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30 June 2003

Fred McManus
US-EPA, Region IV
Wetlands Branch
61 Forsyth St.
Atlanta, GA 30303-8960

Re: Little Venice Water Quality Monitoring Quarterly Reports #9

Dear Mr. McManus:

This letter serves to transmit the Little Venice Water Quality Monitoring Quarterly Report as per our EPA Agreement #X994621-94-0. This report consists of this letter along with corresponding table and figures.

Project Background

This report includes cumulative water quality and bacteriological data from 9 stations within the Little Venice subdivision collected during the period of record Jan. – Mar. 2003 (Fig. 1). Water was collected weekly for bacteriological analysis by SYNAGRO for enumeration of fecal coliform and enterococci (counts per 100 ml). Field parameters collected weekly at both the surface and bottom of the water column at each station include salinity (psu), temperature (°C), and dissolved oxygen (DO; mg l⁻¹). Water quality parameters monitored weekly at each station include total nitrogen (TN), total phosphorus (TP), and chlorophyll *a* (CHLA; µg l⁻¹). Monthly monitoring at each station included the dissolved nutrients nitrate+nitrite (NO_x), nitrite (NO₂), nitrate (NO₃), ammonium (NH₄), inorganic nitrogen (DIN), soluble reactive phosphate (SRP), and silicate (Si(OH)₄). Concentrations for all of these variables are reported in ppm unless noted otherwise. In addition, monthly deployment of ISCO autosamplers at rotating sites were programmed to collect 12 samples per day over a 2 day period. These samples were

analyzed for TN and TP. Hydrolab datasondes accompanied the autosamplers to measure and log temperature, salinity, DO, and pH on an hourly basis.

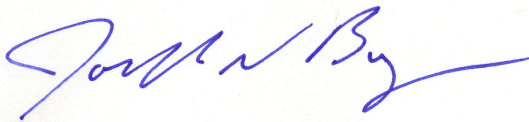
Results

Figures 2-10 show bacterial counts for the canal stations for the complete period of record. The FL state standard for single counts of fecal coliforms in bathing waters is 800 counts/100ml while the EPA recommended standard for enterococci is 104 counts/100ml. Fecal coliform counts exceeded the FL state standard 0 times while enterococci counts exceeded EPA recommended standards 48 times over the period of record. One of the most interesting aspects of the bacteriological data is the growing evidence of a seasonal cycle in enterococci numbers.

Figures 11-19 show time series of TN, TP, CHLA, salinity, and DO at all stations. The heads of the canals generally have the highest TN, TP and CHLA (Fig. 20) and lowest DO (Fig. 21). State of Florida Rule 62-302.530, for Class II marine waters specifies that DO “shall never be less than 4.0” mg l⁻¹. To date there have been 397 surface DO and 438 bottom DO measurements below the State standard. As to nutrient criteria, there is no standard for Florida marine waters. However, State of Florida Rule 62-02.300(13), F.A.C. states that “particular consideration shall be given to the protection from nutrient enrichment of those presently containing very low nutrient concentrations: less than 0.3 milligrams per liter total nitrogen or less than 0.04 milligrams per liter total phosphorus.” Therefore, these benchmarks included in the TN and TP graphs are for illustrative purposes only. To date there have been 396 TN measurements and 14 TP values above these benchmarks.

If you have any questions about the content of this report, please do not hesitate to contact me at 305-348-4076, boyerj@fiu.edu.

Sincerely,



Joseph N. Boyer, Ph.D.
Associate Scientist

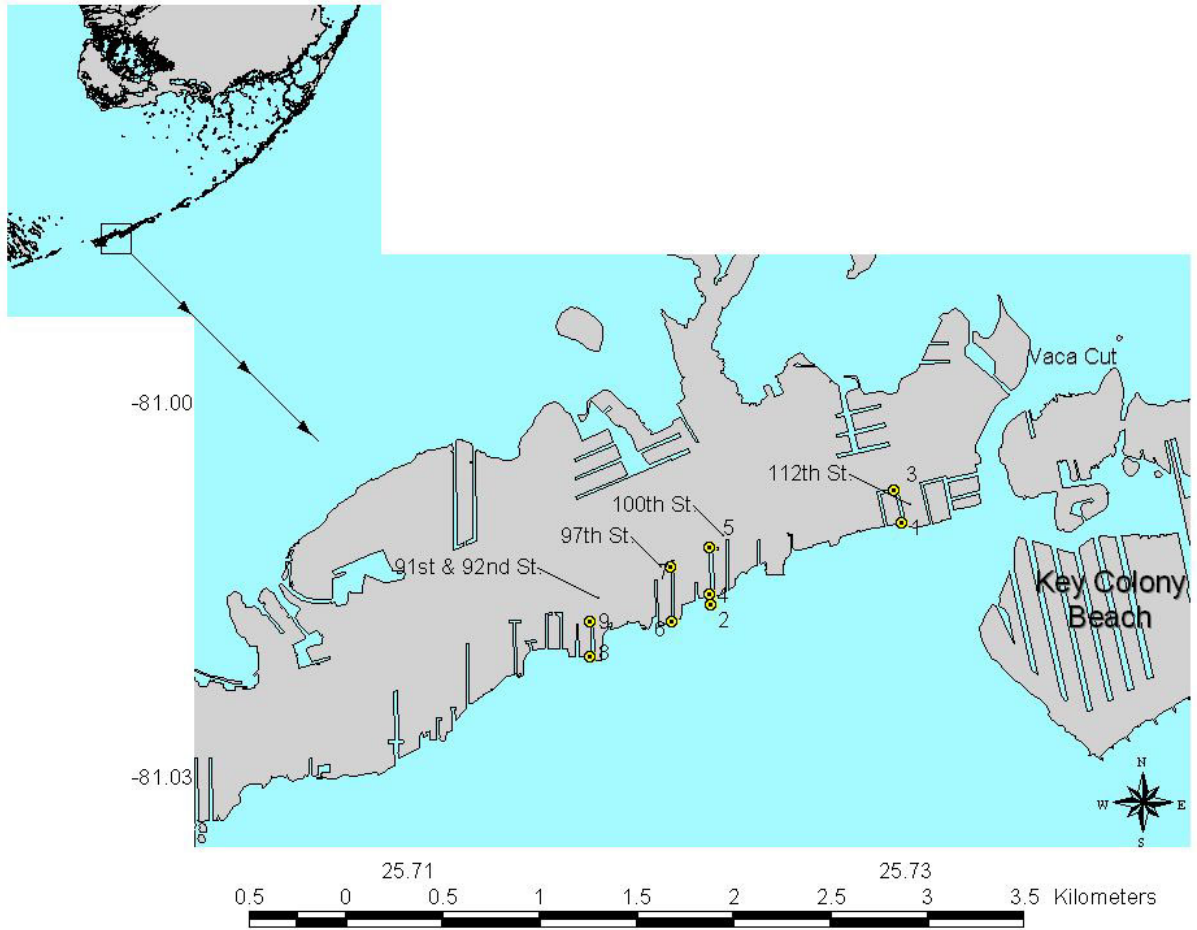


Figure 1.

