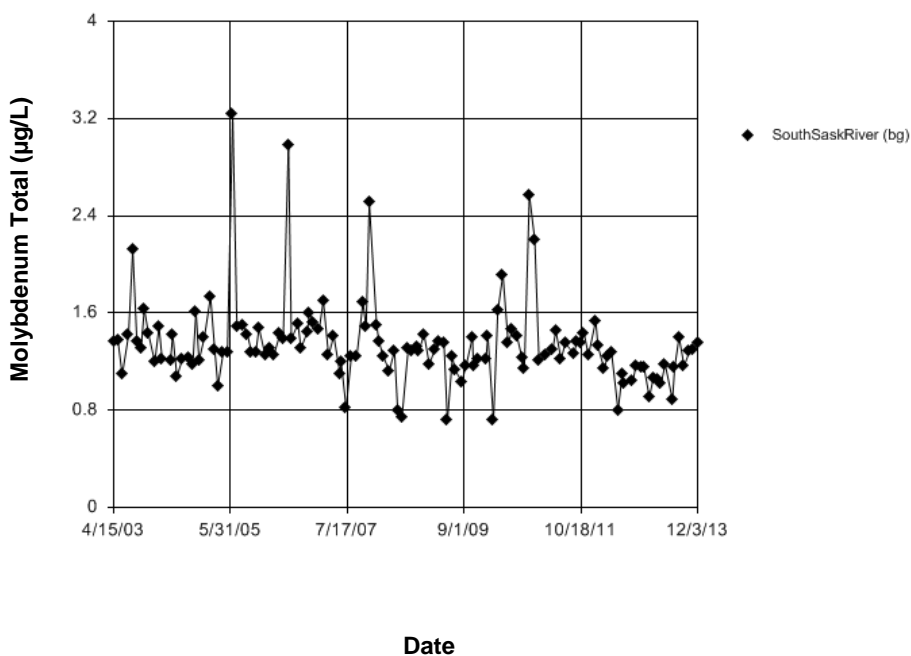


Figure E667 South Saskatchewan River: Molybdenum Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 1.486. Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level. There were 7 groups of time in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal. Kruskal-Wallis statistic (H) = 1.486. Adjusted Kruskal-Wallis statistic (H') = 1.486.

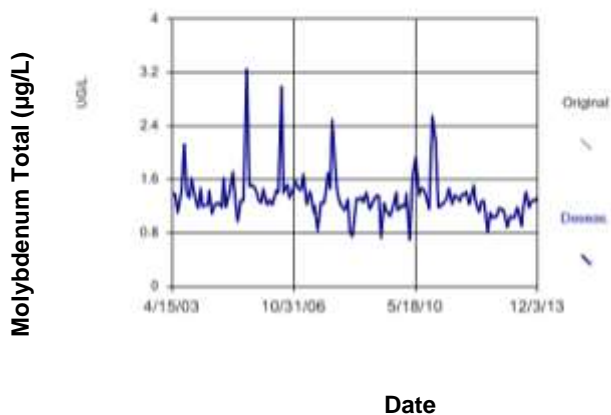


Figure E668 South Saskatchewan River: Molybdenum Total

Sen's Slope Estimator

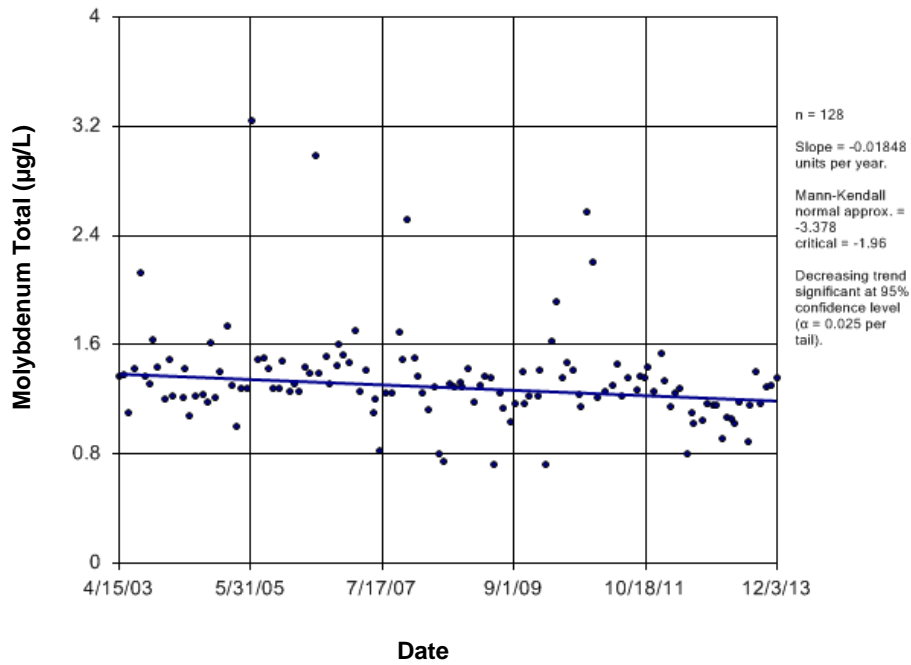


Figure E669 South Saskatchewan River: Molybdenum Total

Time Series

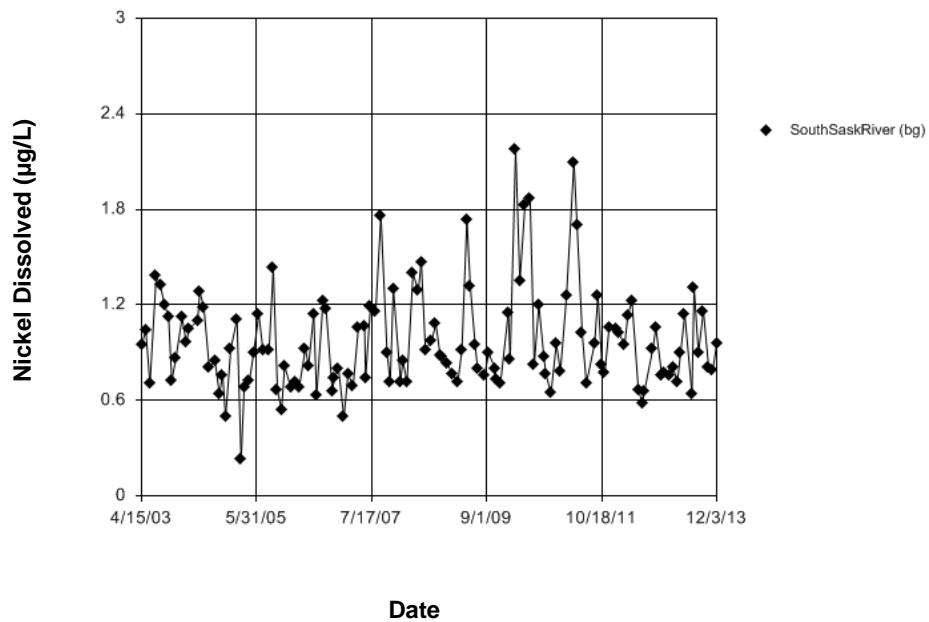


Figure E670 South Saskatchewan River: Nickel Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 15.91
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (H) was necessary.

