Appendix 12-1: Biscayne Bay Water Quality Trends

Richard Alleman

This appendix presents the results of a preliminary analysis to demonstrate water quality trends in Biscayne Bay (**Figures 1** through **39**). Canal and river discharge quality is compared to measures given in the Biscayne Bay Surface Water Improvement and Management (SWIM) Plan, which is presented on the South Florida Water Management District's (District or SFWMD) Website at http://www.sfwmd.gov/org/wrp/wrp_ce/projects/bb/toc.html. Specific water quality targets are given for ammonia nitrogen [0.05 milligrams per liter (mg/L) throughout the Bay; 0.01 mg/L within Biscayne National Park] and nitrate/nitrite nitrogen [0.05 mg/L within Biscayne National Park]. Where no specific measures are specified, trends are examined for degradation of ambient quality based on the Outstanding Florida Water (OFW) Rule. Trends should remain flat or be declining. Results are from monitoring stations located near the discharge into Biscayne Bay and are monitored through cooperative agreements with Miami-Dade County Department of Environmental Resources Management (DERM). Results are provided for Snake Creek (C-9), Arch Creek, Biscayne Canal (C-8), Little River (C-7), Miami River, Coral Gables Waterway (C-3), Snapper Creek (C-2), Cutler Drain (C-100), Black Creek (C-1), Princeton Canal (C-102), Military Canal, Mowry Canal (C-103), and Aerojet Canal (C-111).

SNAKE CREEK

Snake Creek (Canal C-9) discharges into Biscayne Bay near Oleta River.

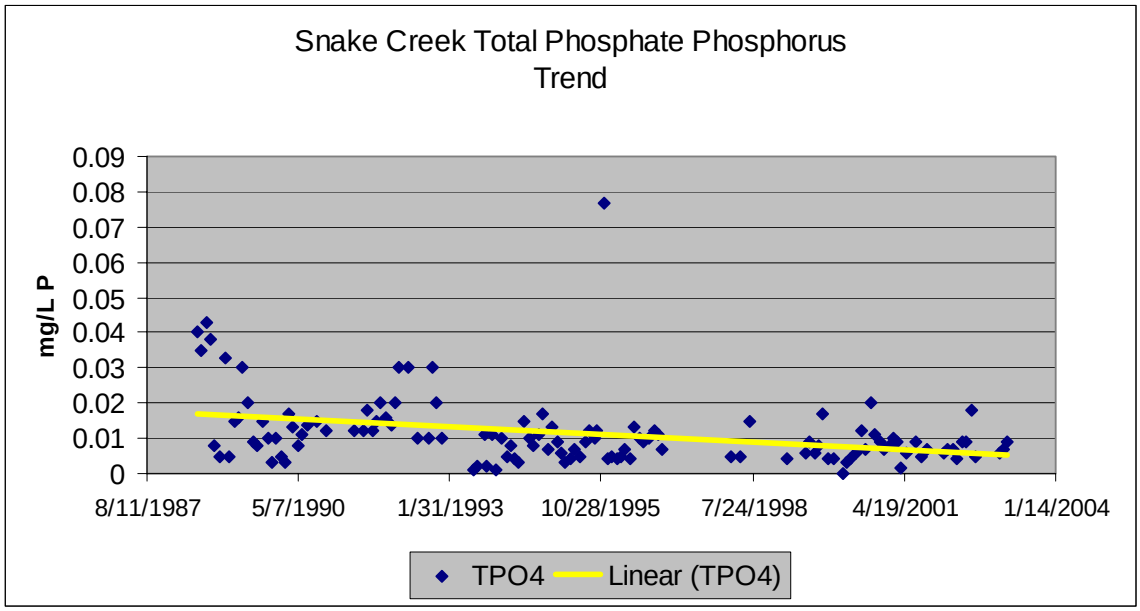

Figure 1. Total phosphate phosphorus concentrations as monitored by Miami-Dade County Department of Environmental Resources Management (DERM) at station SK02. Trend should be flat or declining.

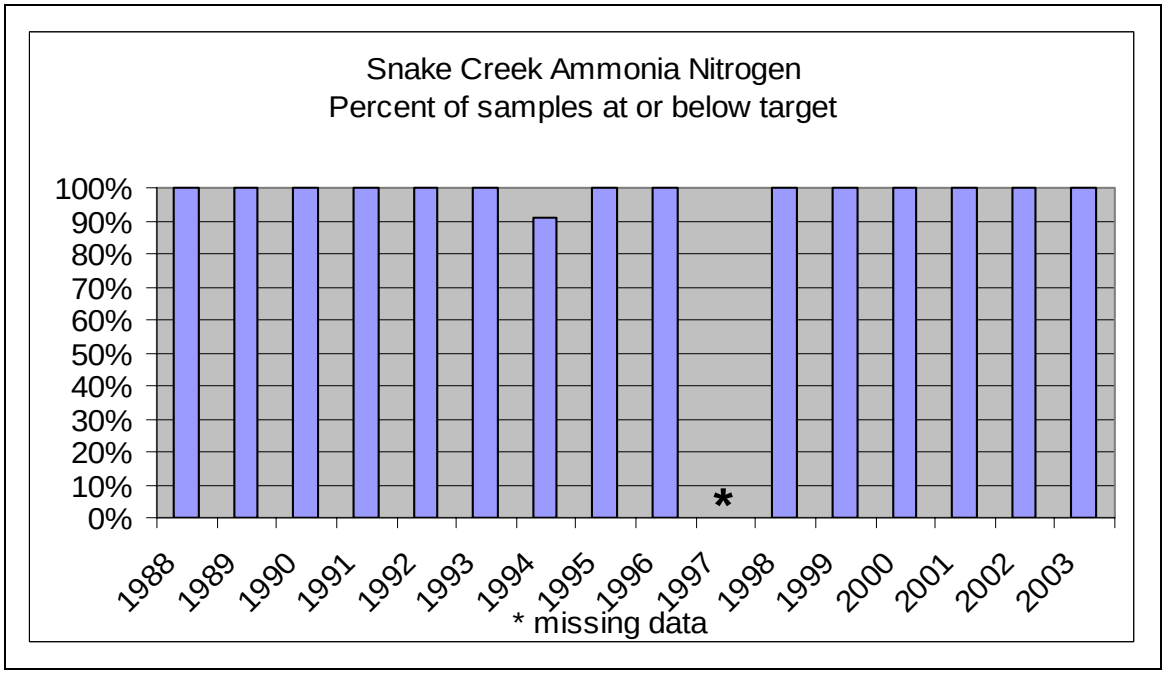

Figure 2. The percentage of samples by year as monitored by Miami-Dade County DERM at station SK02 that was at or below the total ammonia nitrogen concentration criterion of 0.5 mg/L. (* missing data)

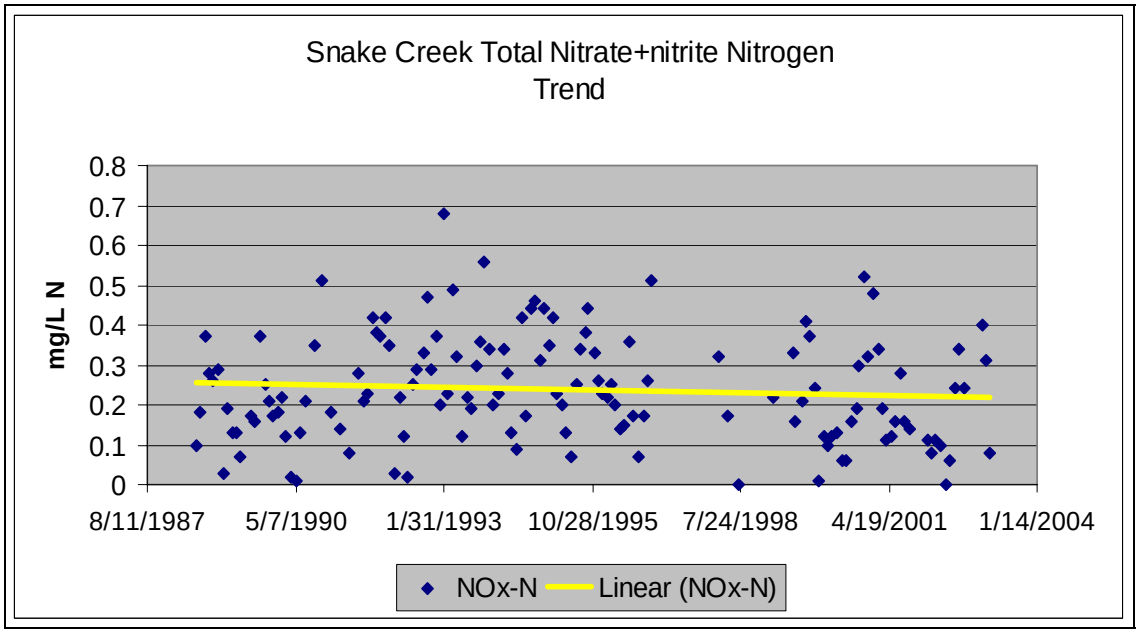

Figure 3. Total nitrate+nitrite nitrogen concentrations as monitored by Miami-Dade County DERM at station SK02. Trend should be flat or declining.