Sta 2 - Nearshore of 112th St. Canal

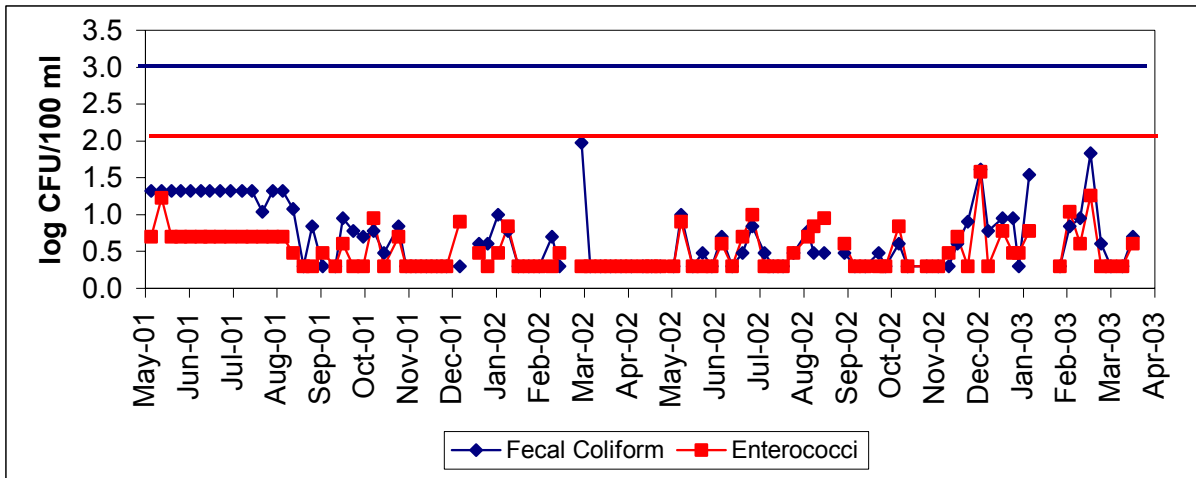


Figure 2

Sta 1 - Mouth of 112th St. Canal

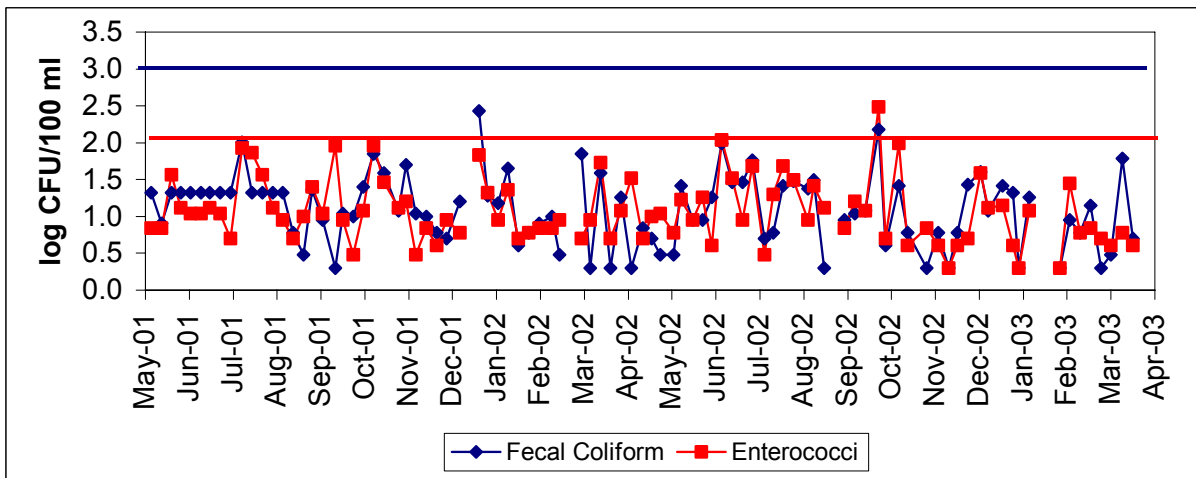


Figure 3

Sta 3 - Head of 112th St. Canal

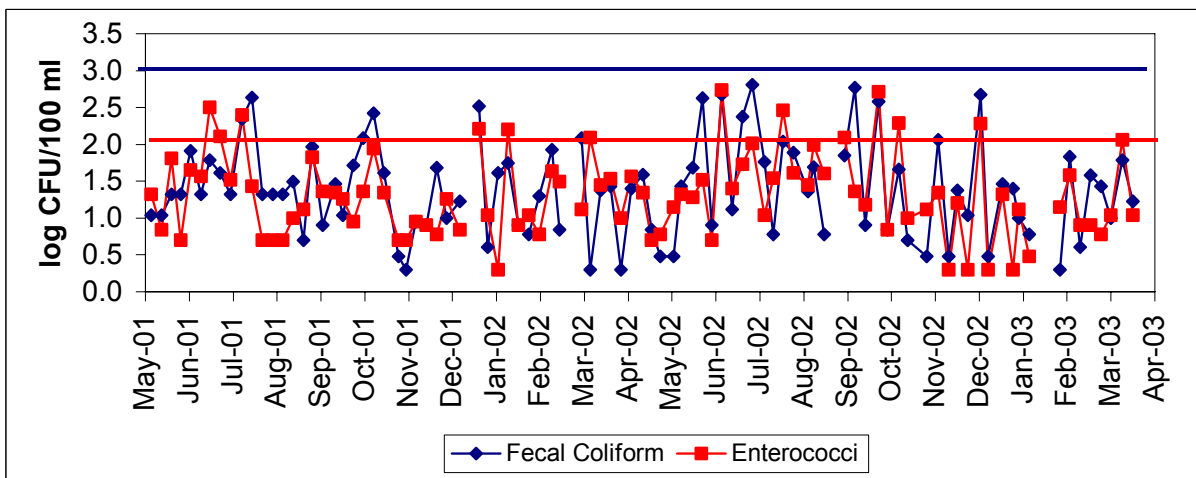


Figure 4

Sta 4 - Mouth of 100th St. Canal

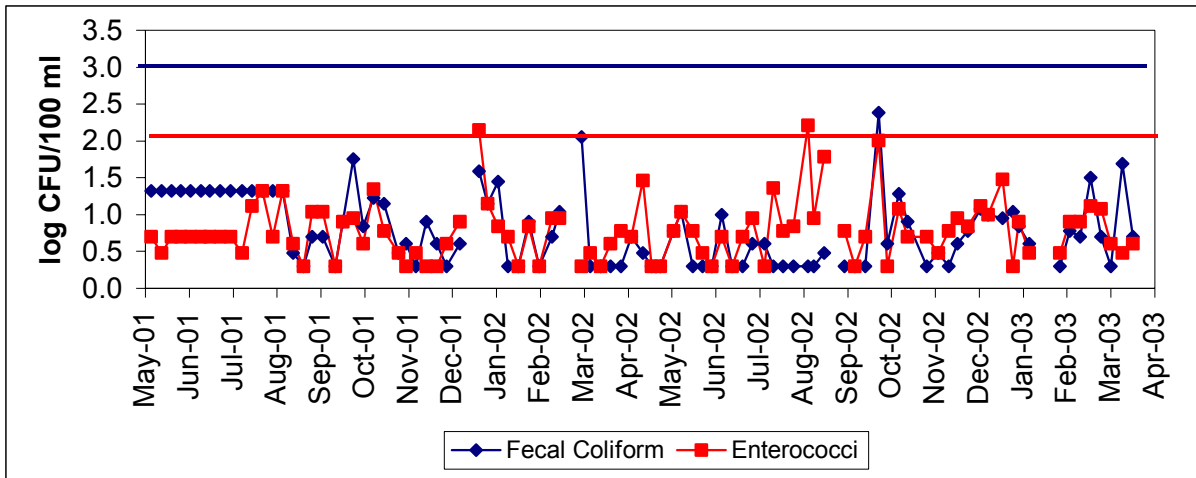


Figure 5

Sta 5 - Head of 100th St. Canal

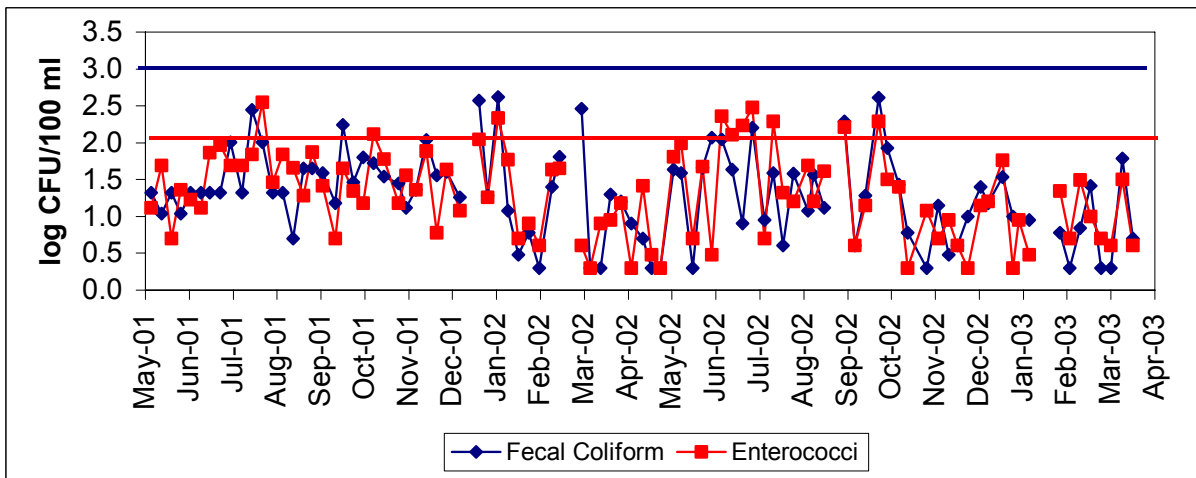


Figure 6

Sta 6 - Mouth of 97th St. Canal