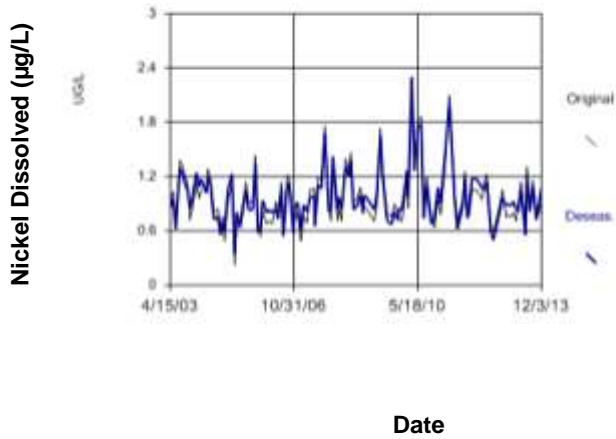


Figure E671 South Saskatchewan River: Nickel Dissolved

Seasonal Kendall

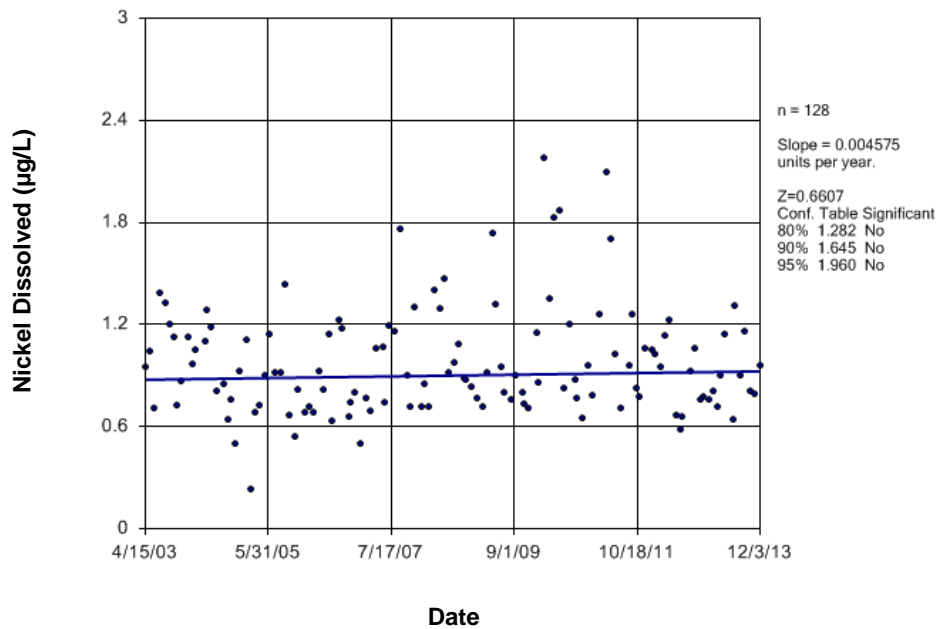


Figure E672 South Saskatchewan River: Nickel Dissolved

Time Series

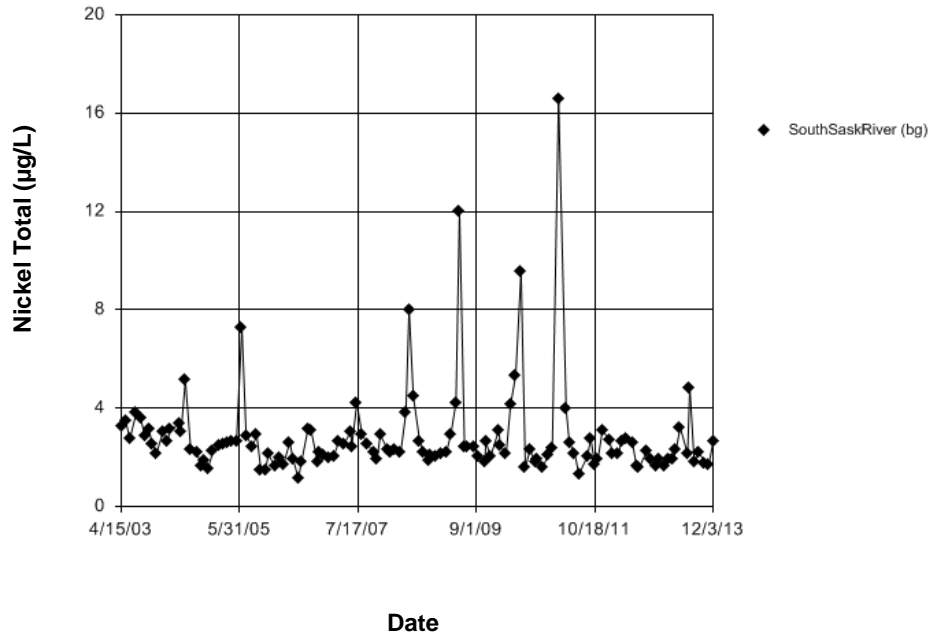


Figure E673 South Saskatchewan River: Nickel Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 6.629
 Tabulated Chi-Squared value = 3.841 with 3 degrees of freedom at the 5% significance level.
 There were 4 groups of data in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 6.629
 Adjusted Kruskal-Wallis statistic (H') = 6.629

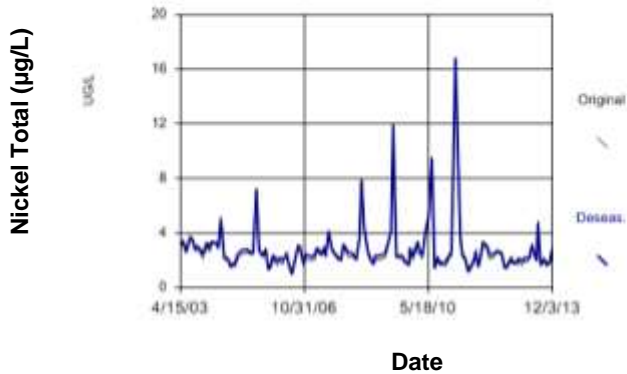


Figure E674 South Saskatchewan River: Nickel Total

Seasonal Kendall

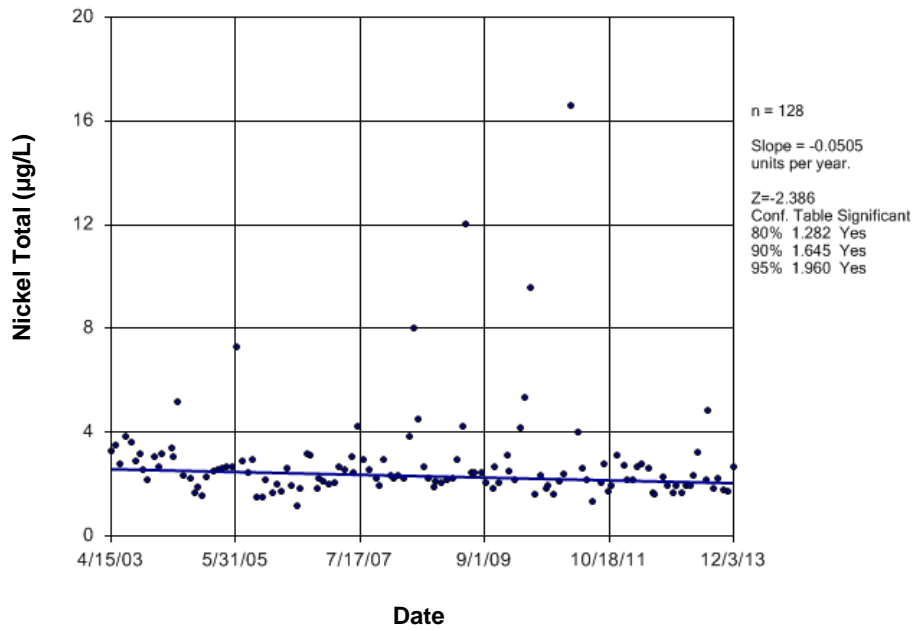


Figure E675 South Saskatchewan River: Nickel Total

Time Series

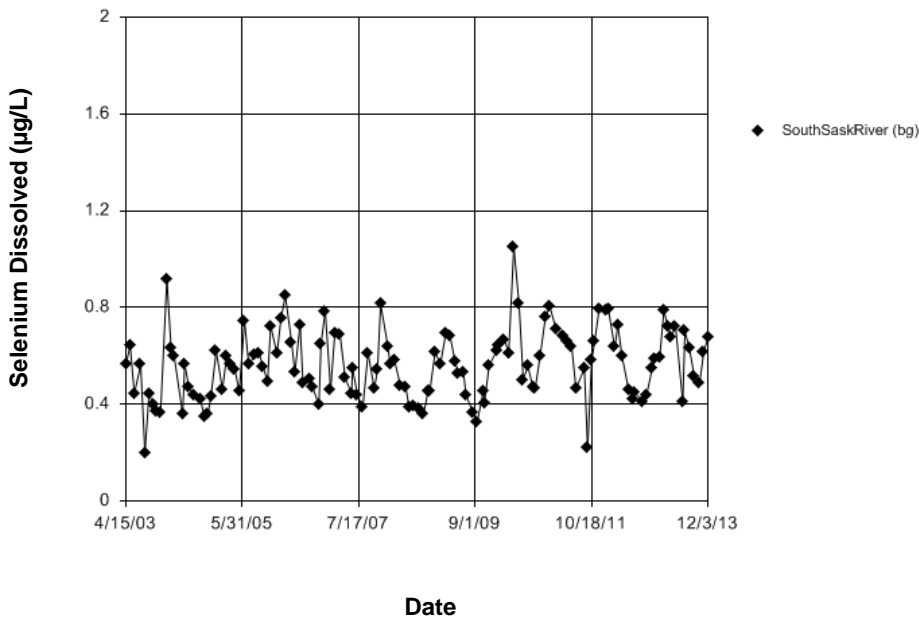


Figure E676 South Saskatchewan River: Selenium Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 25.38
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 1 groups of 5 in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 25.38
 Adjusted Kruskal-Wallis statistic (H') = 25.38