ARCH CREEK

Arch Creek (not a primary canal) discharges into Biscayne Bay north of Broad Causeway.

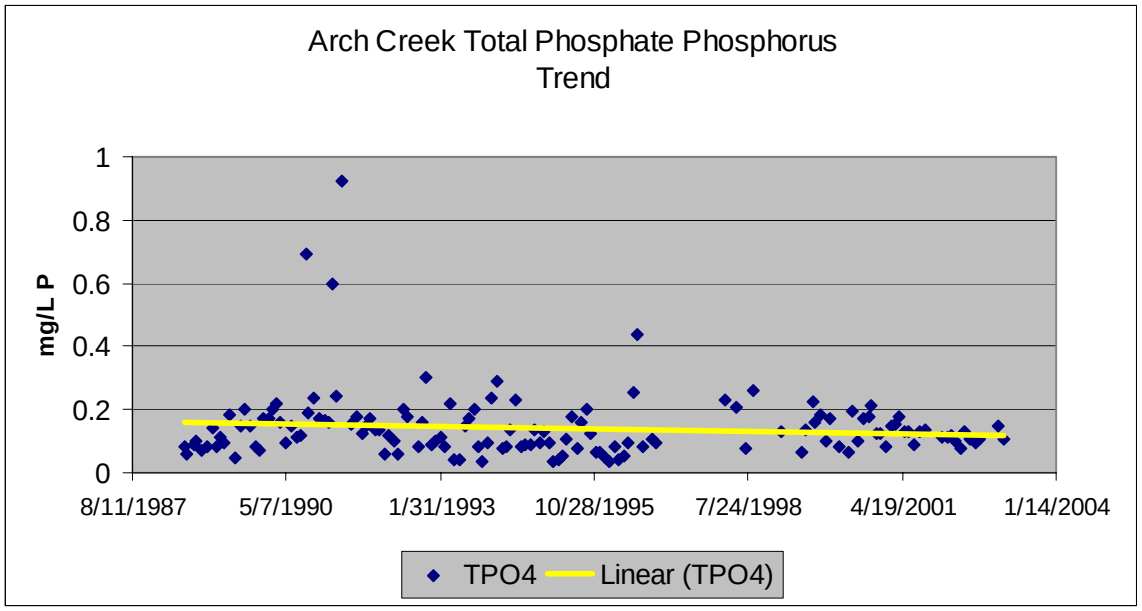

Figure 4. Total phosphate phosphorus concentrations as monitored by Miami-Dade County DERM at station AC03. Trend should be flat or declining.

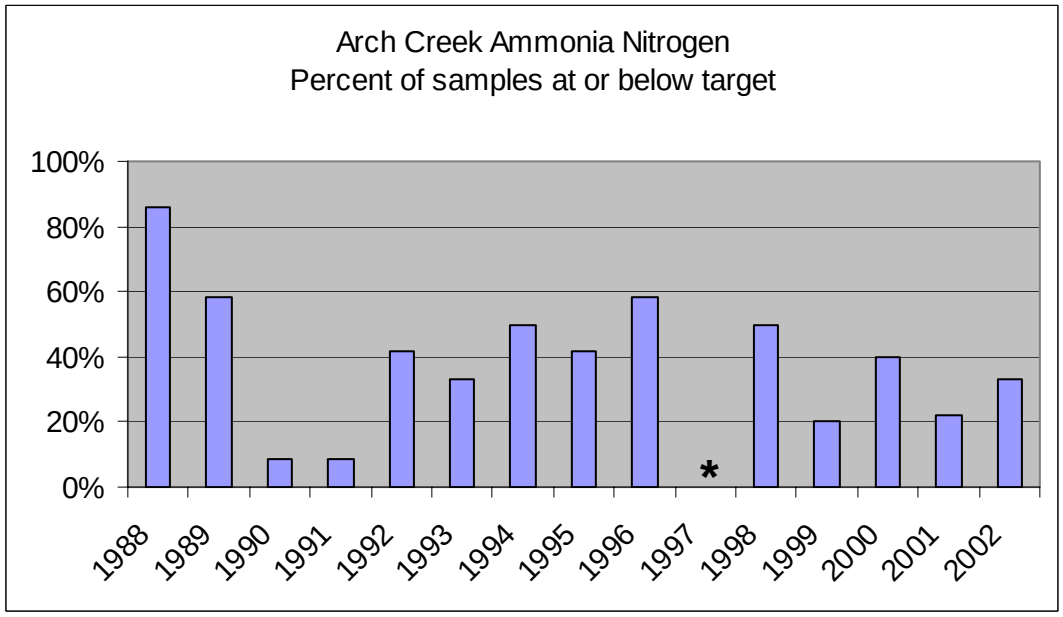

Figure 5. The percentage of samples by year as monitored by Miami-Dade County DERM at station AC03 that was at or below the total ammonia nitrogen concentration criterion of 0.5 mg/L. (* missing data)

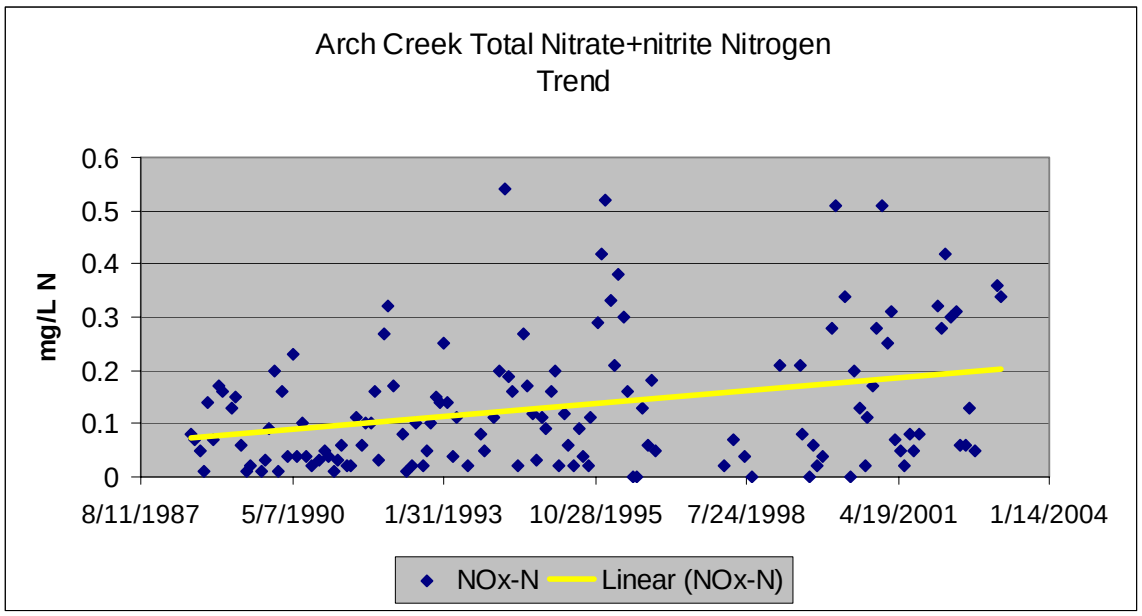

Figure 6. Total nitrate+nitrite nitrogen concentrations as monitored by Miami-Dade County DERM at station AC03. Trend should be flat or declining.

BISCAYNE CANAL

Biscayne Canal discharges into Biscayne Bay between Broad and 79th Street Causeways.