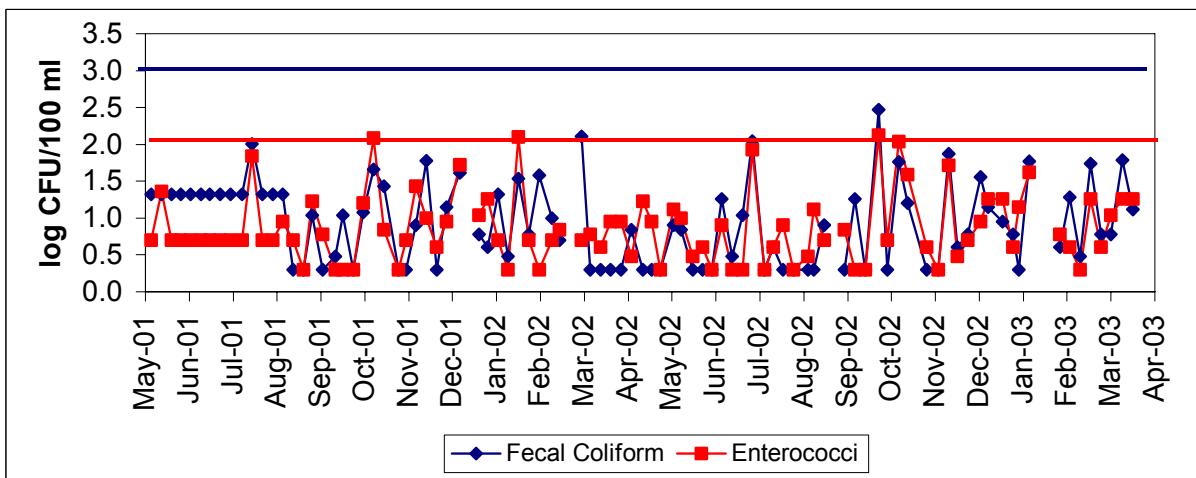


Figure 7

Sta 7 - Head of 97th St. Canal

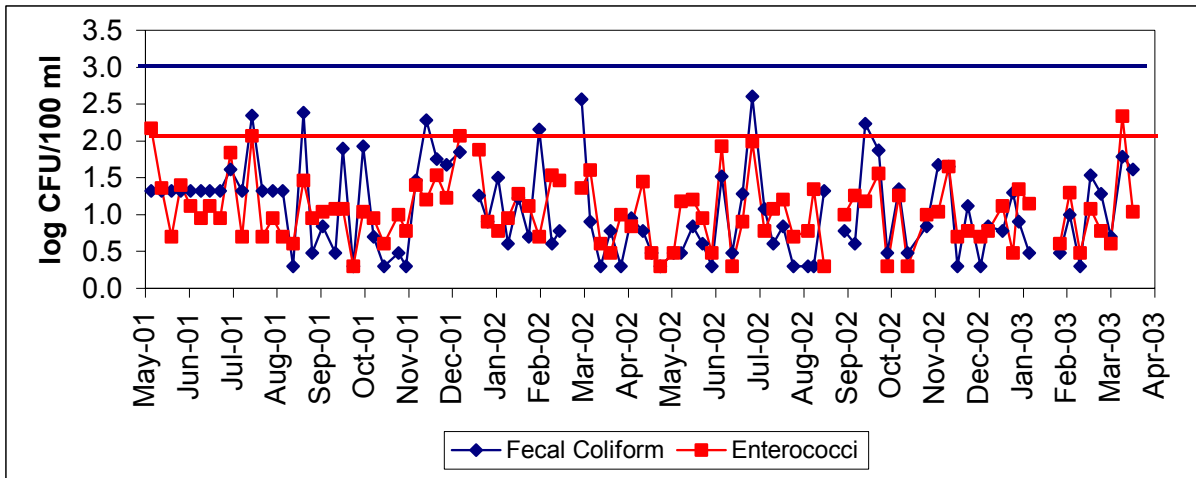


Figure 8

Sta 8 - Mouth of 91st St. Canal

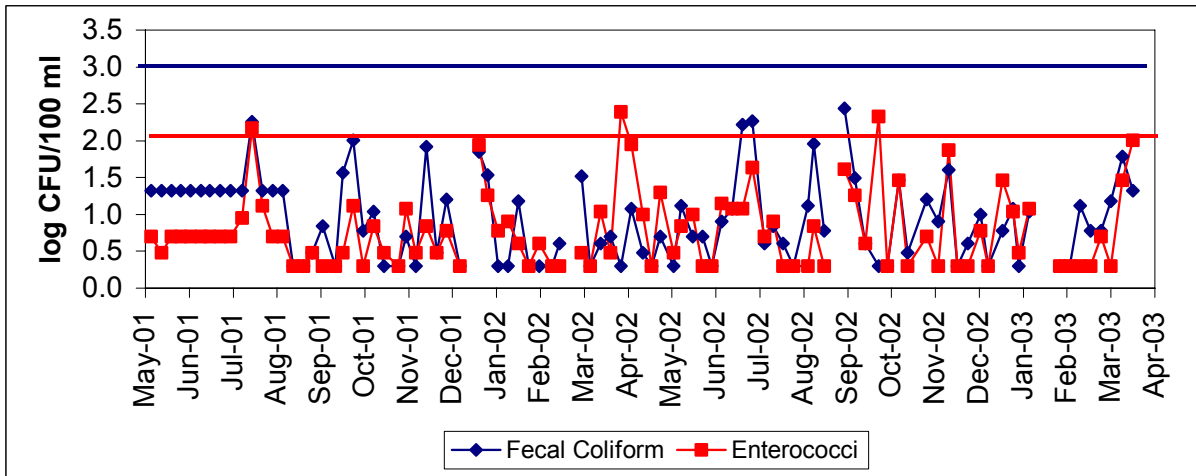


Figure 9

Sta 9 - Head of 91st St. Canal

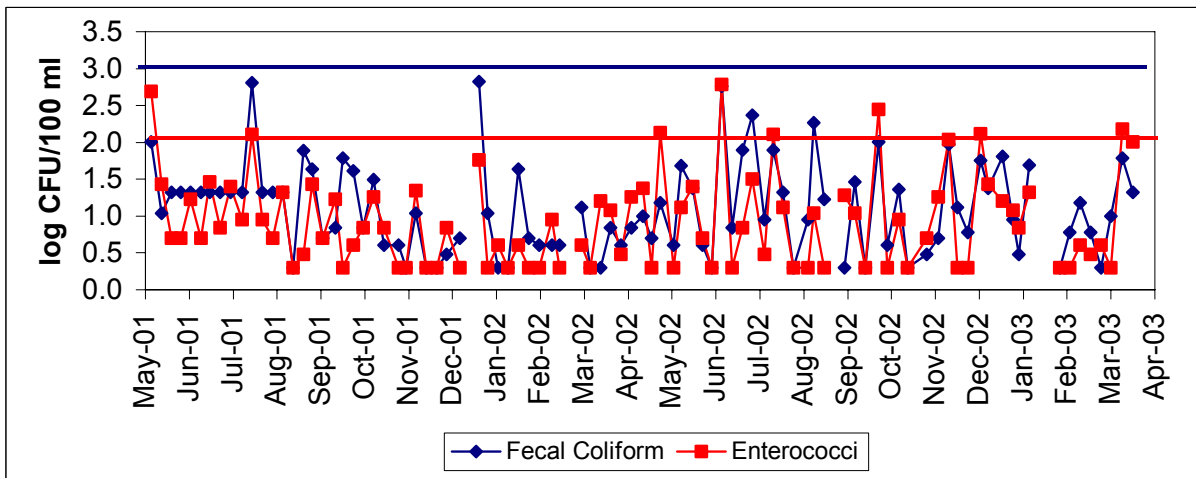


Figure 10

Sta. 2 - Nearshore of the 112th Street Canal

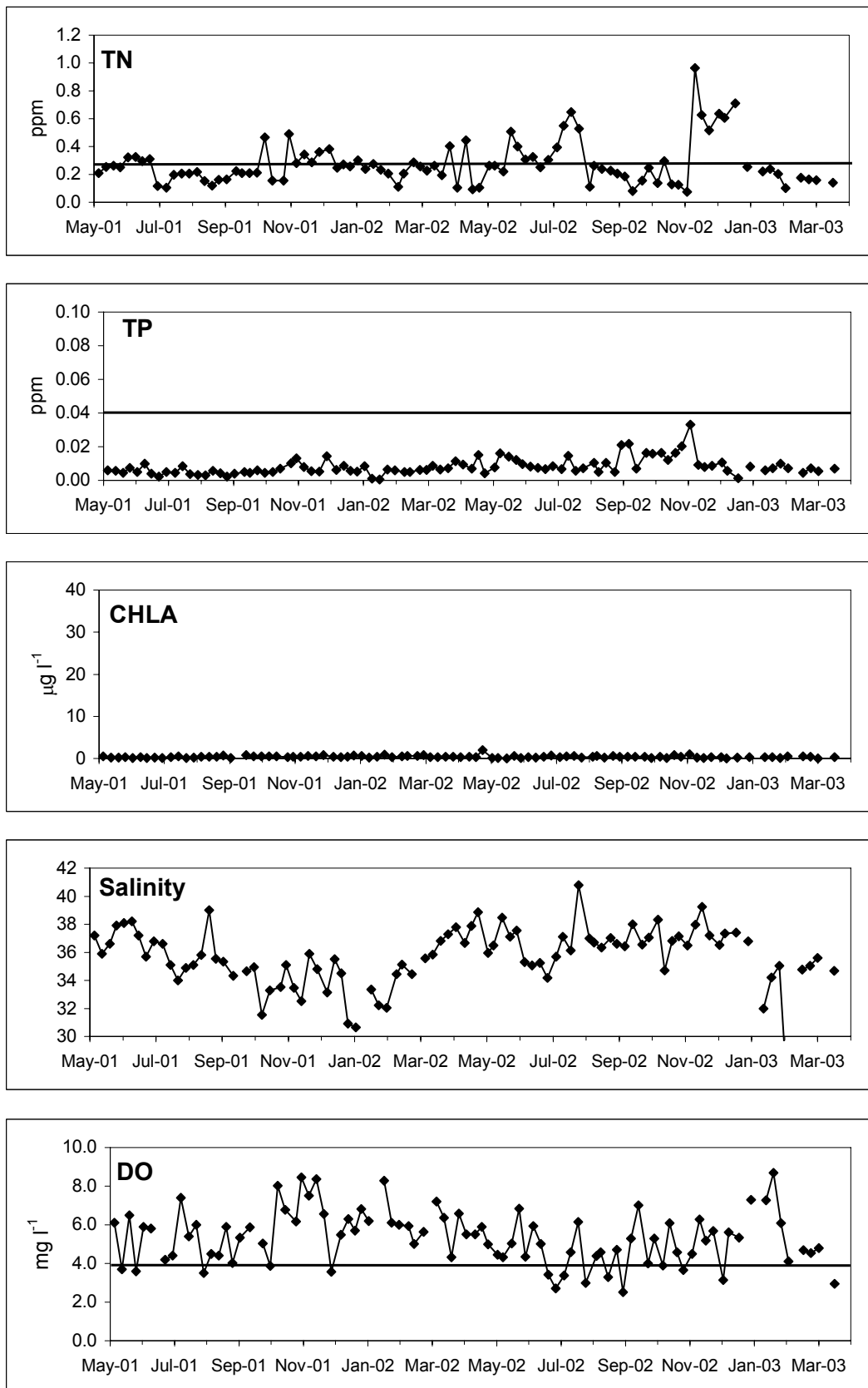


Figure 11

Sta. 1 - Mouth of the 112th Street Canal