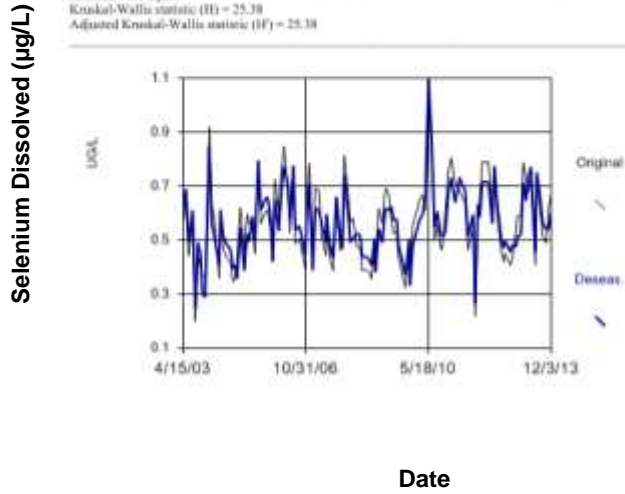


Figure E677 South Saskatchewan River: Selenium Dissolved

Seasonal Kendall

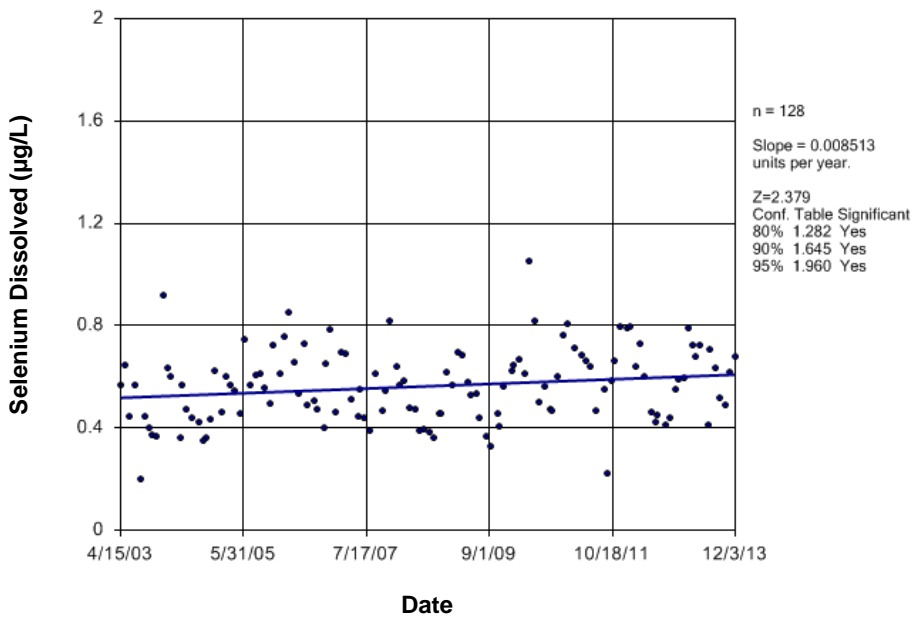


Figure E678 South Saskatchewan River: Selenium Dissolved

Time Series

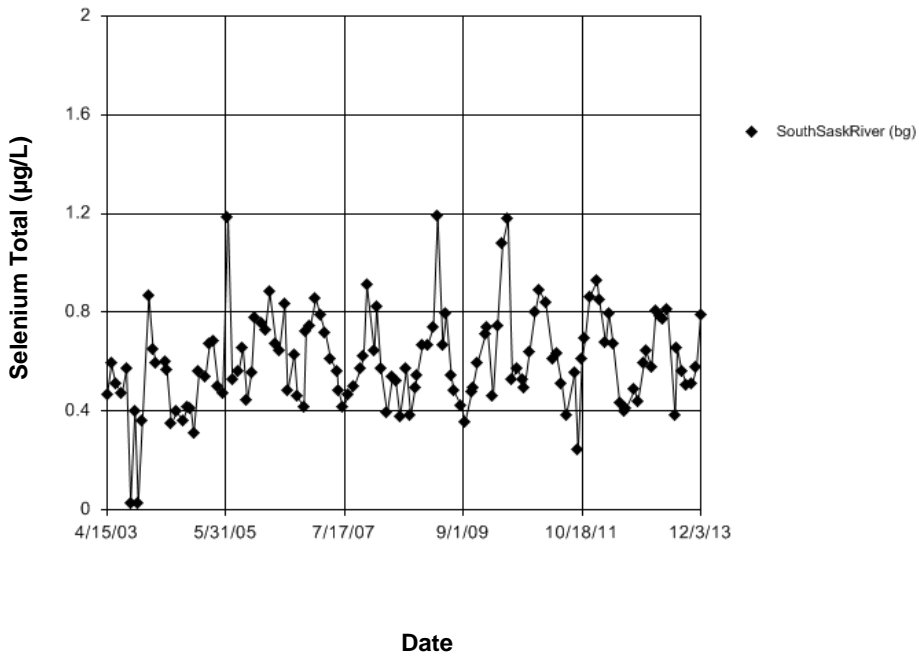


Figure E679 South Saskatchewan River: Selenium Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
 Calculated Kruskal-Wallis statistic = 29.45
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 29.45
 Adjusted Kruskal-Wallis statistic (H') = 29.45

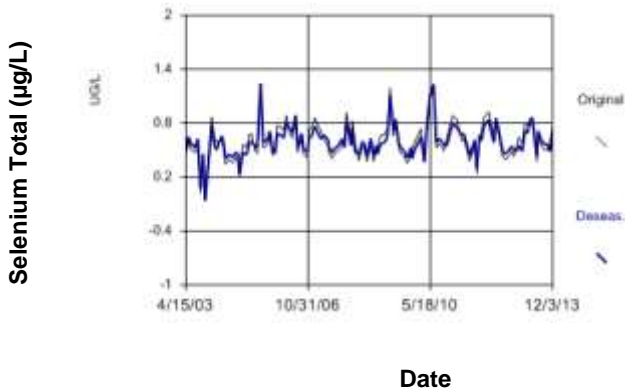


Figure E680 South Saskatchewan River: Selenium Total

Seasonal Kendall

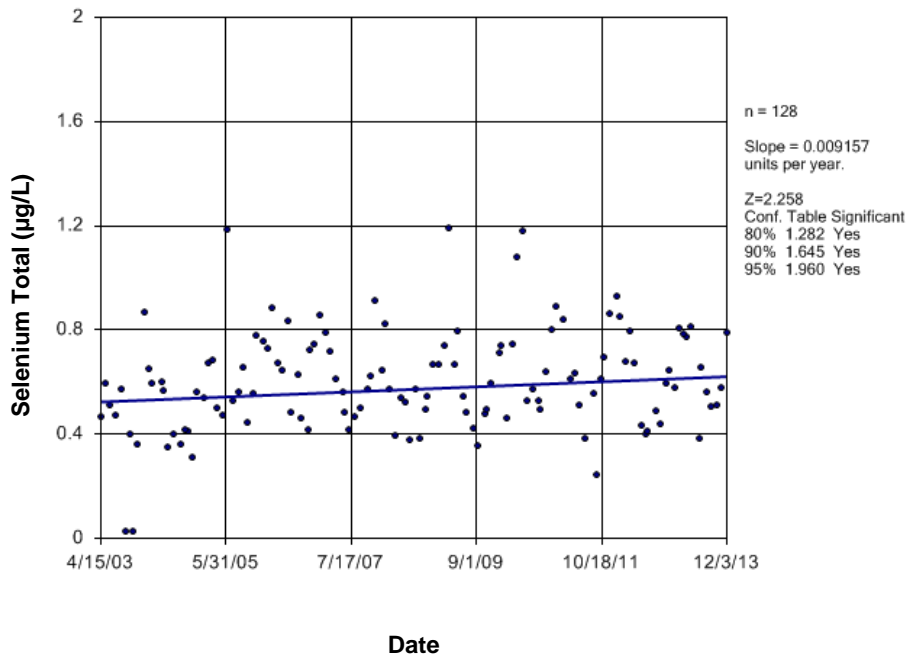


Figure E681 South Saskatchewan River: Selenium Total

Time Series

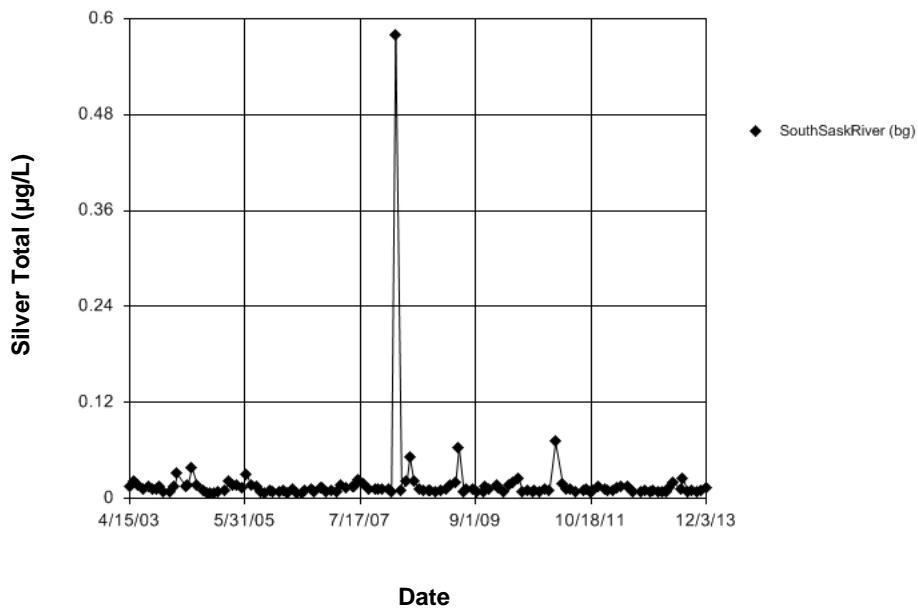


Figure E682 South Saskatchewan River: Silver Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 4.259
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 1 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 4.259
 Adjusted Kruskal-Wallis statistic (H') = 4.259