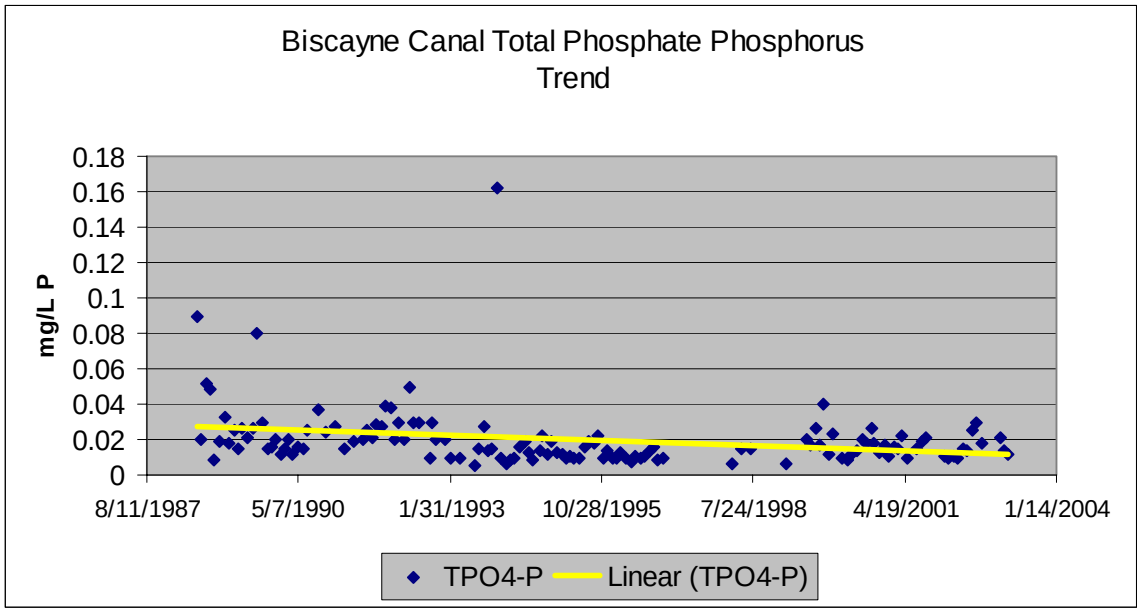

Figure 7. Total phosphate phosphorus concentrations as monitored by Miami-Dade County DERM at station BS04. Trend should be flat or declining.

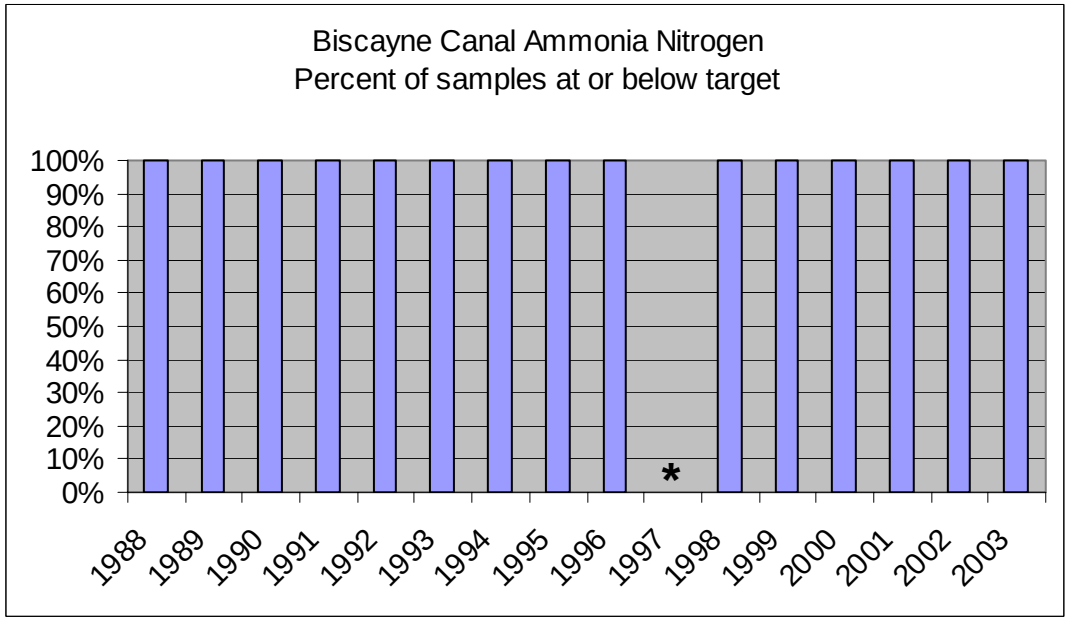

Figure 8. The percentage of samples by year as monitored by Miami-Dade County DERM at station BS04 that was at or below the total ammonia nitrogen concentration criterion of 0.5 mg/L. (* missing data)

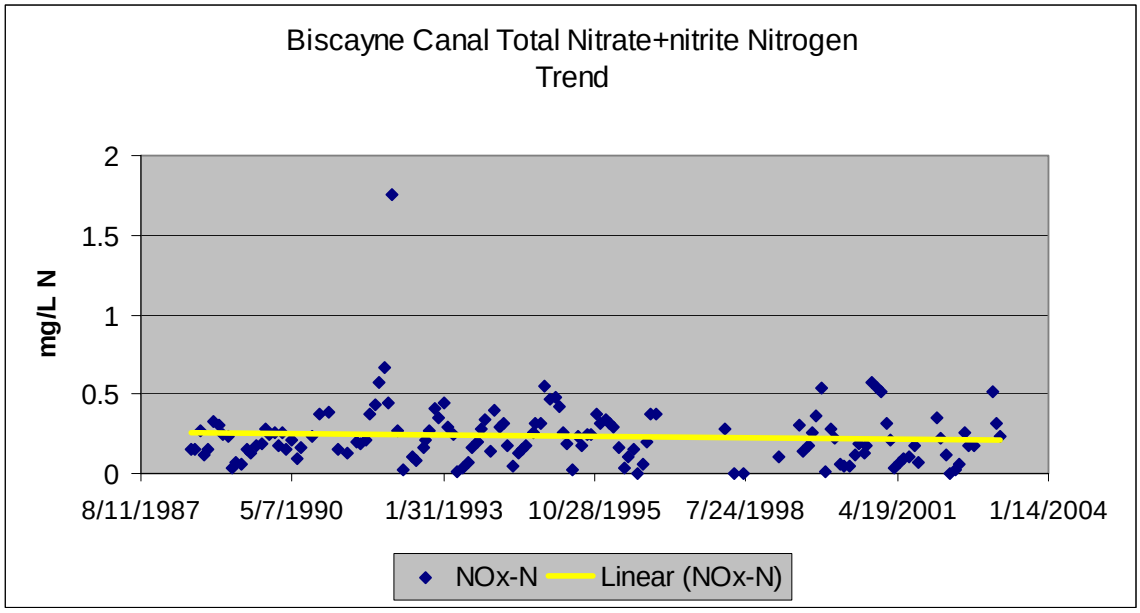

Figure 9. Total nitrate+nitrite nitrogen concentrations as monitored by Miami-Dade County DERM at station BS04. Trend should be flat or declining.

LITTLE RIVER

Little River discharges into Biscayne Bay between the Julia Tuttle and 79th Street Causeways.

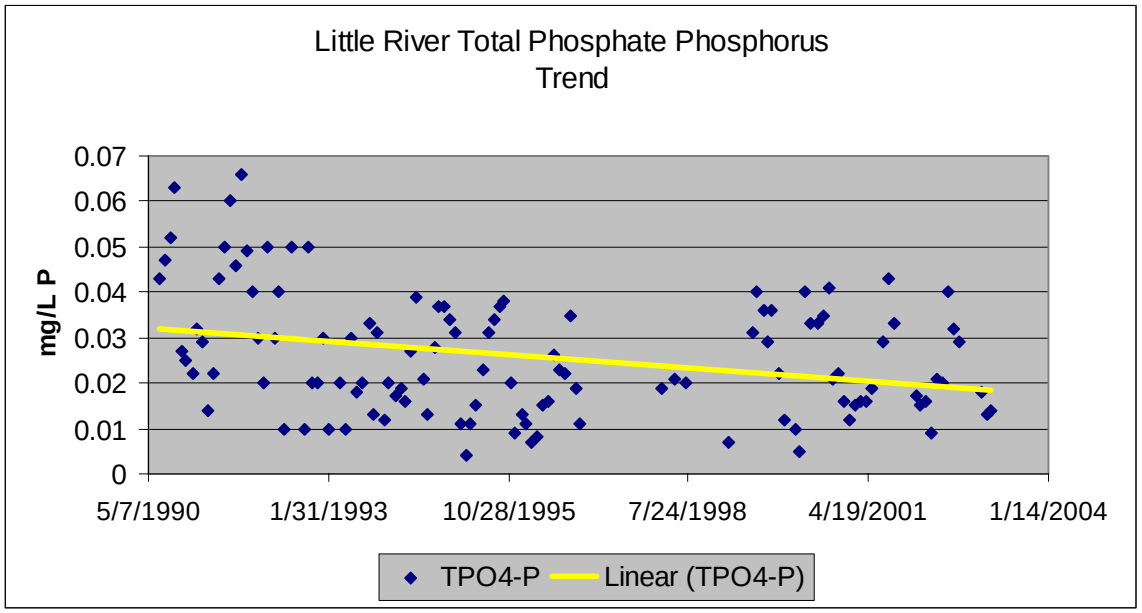

Figure 10. Total phosphate phosphorus concentrations as monitored by Miami-Dade County DERM at station LR06. Trend should be flat or declining.