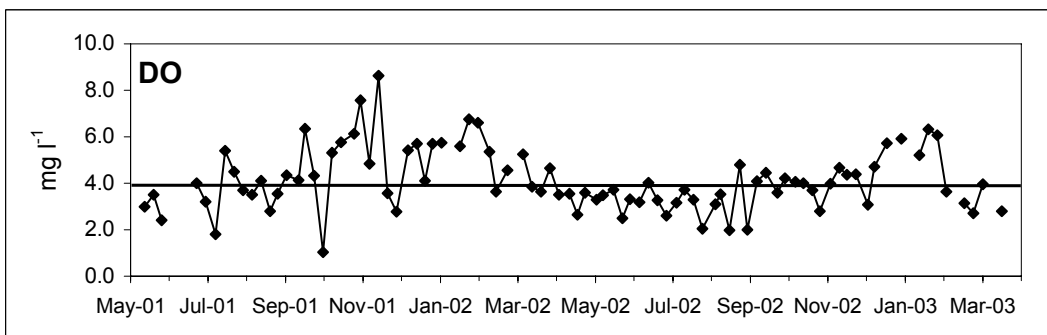
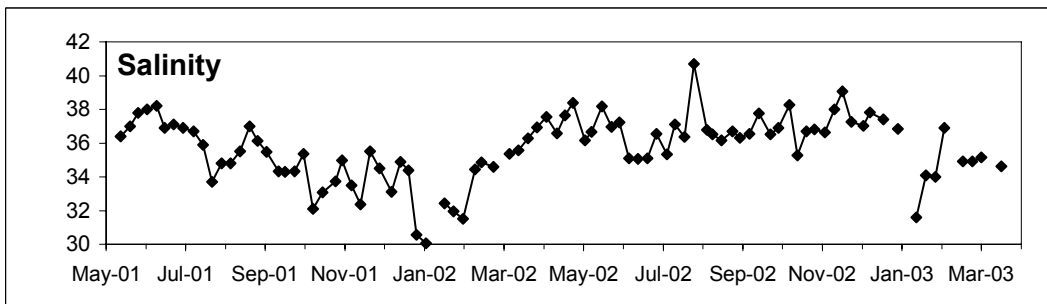
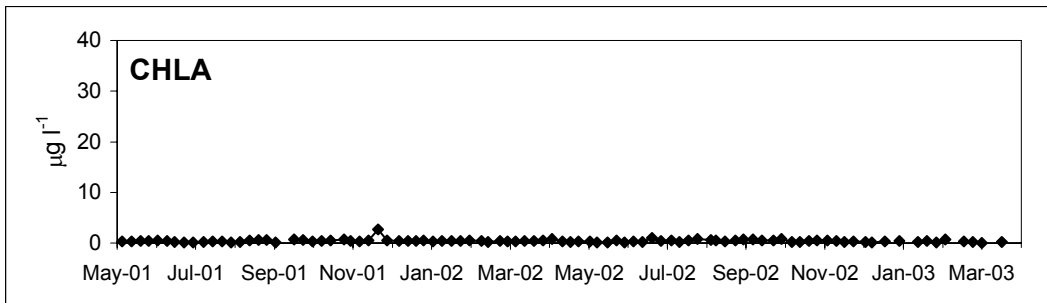
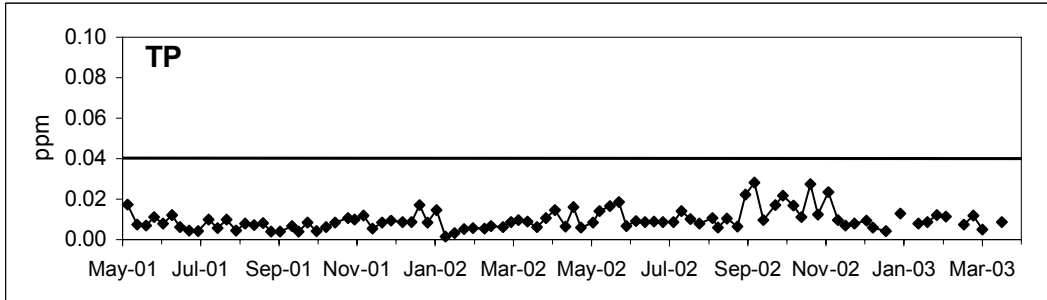
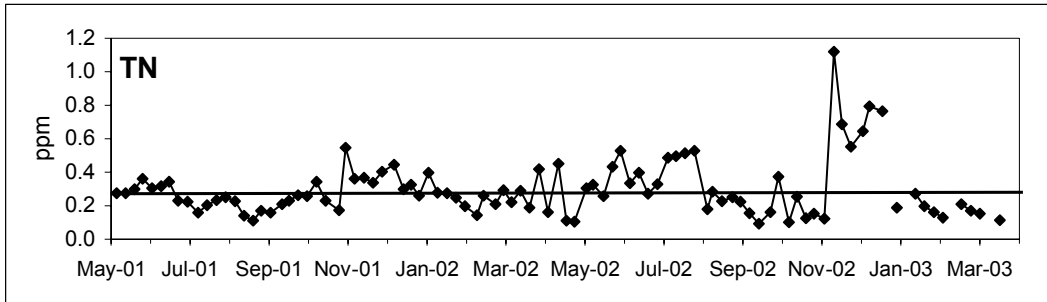


Figure 12

Sta. 3 - Head of the 112th Street Canal

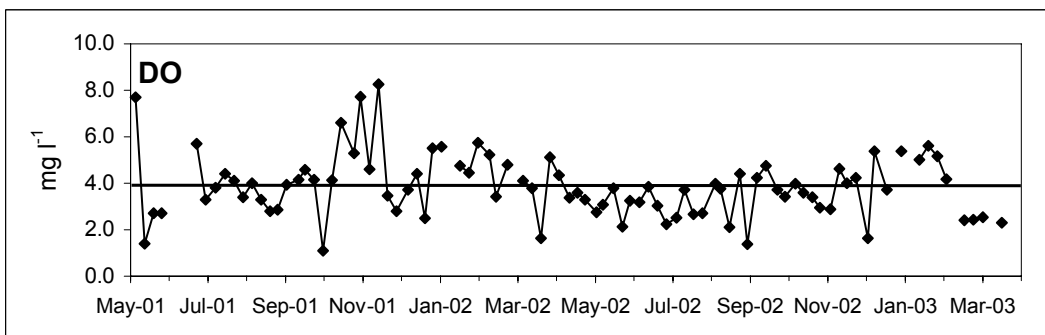
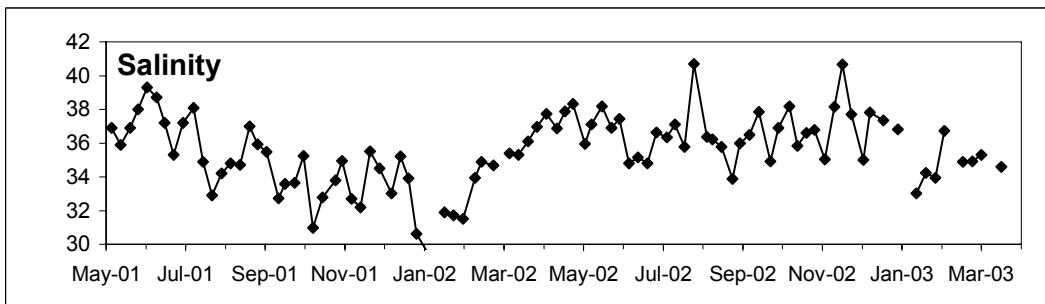
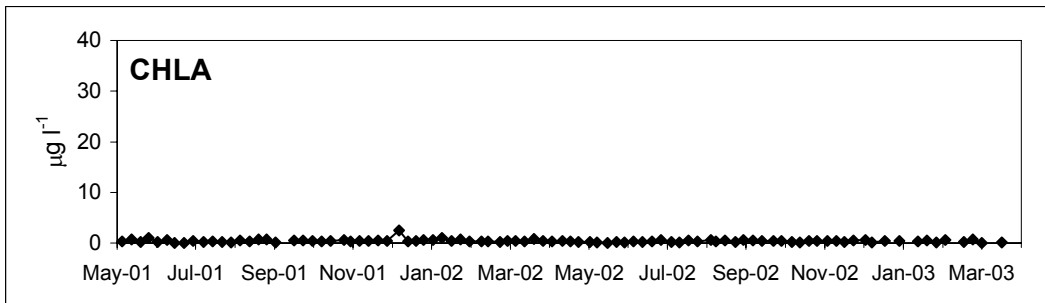
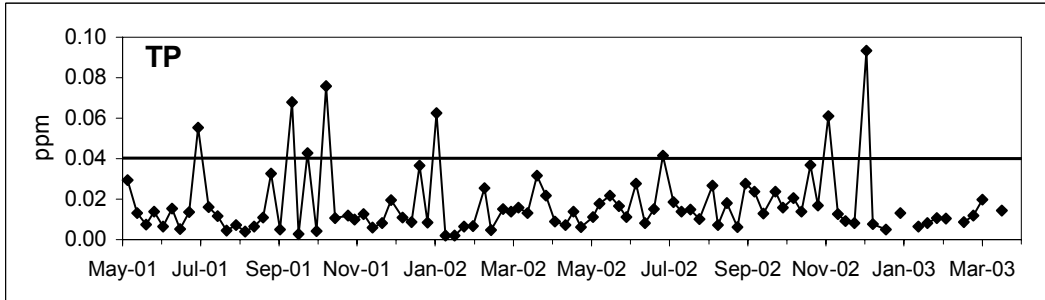
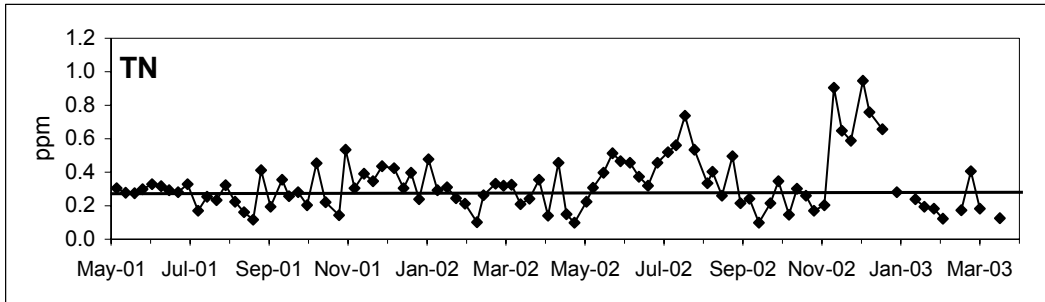