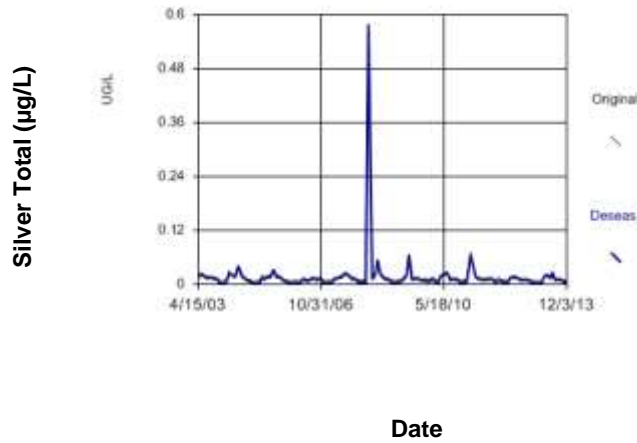


Figure E683 South Saskatchewan River: Silver Total

Seasonal Kendall

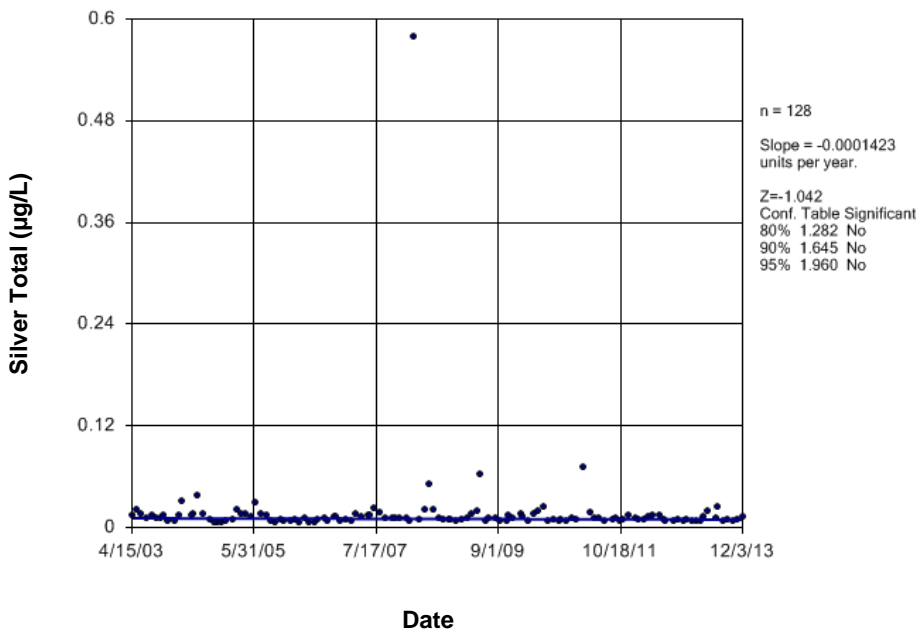


Figure E684 South Saskatchewan River: Silver Total

Time Series

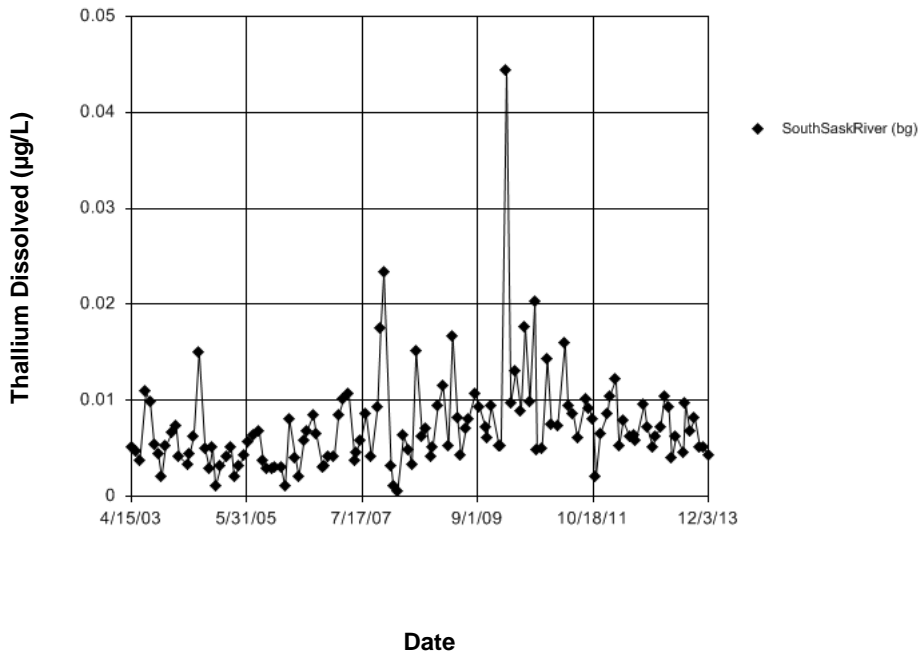


Figure E685 South Saskatchewan River: Thallium Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 1.11
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 4 groups of data in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 1.11
 Adjusted Kruskal-Wallis statistic (H') = 1.11