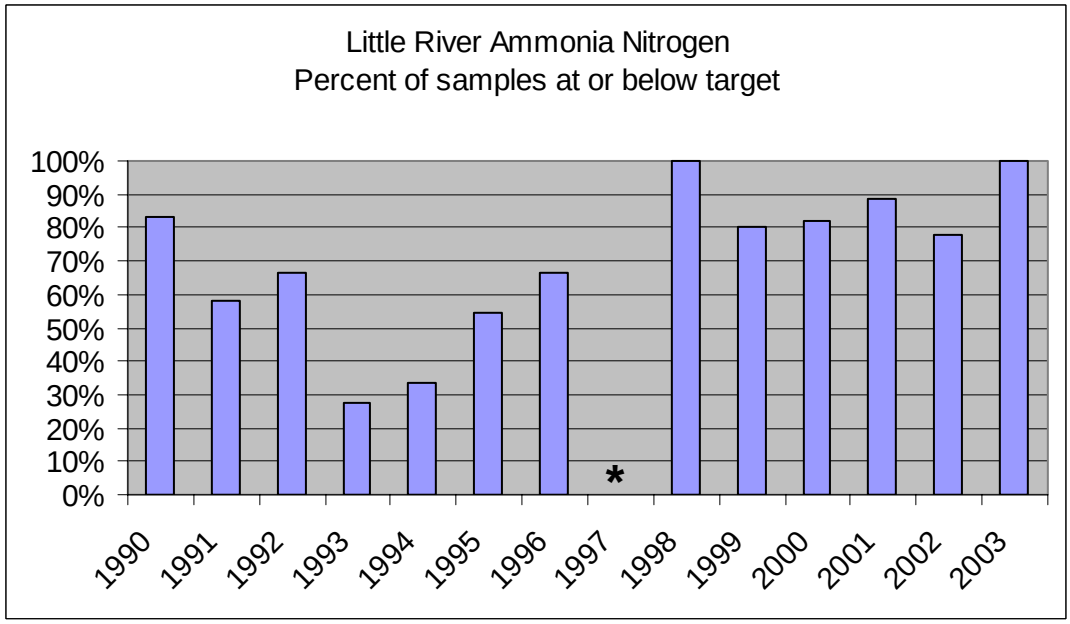

Figure 11. The percentage of samples by year as monitored by Miami-Dade County DERM at station LR06 that was at or below the total ammonia nitrogen concentration criterion of 0.5 mg/L. (* missing data)

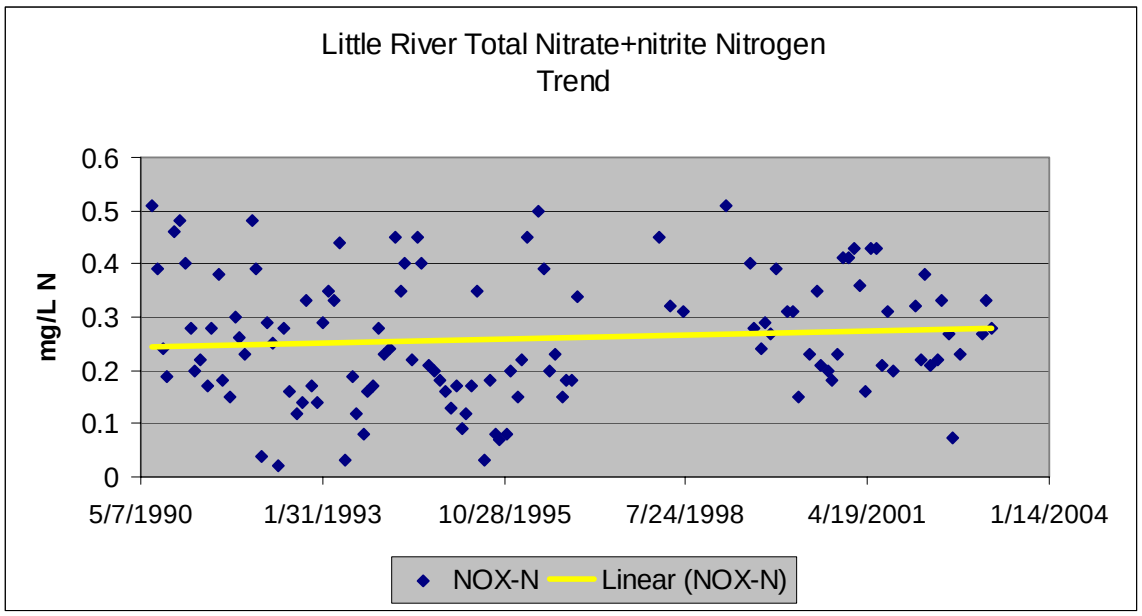

Figure 12. Total nitrate+nitrite nitrogen concentrations as monitored by Miami-Dade County DERM at station LR06. Trend should be flat or declining.

MIAMI RIVER

Miami River (C-6 upstream) discharges into Biscayne Bay between the Port of Miami and the Rickenbacker Causeway.

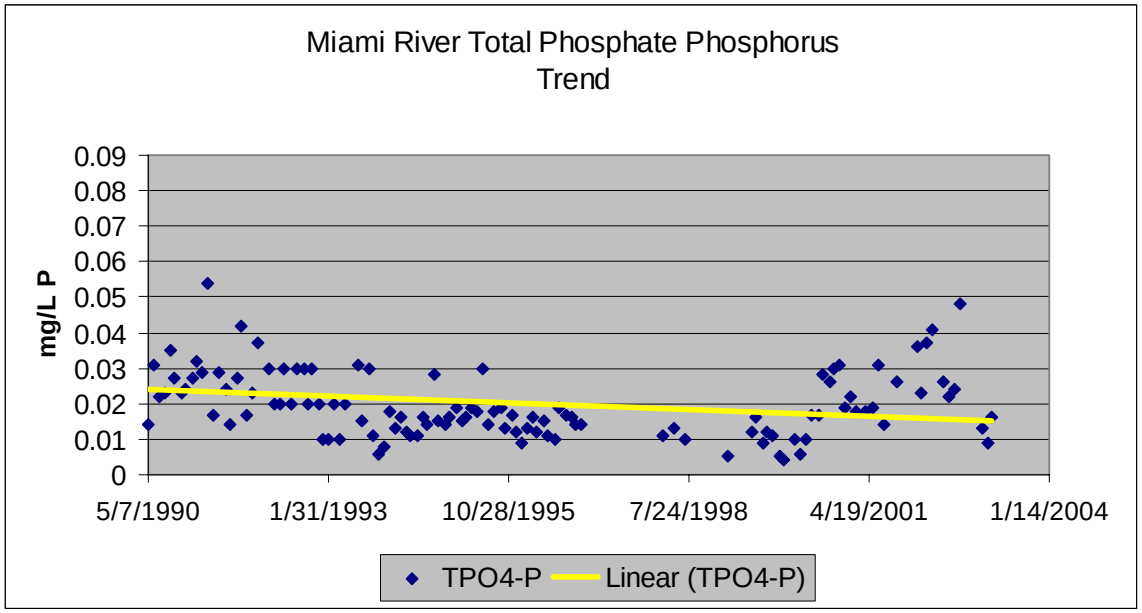

Figure 13. Total phosphate phosphorus concentrations as monitored by Miami-Dade County DERM at station MR03. Trend should be flat or declining.

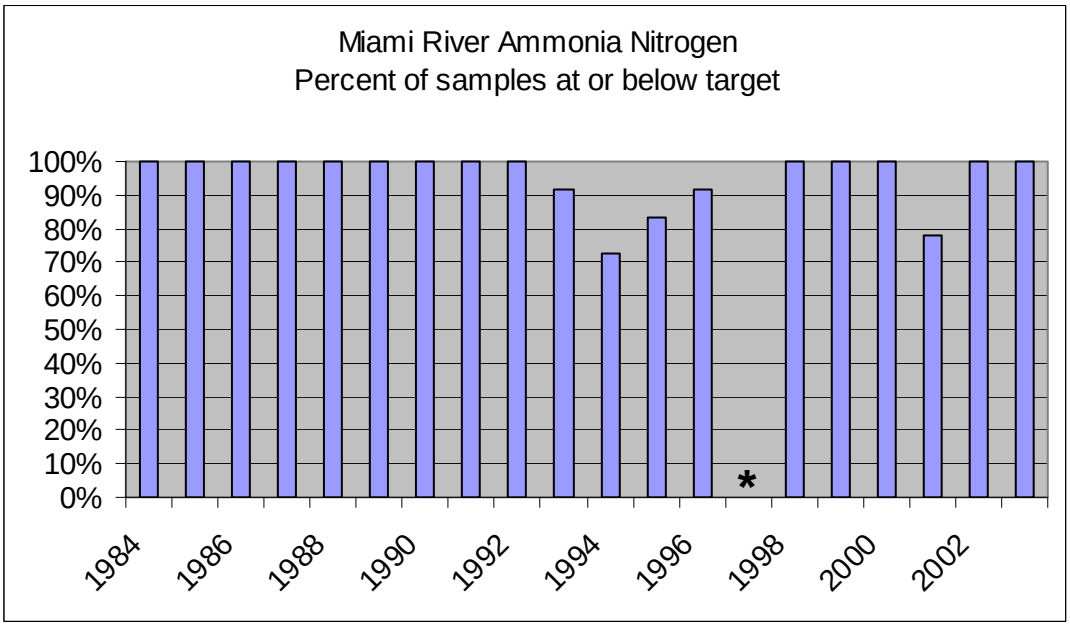

Figure 14. The percentage of samples by year as monitored by Miami-Dade County DERM at station MR03 that was at or below the total ammonia nitrogen concentration criterion of 0.5 mg/L. (* missing data)