Figure 13

Sta. 4 - Mouth of the 100th Street Canal

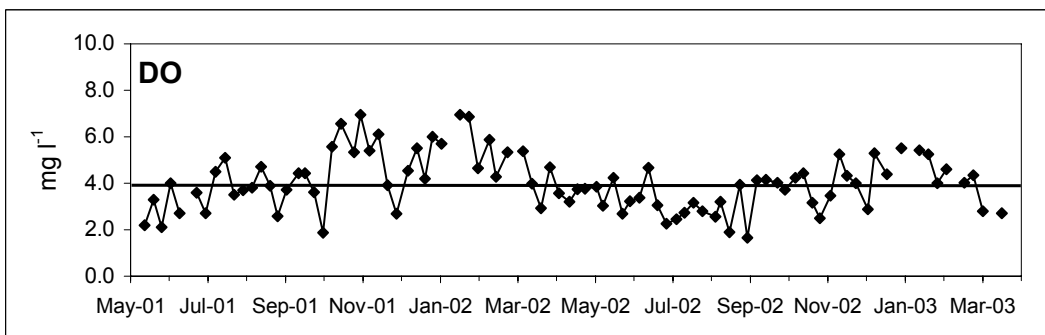
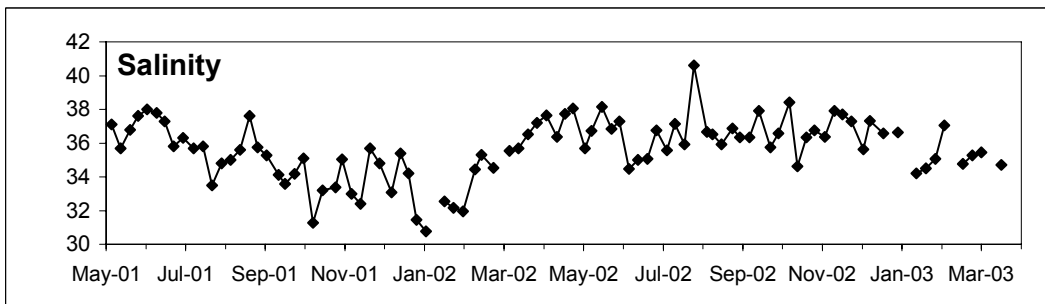
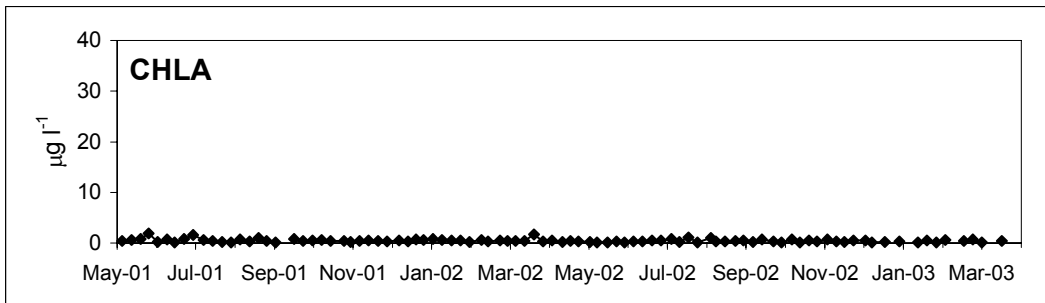
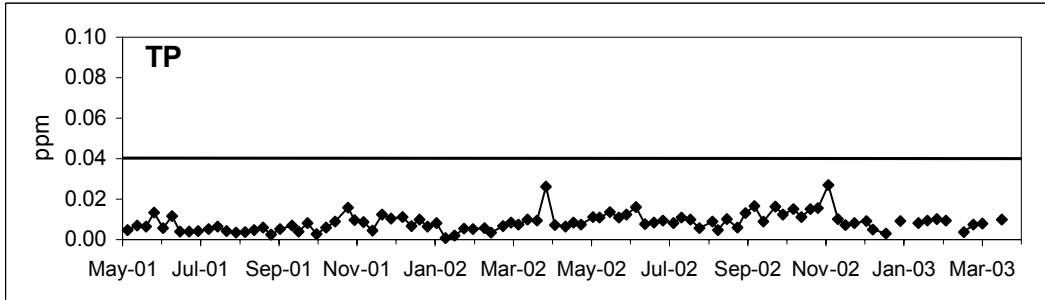
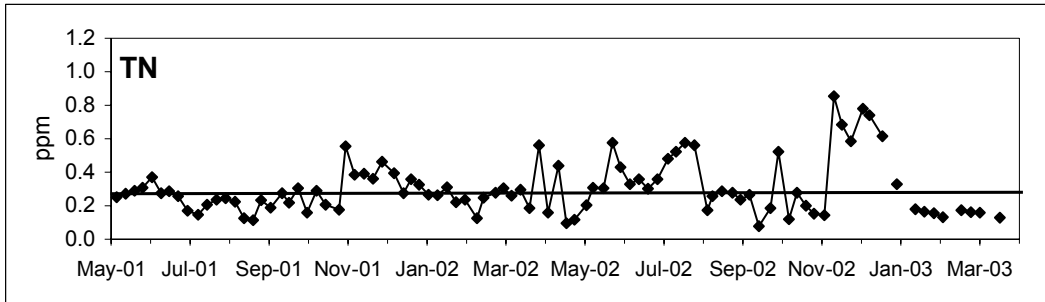