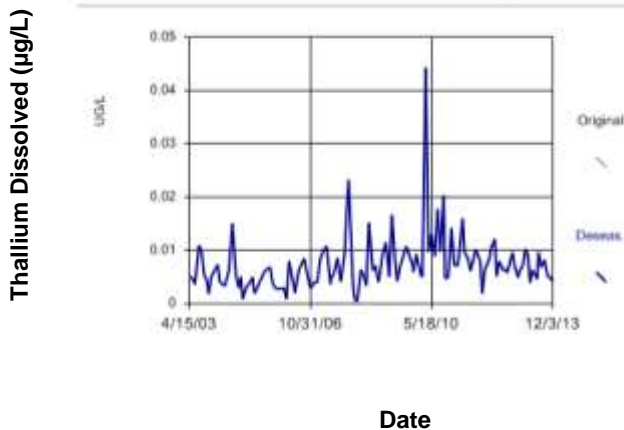


Figure E686 South Saskatchewan River: Thallium Dissolved

Sen's Slope Estimator

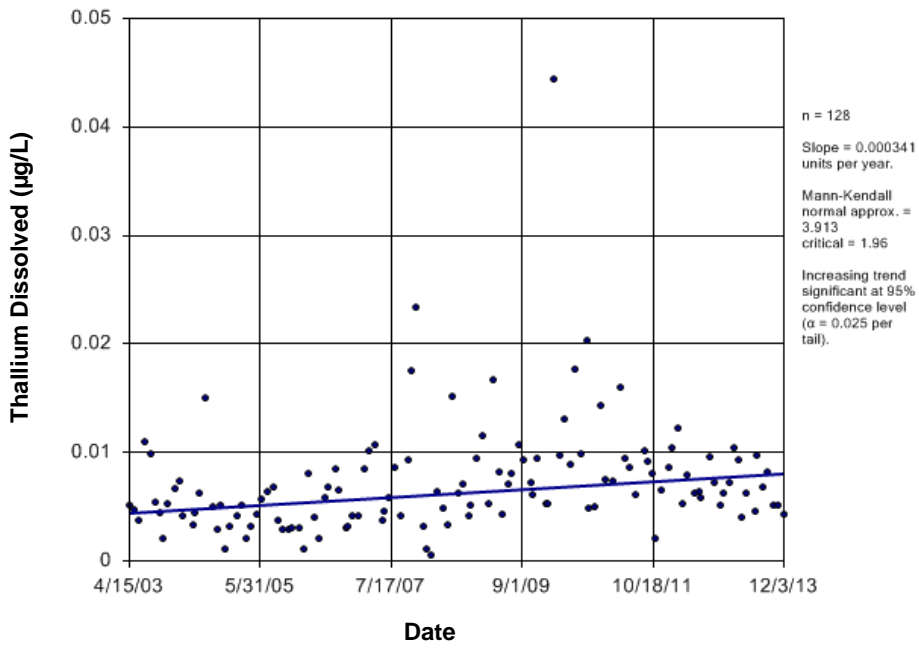


Figure E687 South Saskatchewan River: Thallium Dissolved

Time Series

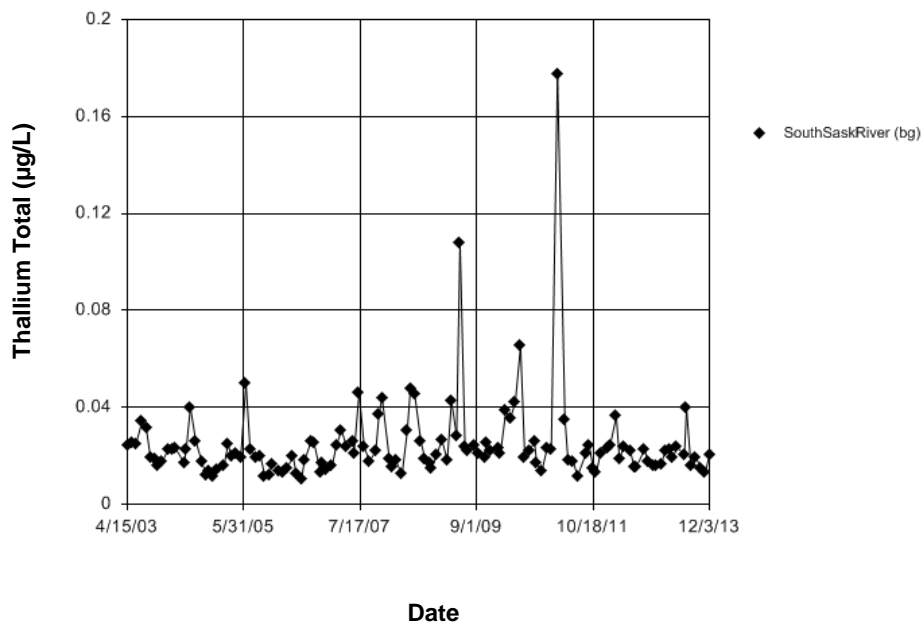


Figure E688 South Saskatchewan River: Thallium Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 2.321
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 3 groups of time in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 2.321
 Adjusted Kruskal-Wallis statistic (H') = 2.321

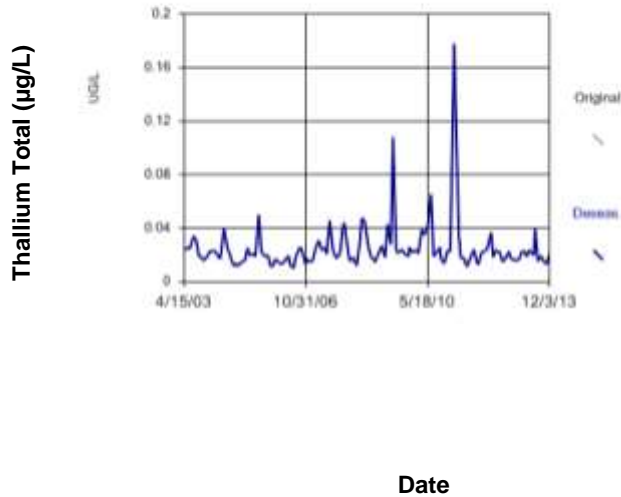


Figure E689 South Saskatchewan River: Thallium Total

Sen's Slope Estimator

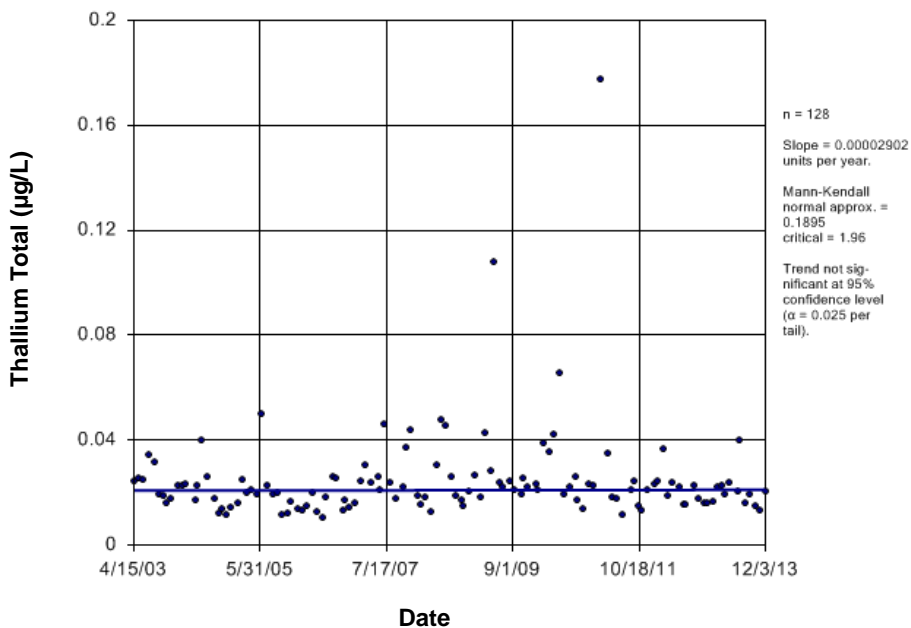


Figure E690 South Saskatchewan River: Thallium Total

Time Series

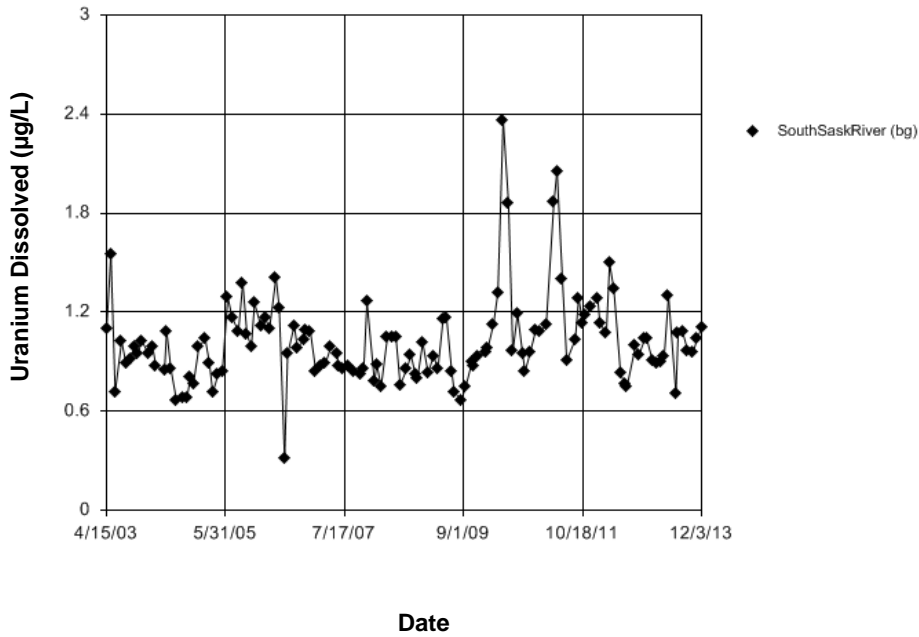


Figure E691 South Saskatchewan River: Uranium Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.08246. Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level. There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal. Kruskal-Wallis statistic (H) = 0.08246. Adjusted Kruskal-Wallis statistic (H') = 0.08246.