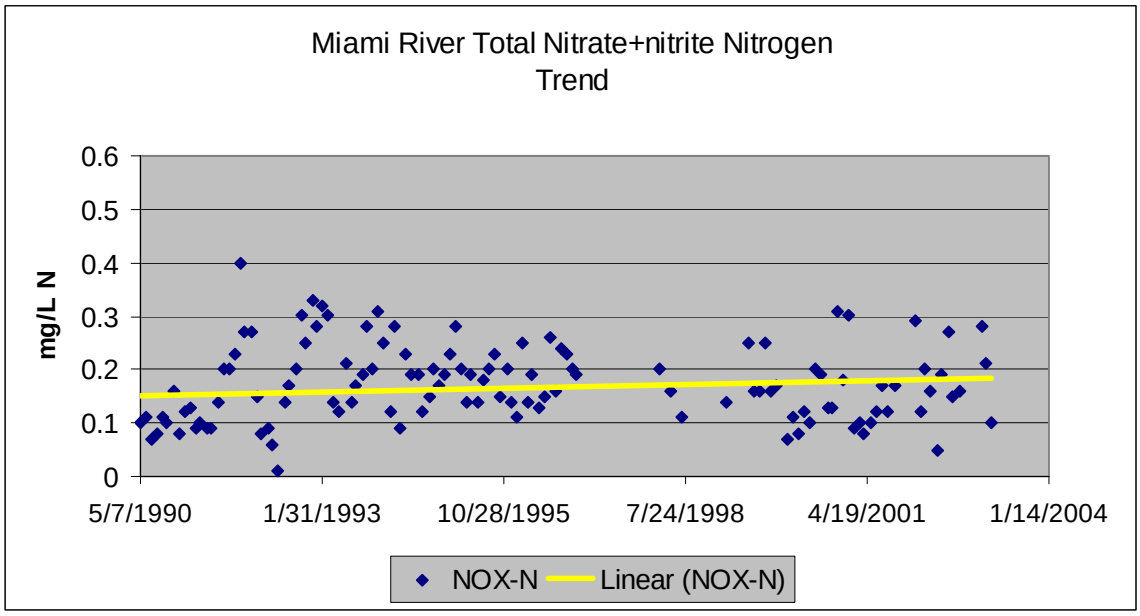

Figure 15. Total nitrate+nitrite nitrogen concentrations as monitored by Miami-Dade County DERM at station MR03. Trend should be flat or declining.

CORAL GABLES WATERWAY

Coral Gables Waterway (C-3) discharges to Biscayne Bay west of Key Biscayne.

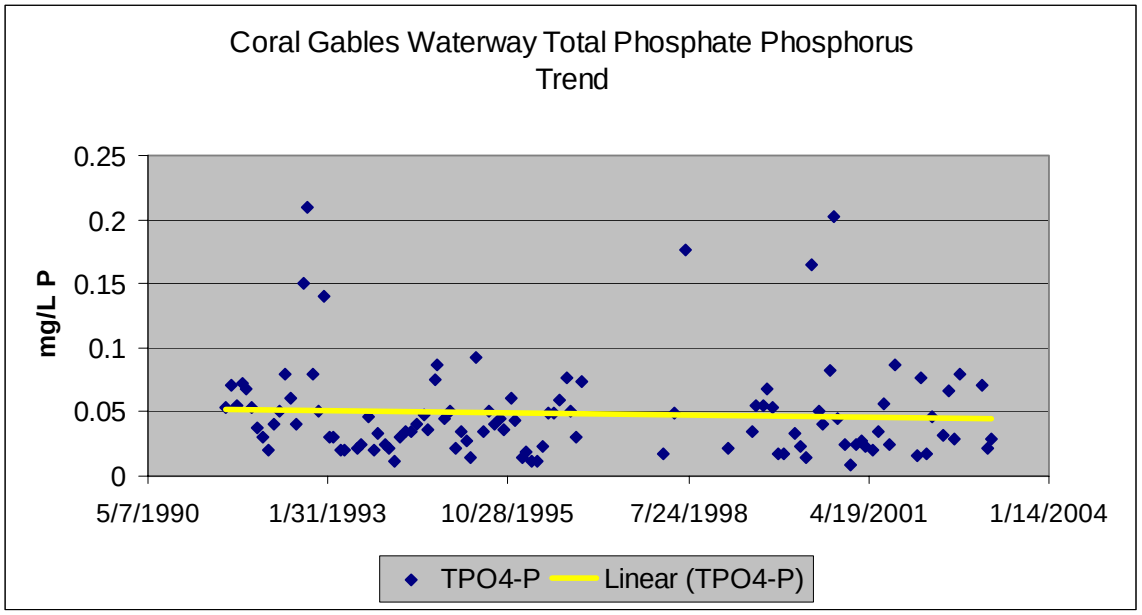

Figure 16. Total phosphate phosphorus concentrations as monitored by Miami-Dade County DERM at station CG07. Trend should be flat or declining.

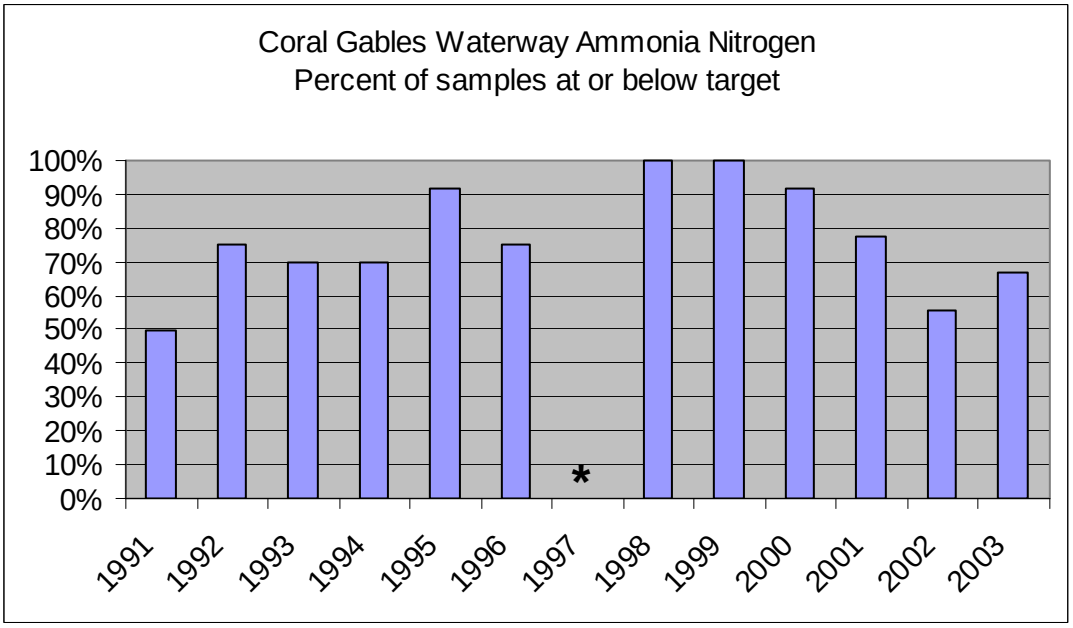

Figure 17. The percentage of samples by year as monitored by Miami-Dade County DERM at station CG07 that was at or below the total ammonia nitrogen concentration criterion of 0.5 mg/L. (* missing data)