Figure 14

Sta. 5 - Head of the 100th Street Canal

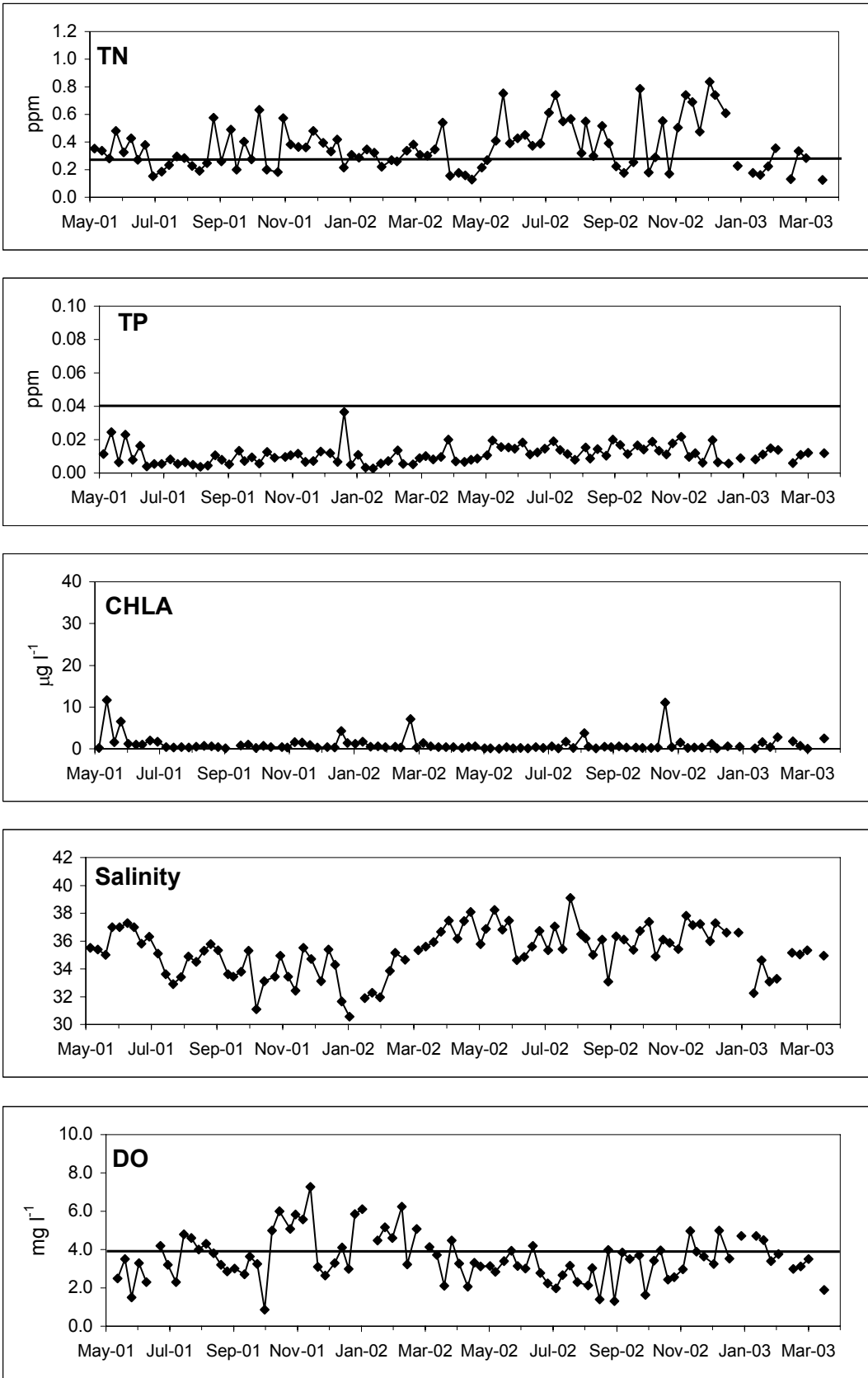


Figure 15

Sta. 6 - Mouth of the 97th Street Canal

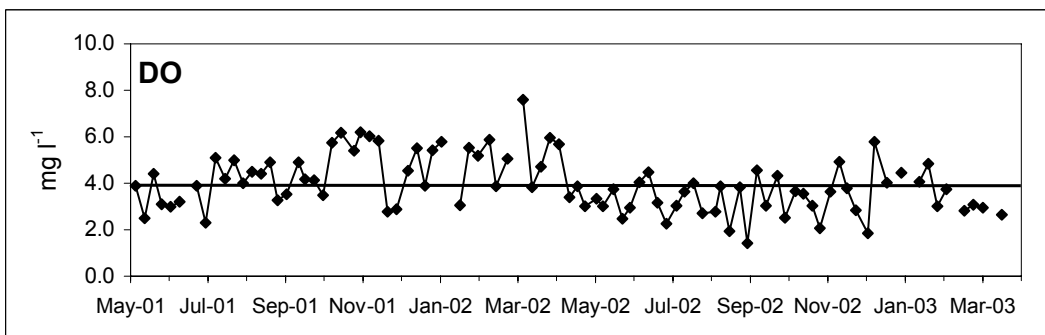
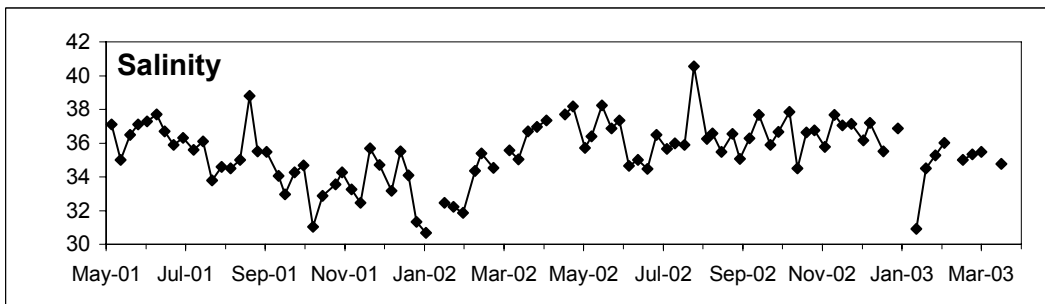
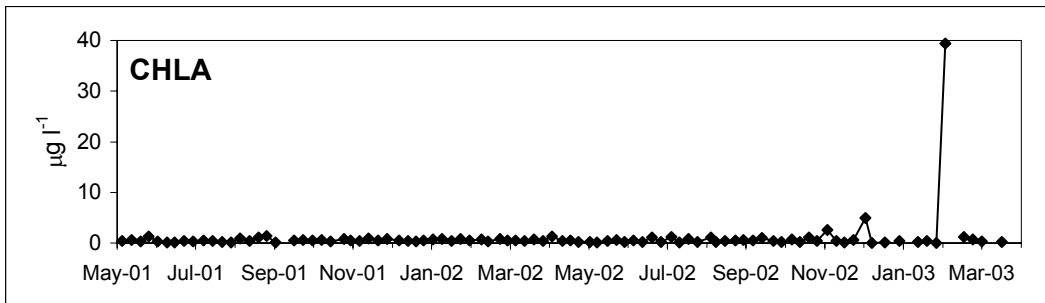
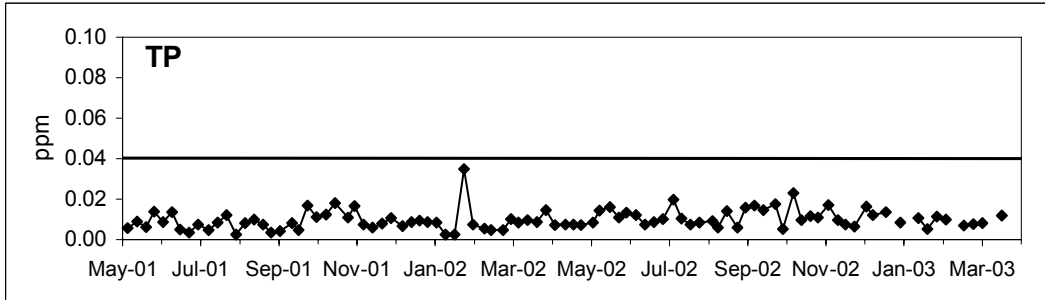
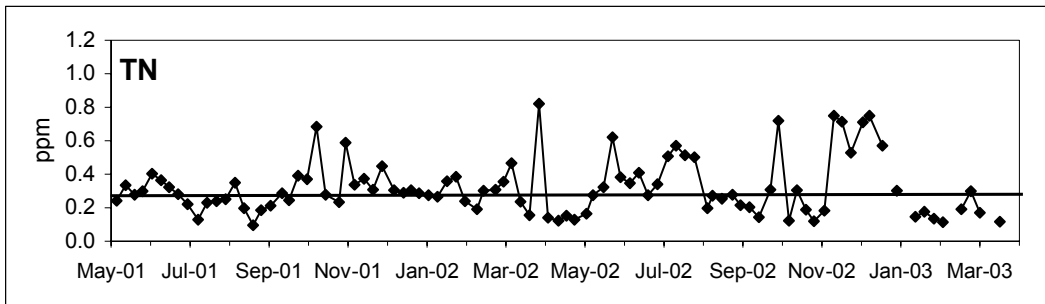


Figure 16

Sta. 7 - Head of the 97th Street Canal

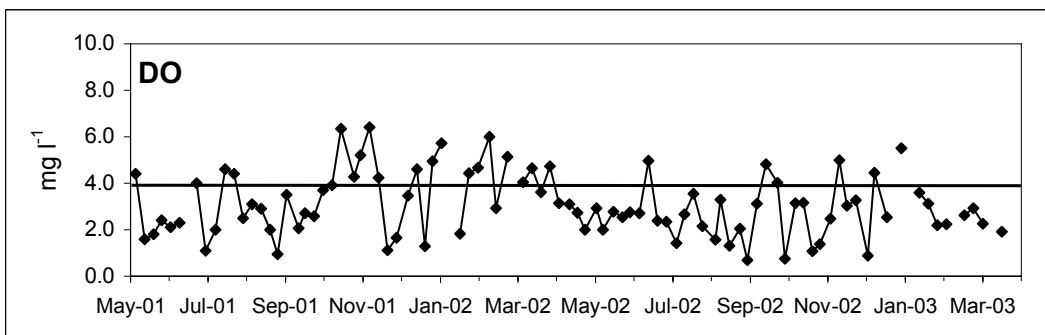
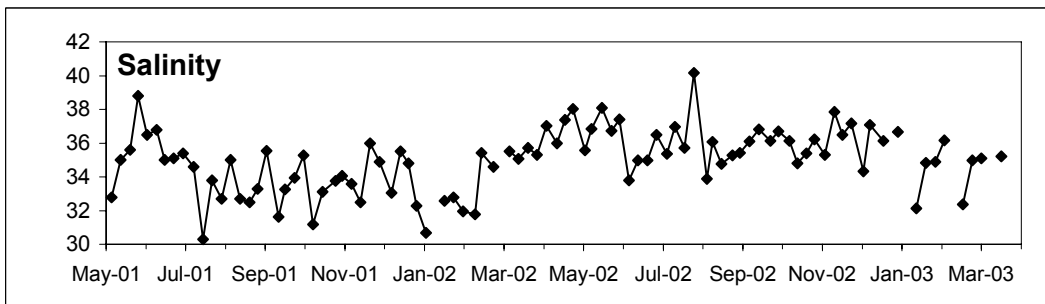
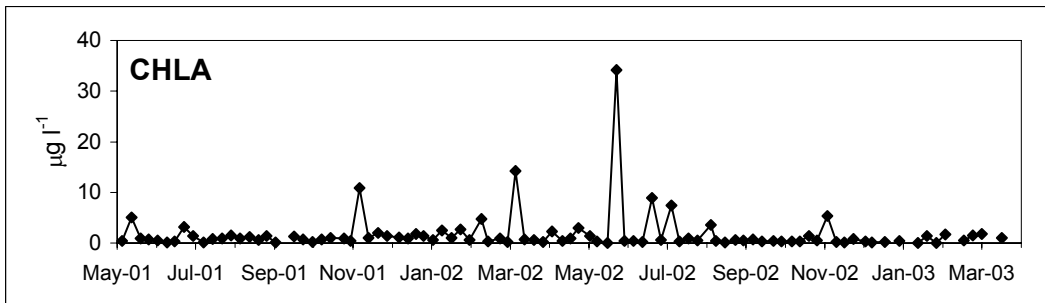
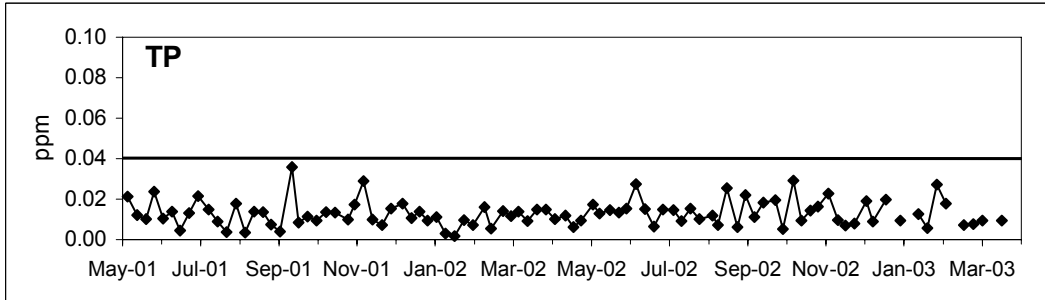
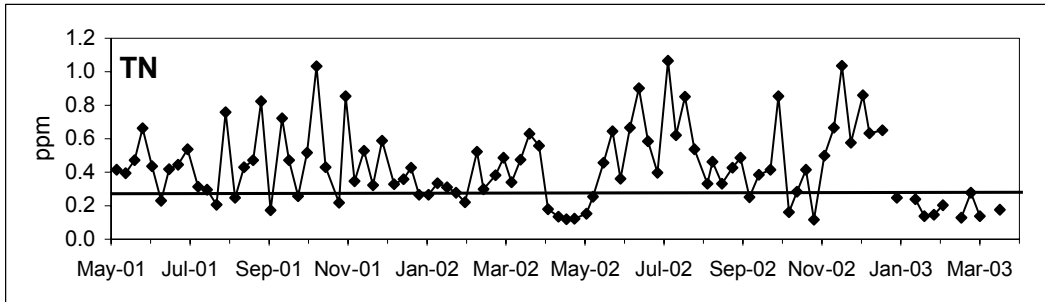