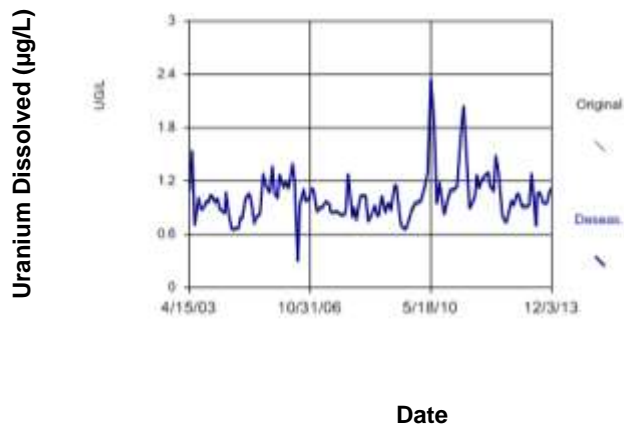


Figure E692 South Saskatchewan River: Uranium Dissolved

Sen's Slope Estimator

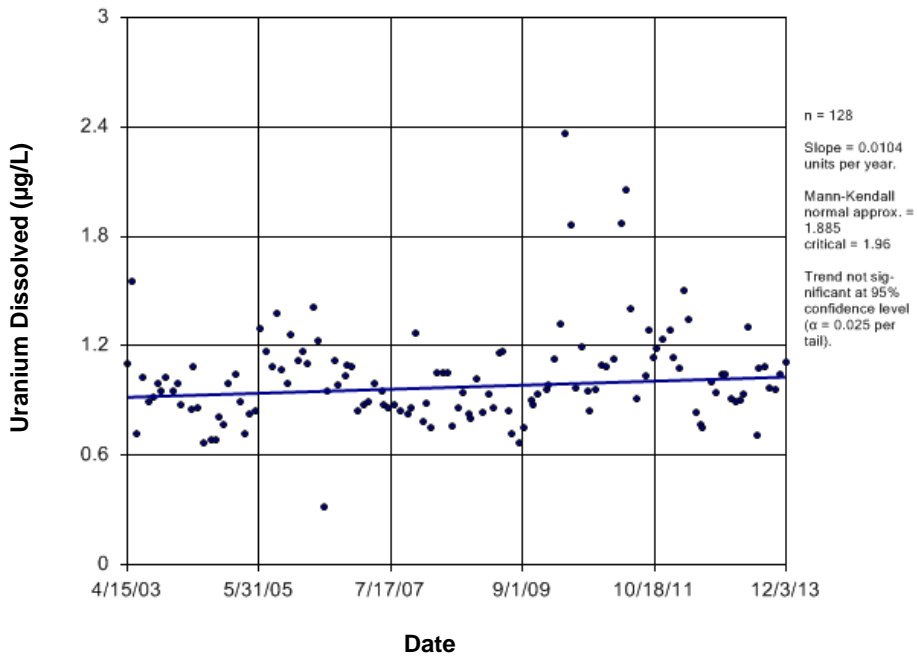


Figure E693 South Saskatchewan River: Uranium Dissolved

Time Series

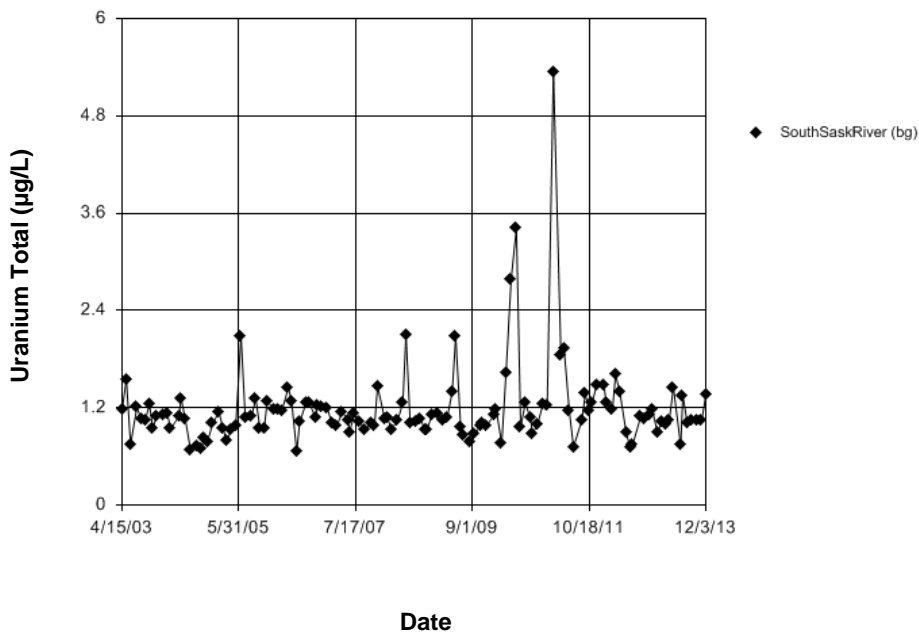


Figure E694 South Saskatchewan River: Uranium Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates NO SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is less than or equal to the Chi-squared value, we conclude that no season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 0.1079
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 7 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 0.1079
 Adjusted Kruskal-Wallis statistic (H') = 0.1079

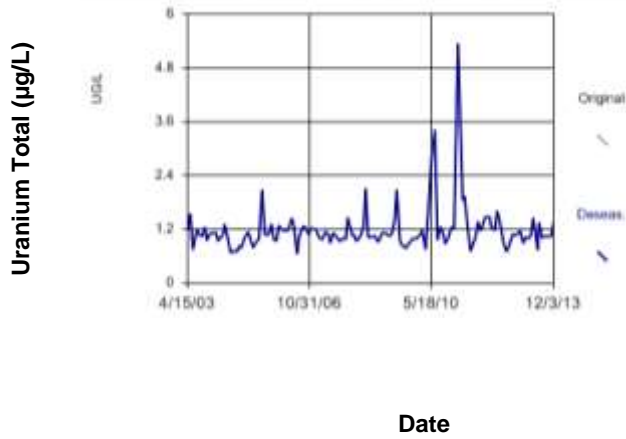


Figure E695 South Saskatchewan River: Uranium Total

Sen's Slope Estimator

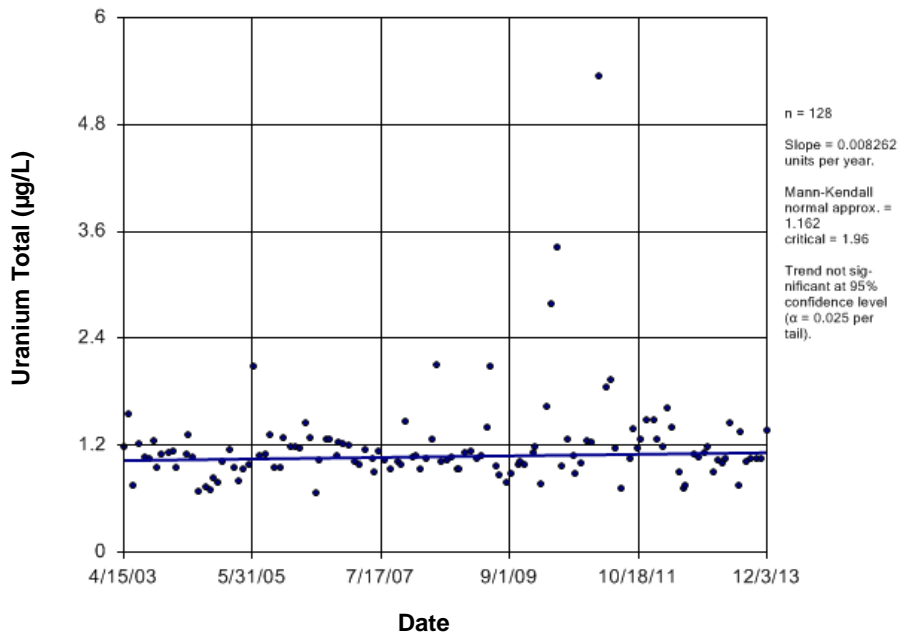


Figure E696 South Saskatchewan River: Uranium Total

Time Series

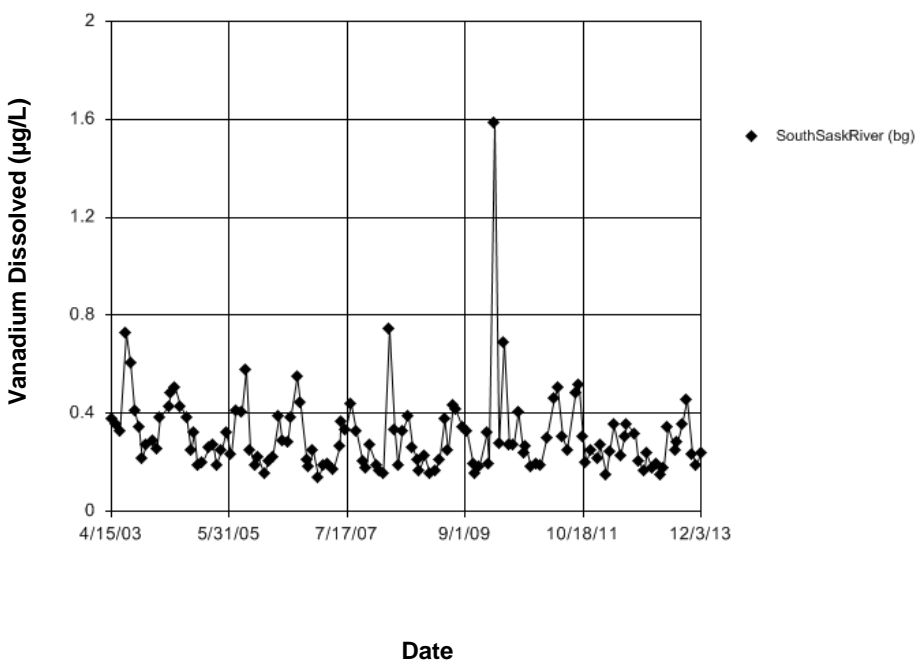


Figure E697 South Saskatchewan River: Vanadium Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season.
 Calculated Kruskal-Wallis statistic = 50.91
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 3 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H') = 50.91
 Adjusted Kruskal-Wallis statistic (H') = 50.91