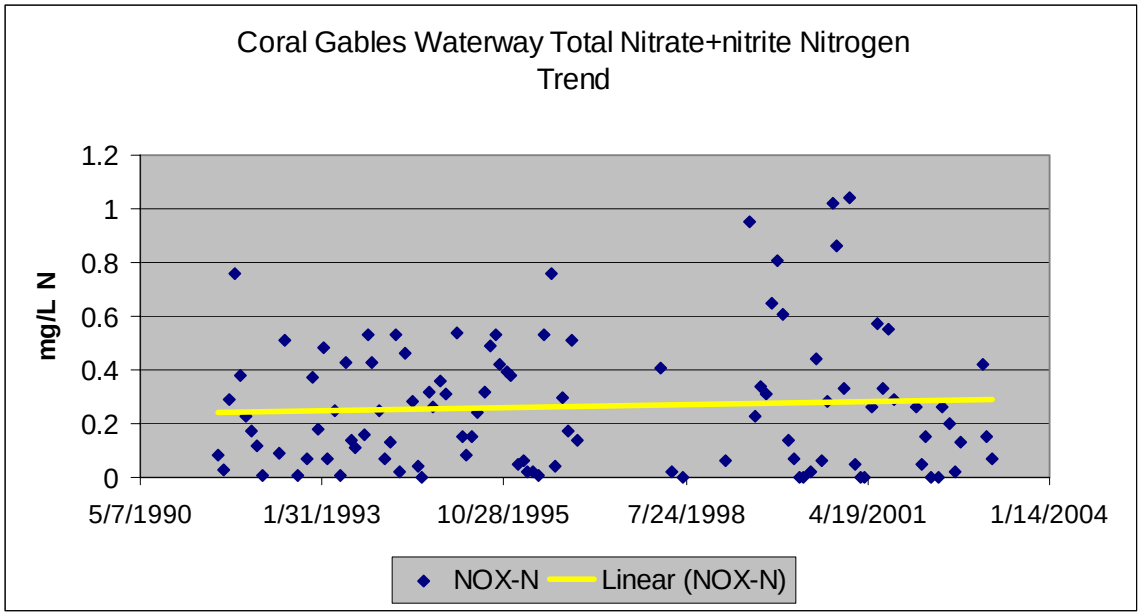

Figure 18. Total nitrate+nitrite nitrogen concentrations as monitored by Miami-Dade County DERM at station CG07. Trend should be flat or declining.

SNAPPER CREEK

Snapper Creek (C-2) discharges to Biscayne Bay west of the Safety Valve shoals.

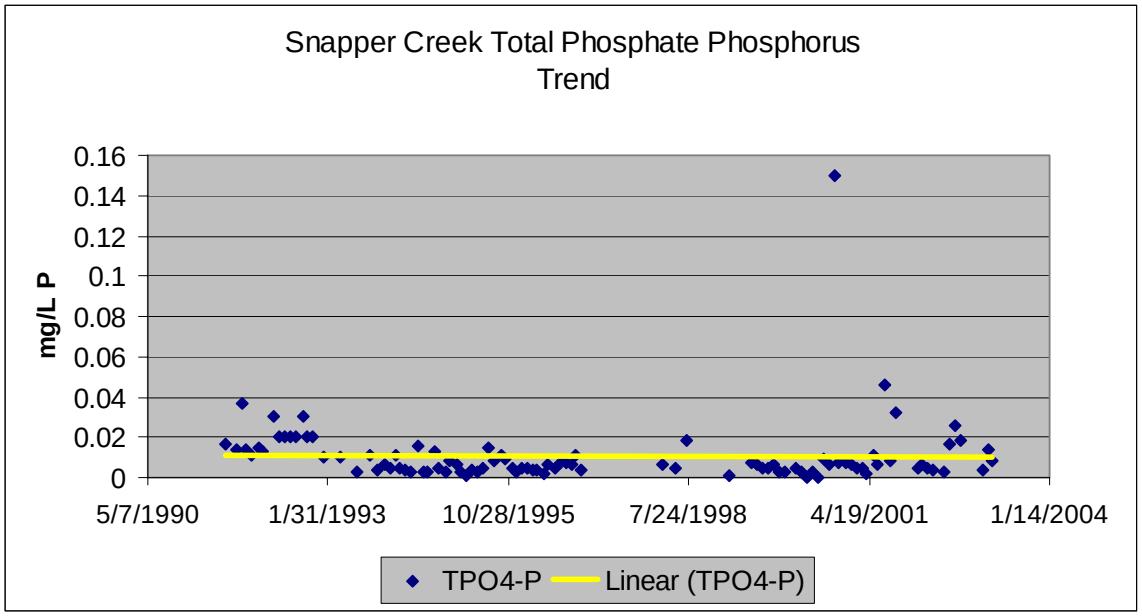

Figure 19. Total phosphate phosphorus concentrations as monitored by Miami-Dade County DERM at station SP04. Trend should be flat or declining.

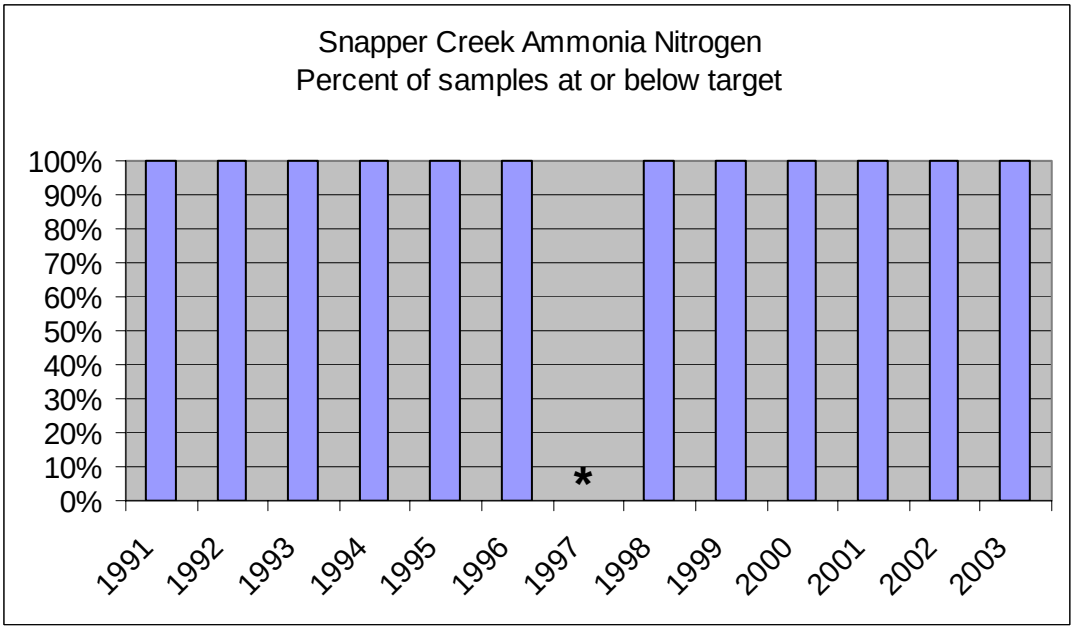

Figure 20. The percentage of samples by year as monitored by Miami-Dade County DERM at station SP04 that was at or below the total ammonia nitrogen concentration criterion of 0.5 mg/L. (* missing data)

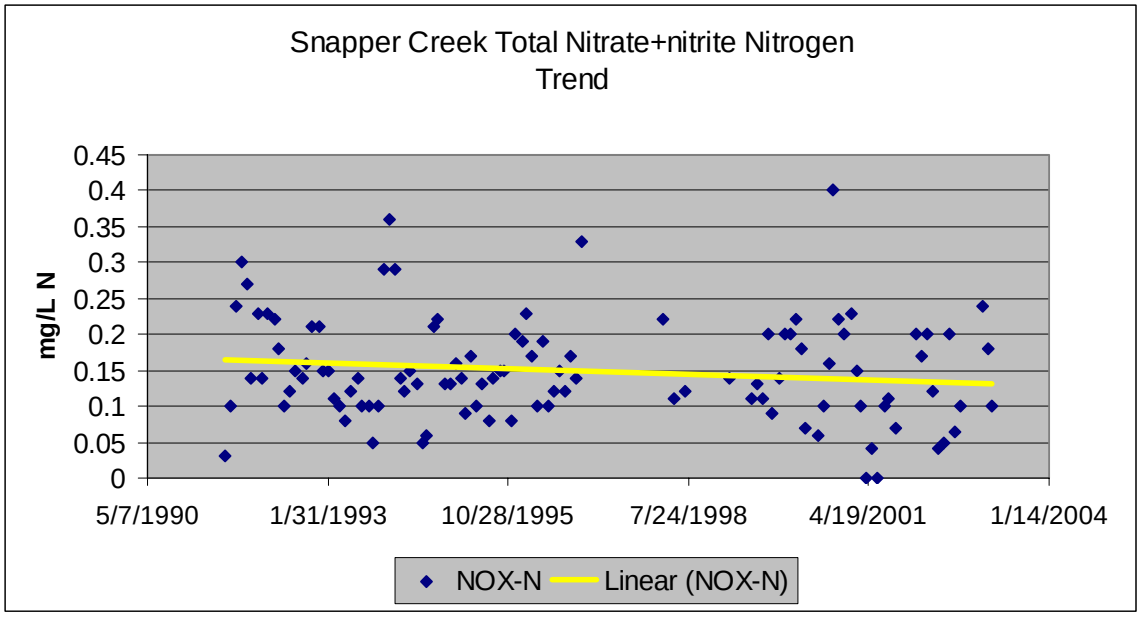

Figure 21. Total nitrate+nitrite nitrogen concentrations as monitored by Miami-Dade County DERM at station SP04. Trend should be flat or declining.