Figure 17

Sta. 8 - Mouth of the 91st Street Canal

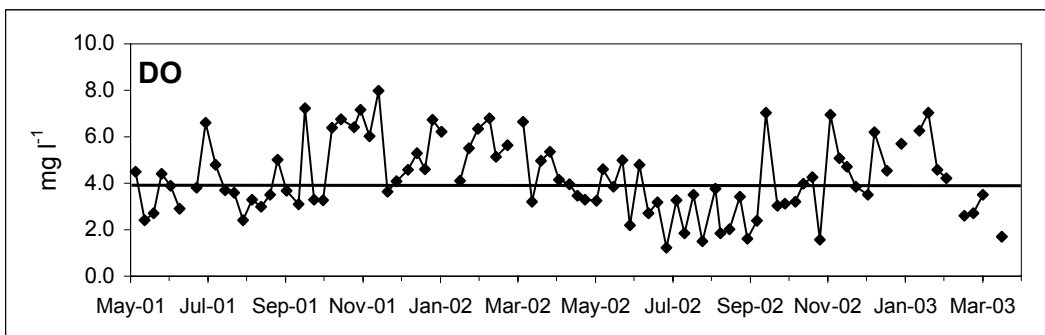
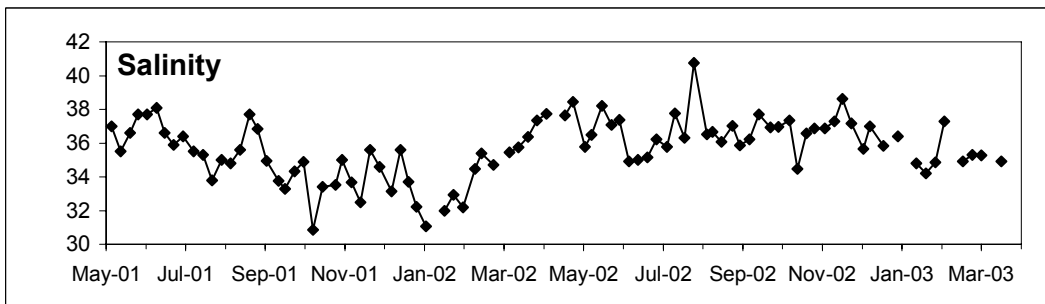
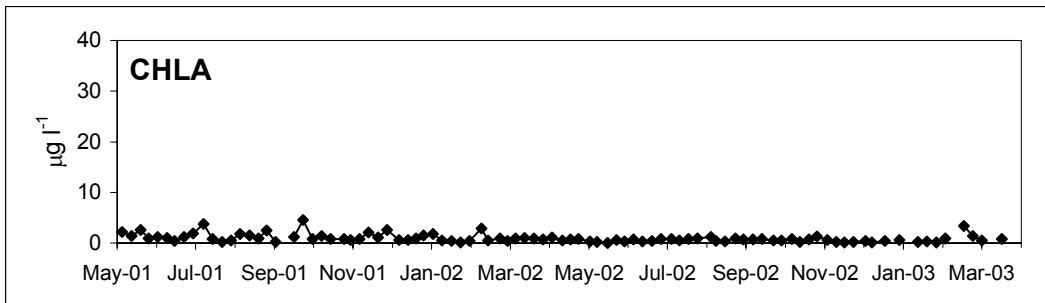
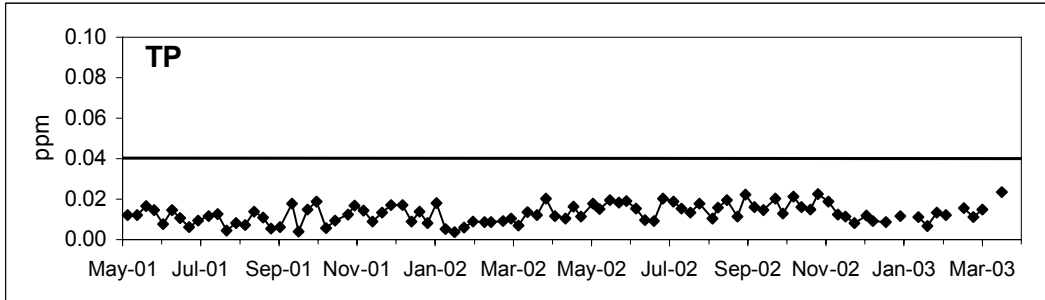
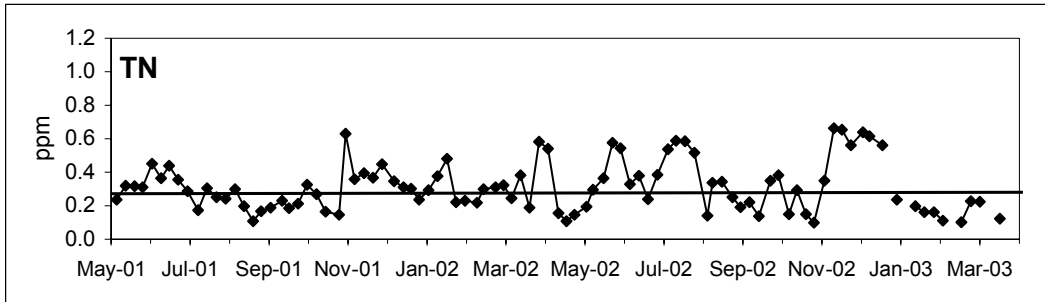