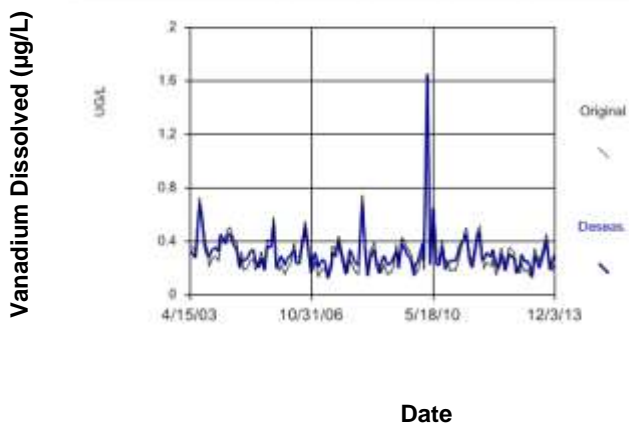


Figure E698 South Saskatchewan River: Vanadium Dissolved

Seasonal Kendall

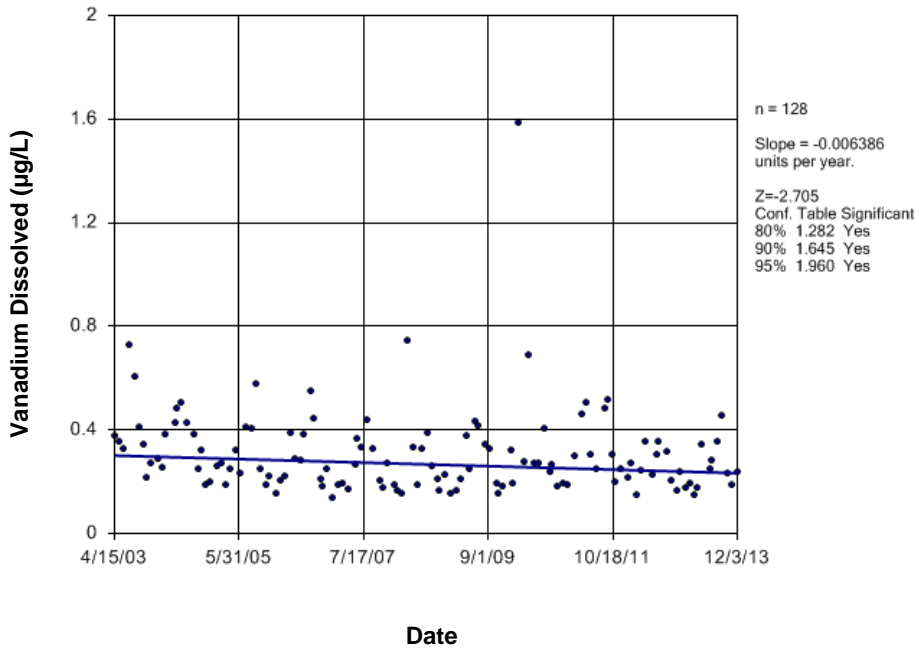


Figure E699 South Saskatchewan River: Vanadium Dissolved

Time Series

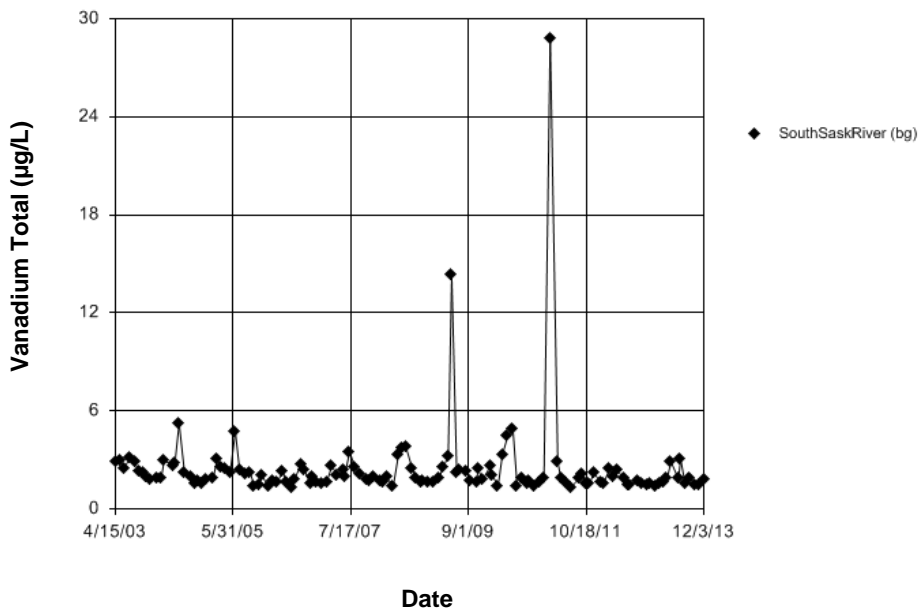


Figure E700 South Saskatchewan River: Vanadium Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent from any other season. Calculated Kruskal-Wallis statistic = 9.612
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 3 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 9.612
 Adjusted Kruskal-Wallis statistic (H') = 9.612

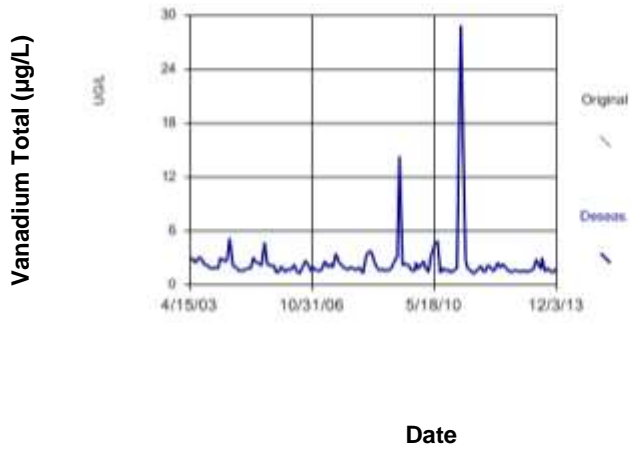


Figure E701 South Saskatchewan River: Vanadium Total

Seasonal Kendall

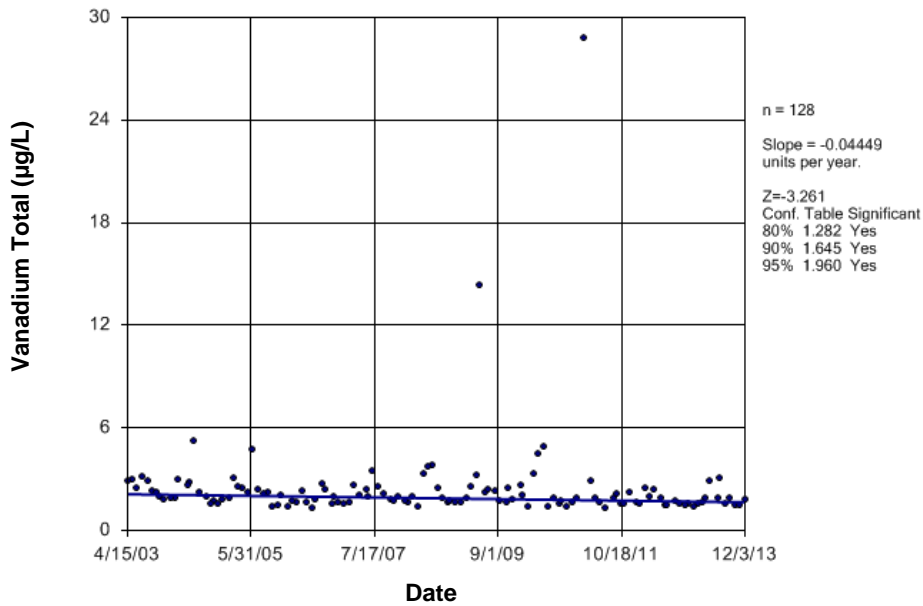


Figure E702 South Saskatchewan River: Vanadium Total

Time Series

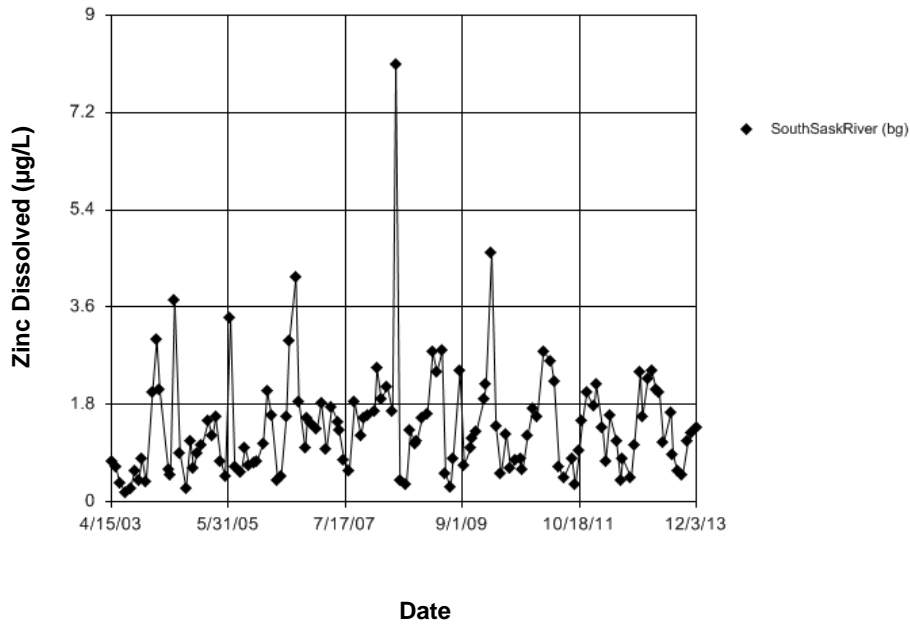


Figure E703 South Saskatchewan River: Zinc Dissolved

Seasonality

For the data shown, the Kruskal-Wallis test indicates **SEASONALITY** at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 25.16. Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level. There were 0 groups of ties in the data, so no adjustment to the Kruskal-Wallis statistic (0) was necessary.