CUTLER DRAIN

Cutler Drain (C-100) discharges to Biscayne Bay south of the Deering Estate.

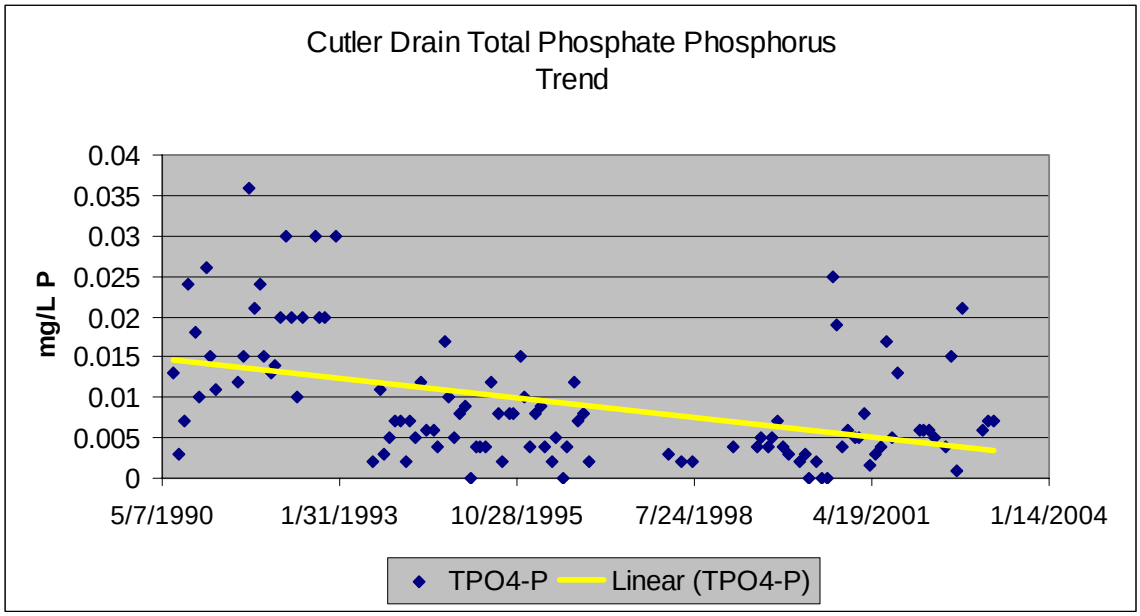

Figure 22. Total phosphate phosphorus concentrations as monitored by Miami-Dade County DERM at station CD02. Trend should be flat or declining.

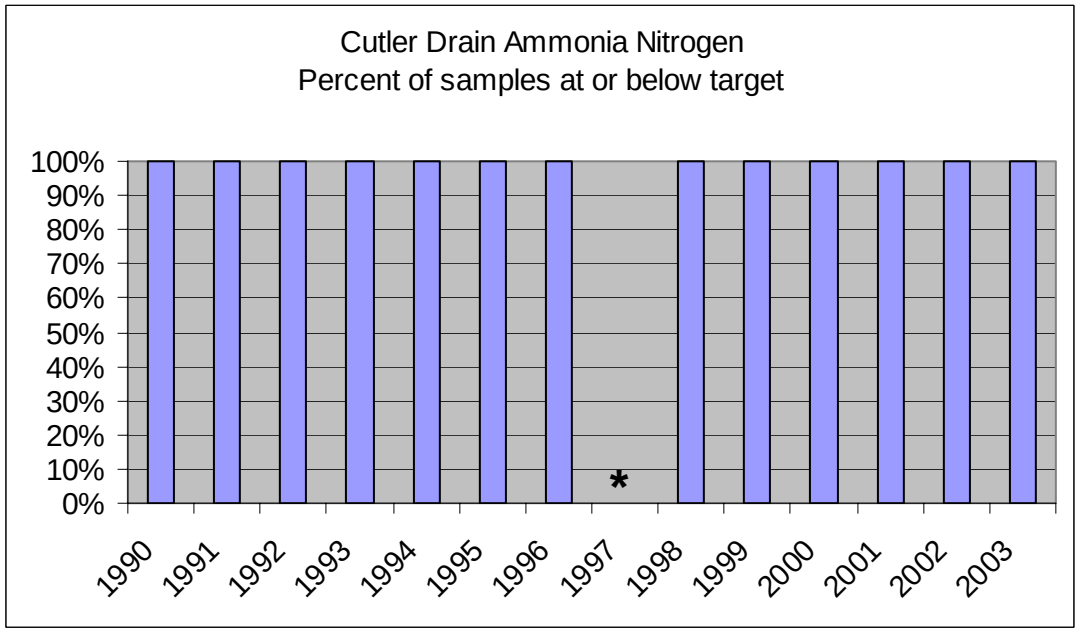

Figure 23. The percentage of samples by year as monitored by Miami-Dade County DERM at station CD02 that was at or below the total ammonia nitrogen concentration criterion of 0.5 mg/L. (* missing data)

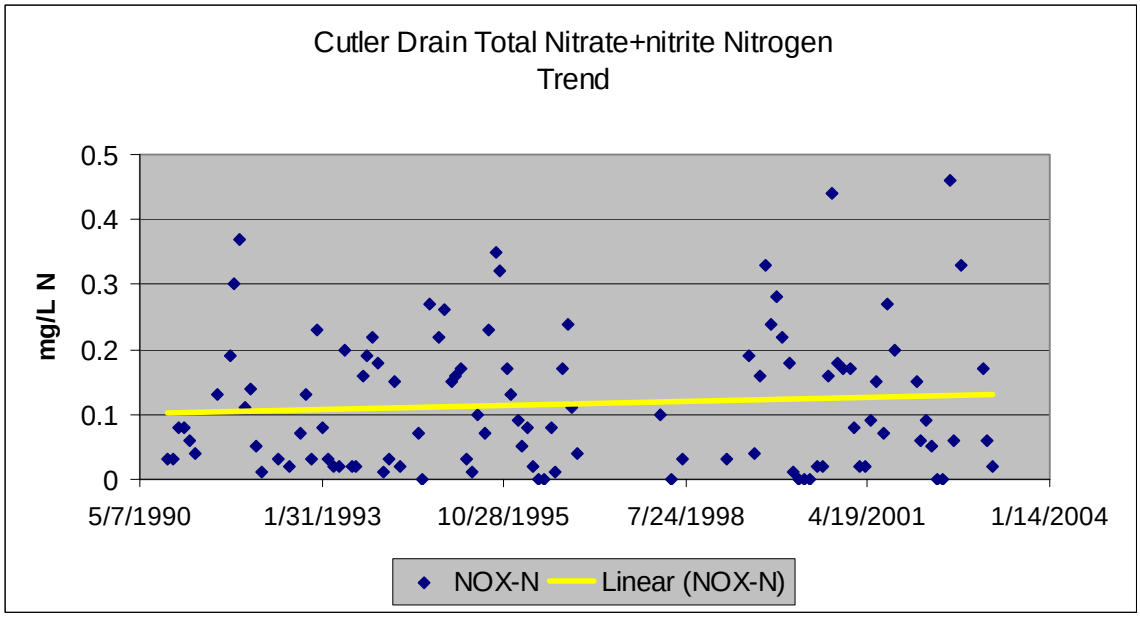

Figure 24. Total nitrate+nitrite nitrogen concentrations as monitored by Miami-Dade County DERM at station CD02. Trend should be flat or declining.

BLACK CREEK

Black Creek (C-1) discharges into Biscayne National Park south of Black Point.