Figure 18

Sta. 9 - Head of the 91st Street Canal

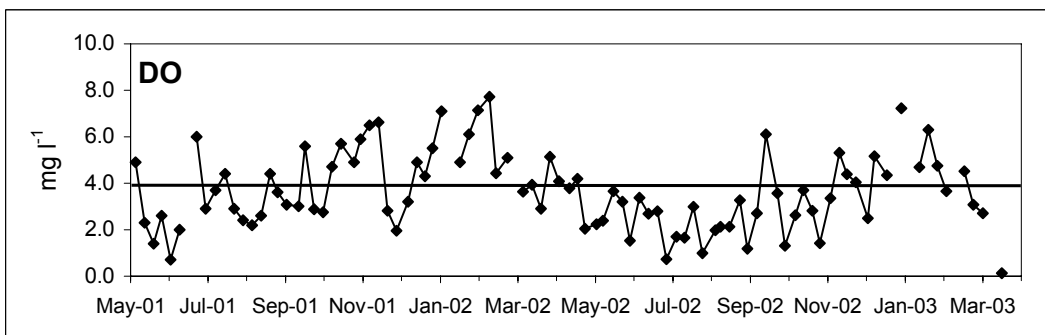
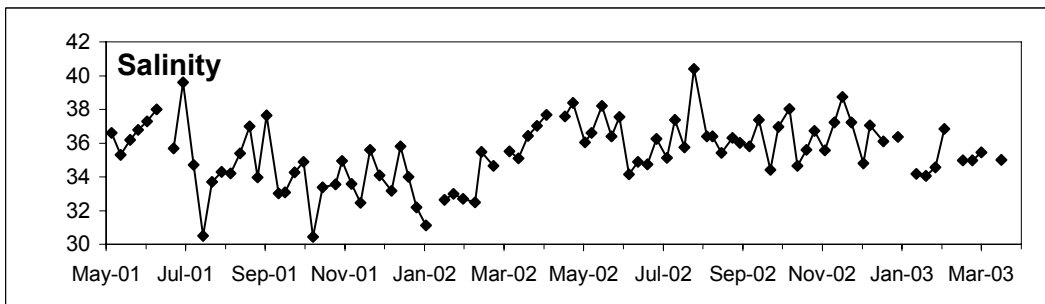
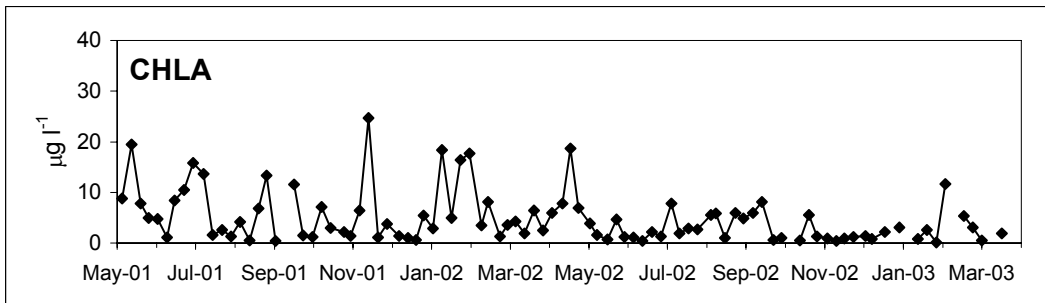
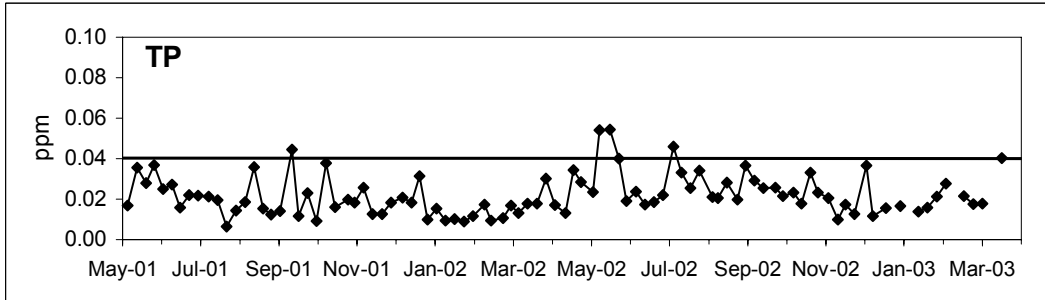
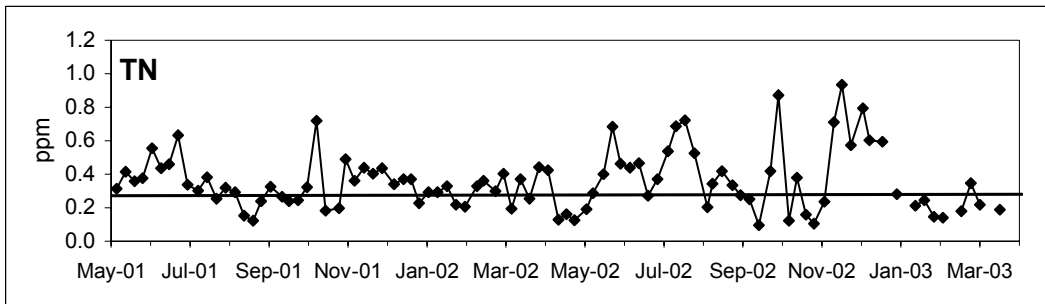


Figure 19

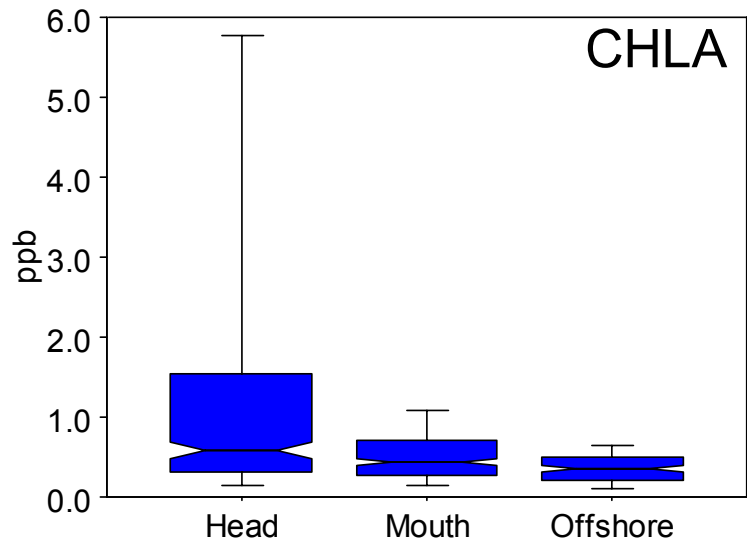
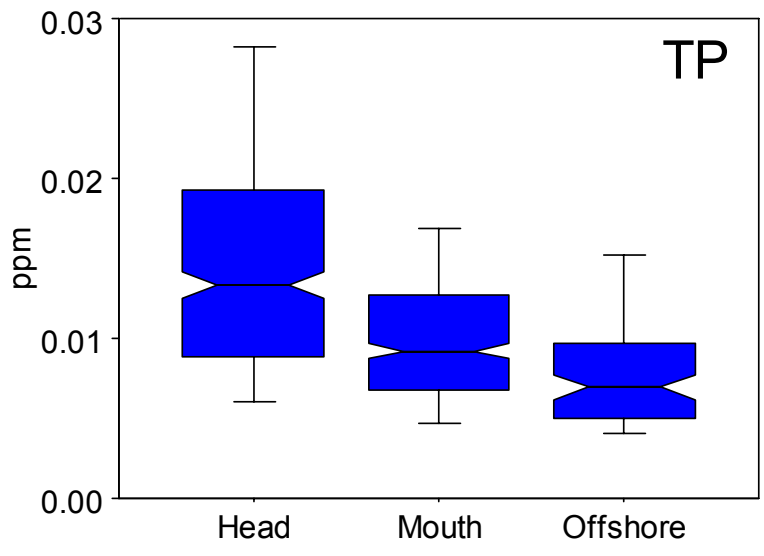
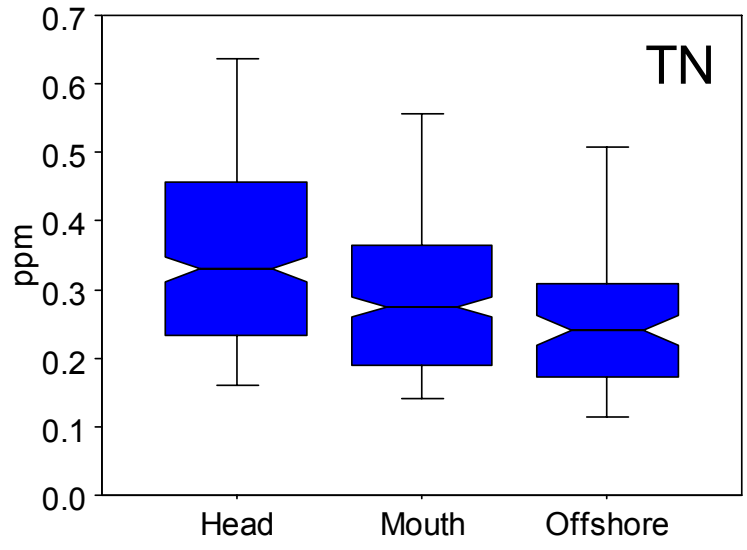


Figure 20

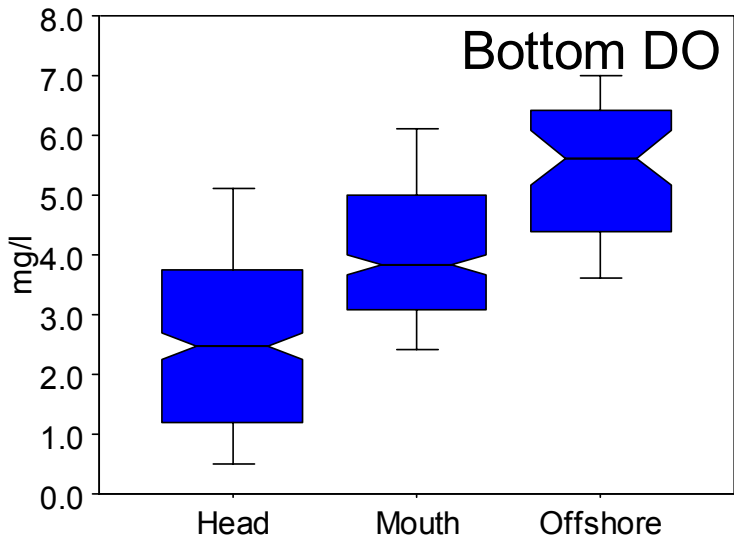
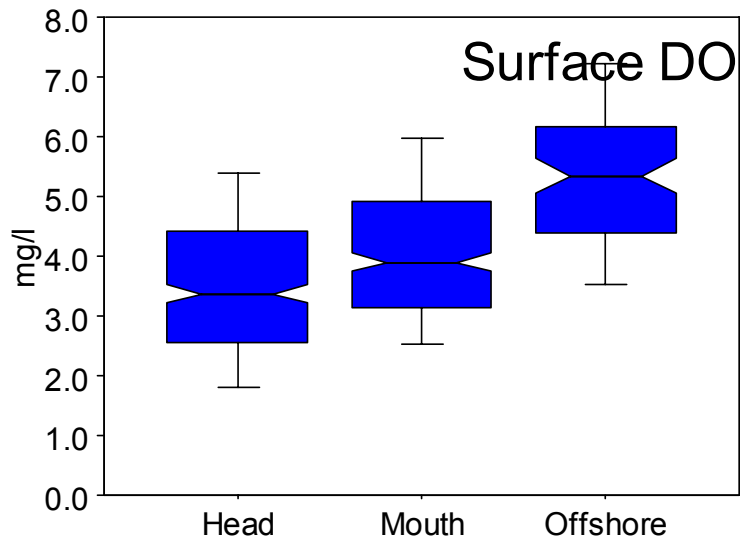


Figure 21