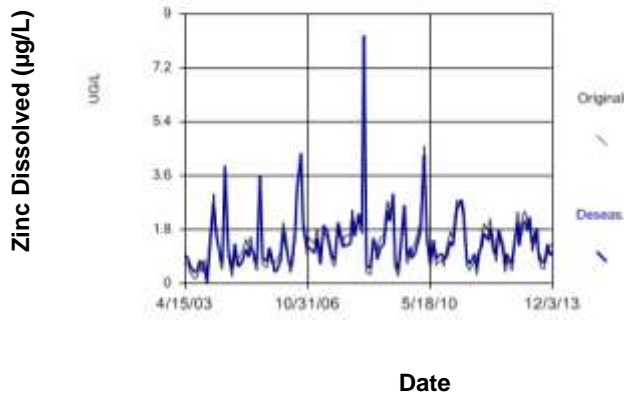


Figure E704 South Saskatchewan River: Zinc Dissolved

Seasonal Kendall

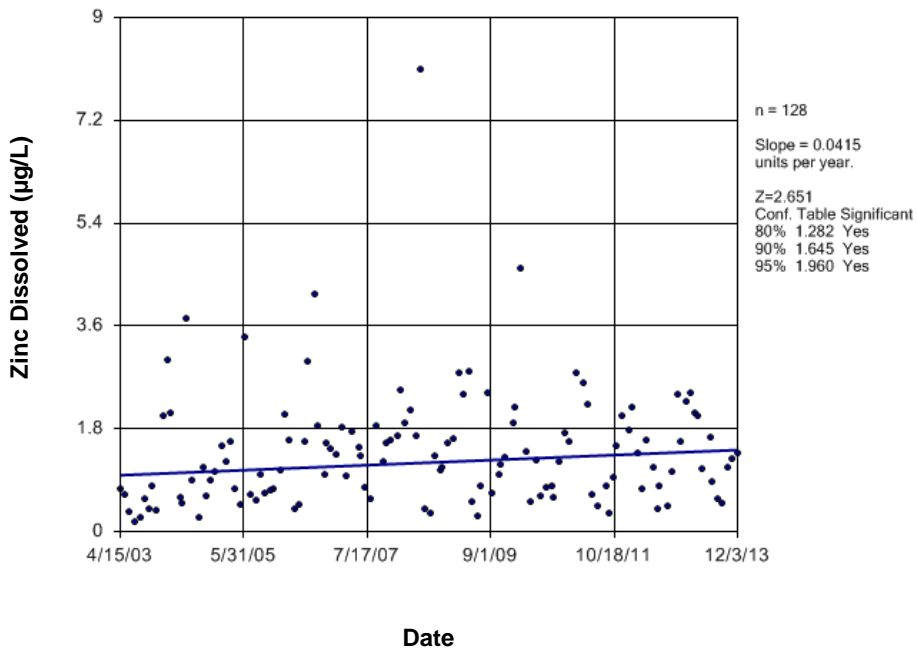


Figure E705 South Saskatchewan River: Zinc Dissolved

Time Series

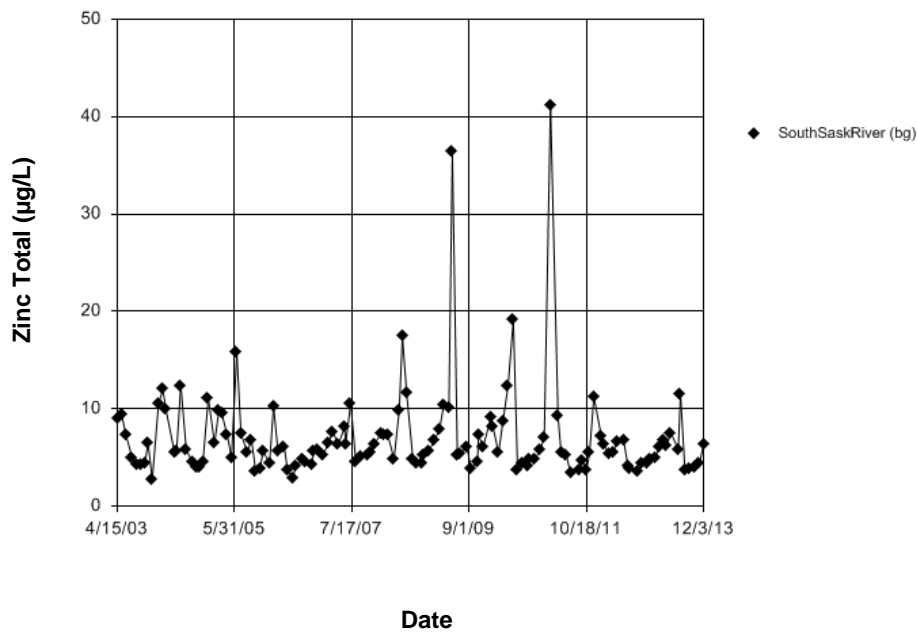


Figure E706 South Saskatchewan River: Zinc Total

Seasonality

For the data shown, the Kruskal-Wallis test indicates SEASONALITY at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one season has a significantly different median concentration of this constituent than any other season. Calculated Kruskal-Wallis statistic = 8.121
 Tabulated Chi-Squared value = 3.841 with 1 degree of freedom at the 5% significance level.
 There were 1 groups of data in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
 Kruskal-Wallis statistic (H) = 8.121
 Adjusted Kruskal-Wallis statistic (H') = 8.121

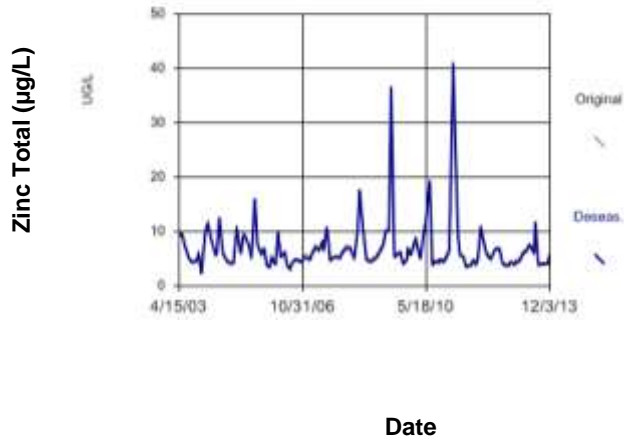


Figure E707 South Saskatchewan River: Zinc Total

Seasonal Kendall

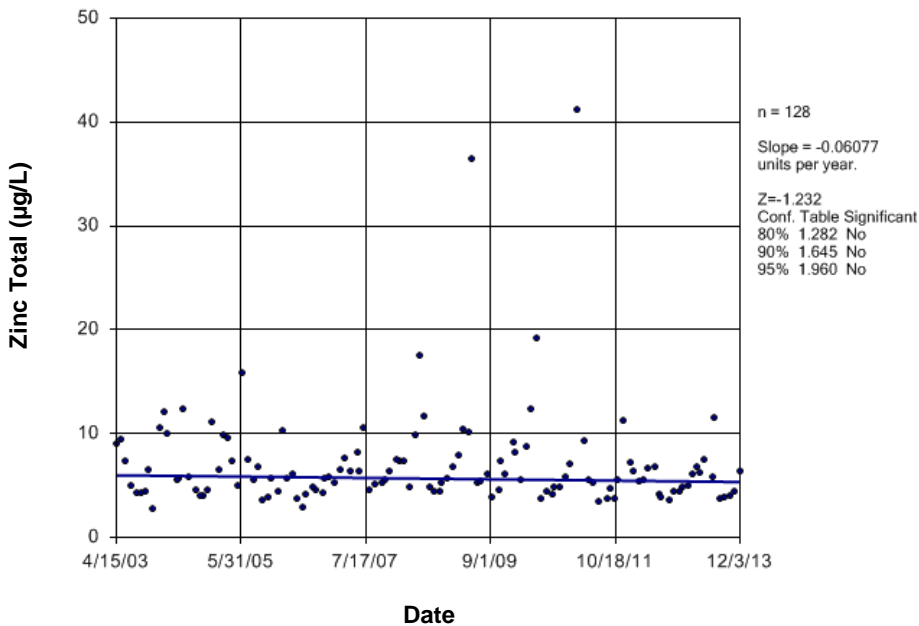


Figure E708 South Saskatchewan River: Zinc Total



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