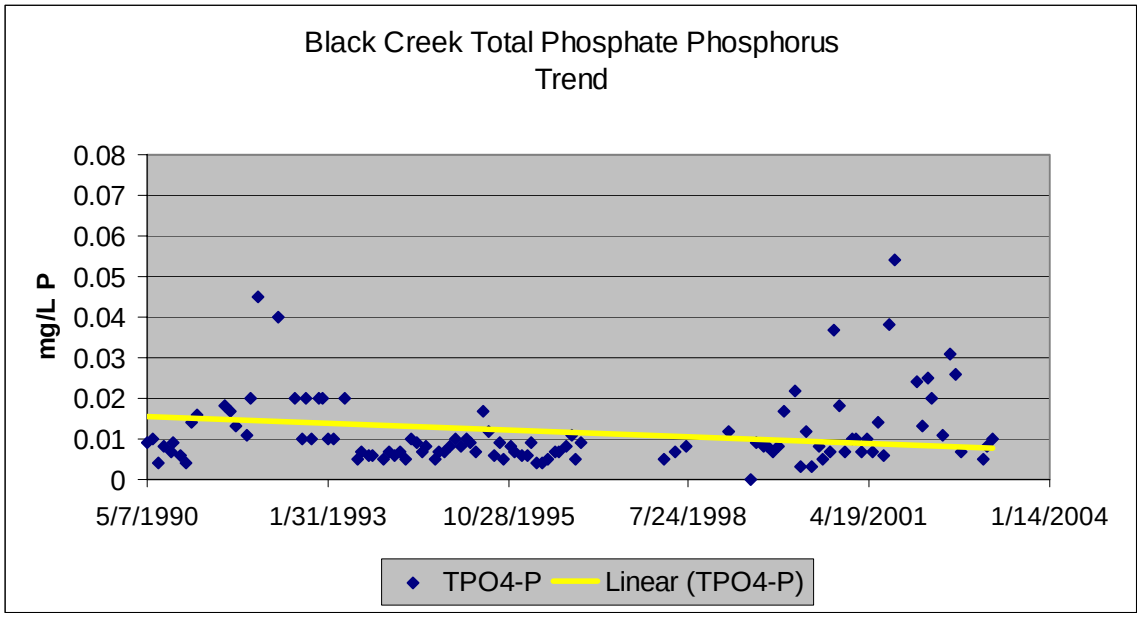

Figure 25. Total phosphate phosphorus concentrations as monitored by Miami-Dade County DERM at station BL01. Trend should be flat or declining.

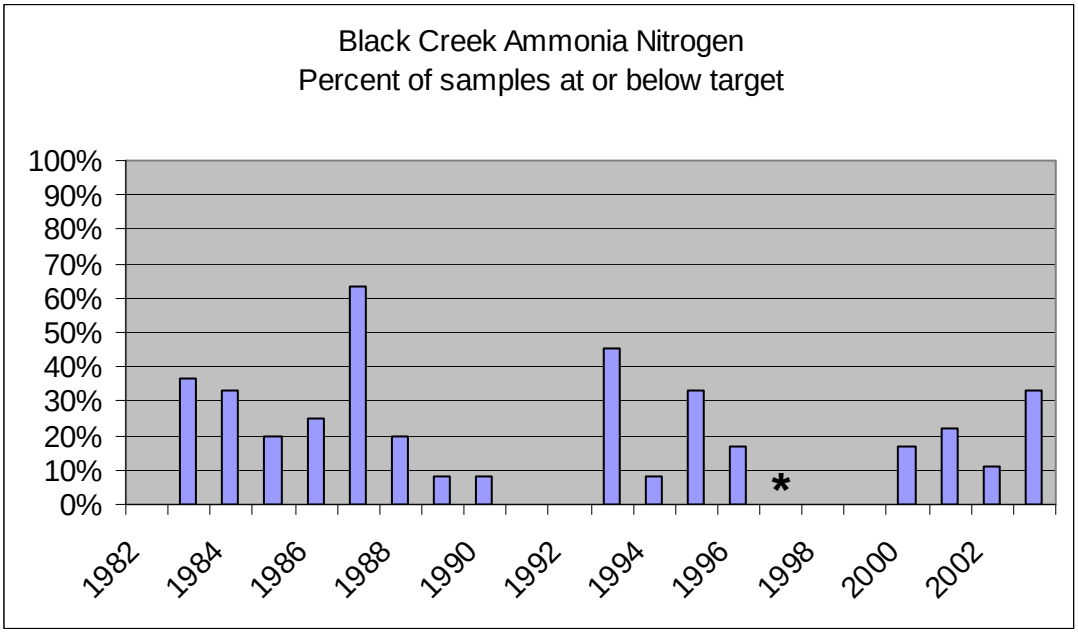

Figure 26. The percentage of samples by year as monitored by Miami-Dade County DERM at station BL01 that was at or below the total ammonia nitrogen concentration criterion of 0.1 mg/L. (* missing data)

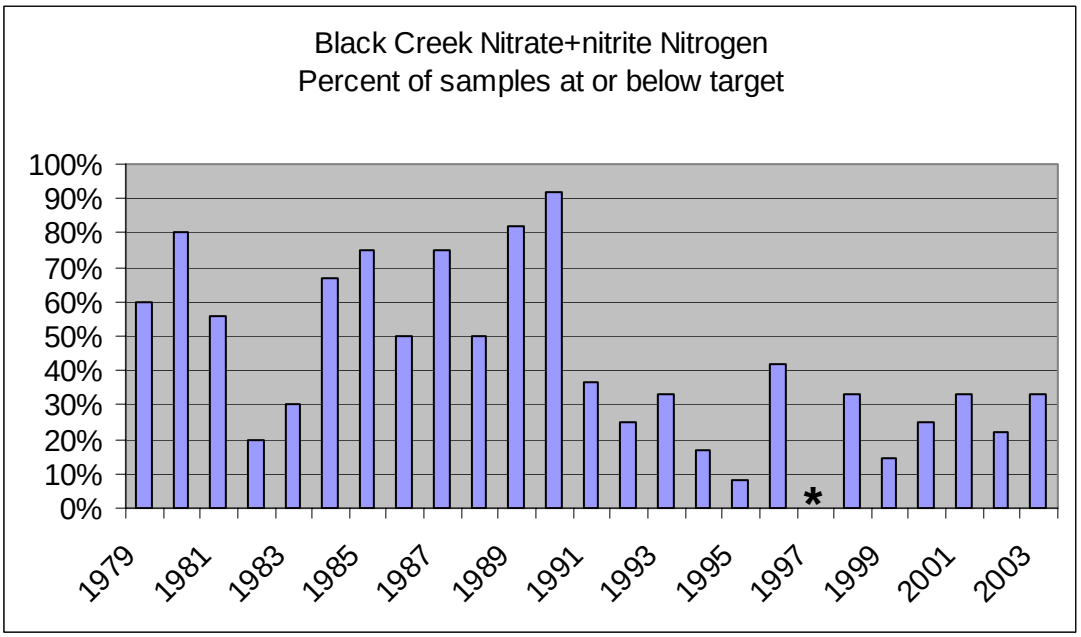

Figure 27. The percentage of samples by year as monitored by Miami-Dade County DERM at station BL01 that was at or below the total nitrate/nitrite nitrogen concentration criterion of 0.05 mg/L. (* missing data)

PRINCETON CANAL

Princeton Canal (C-102) discharges to Biscayne National Park north of Fender Point.

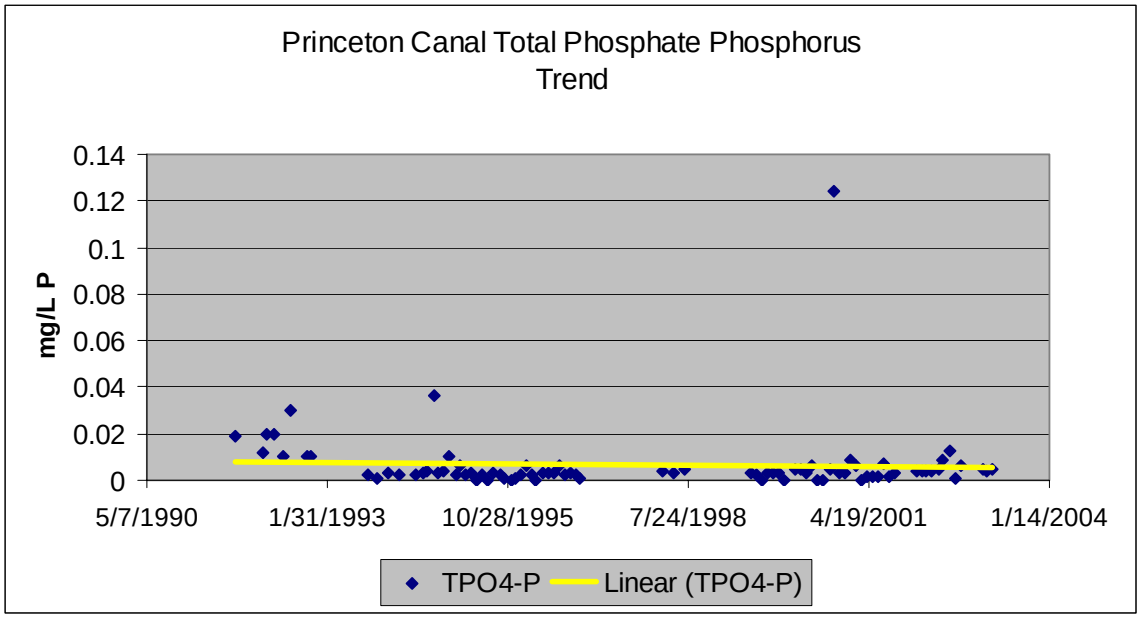

Figure 28. Total phosphate phosphorus concentrations as monitored by Miami-Dade County DERM at station PR03. Trend should be flat or declining.

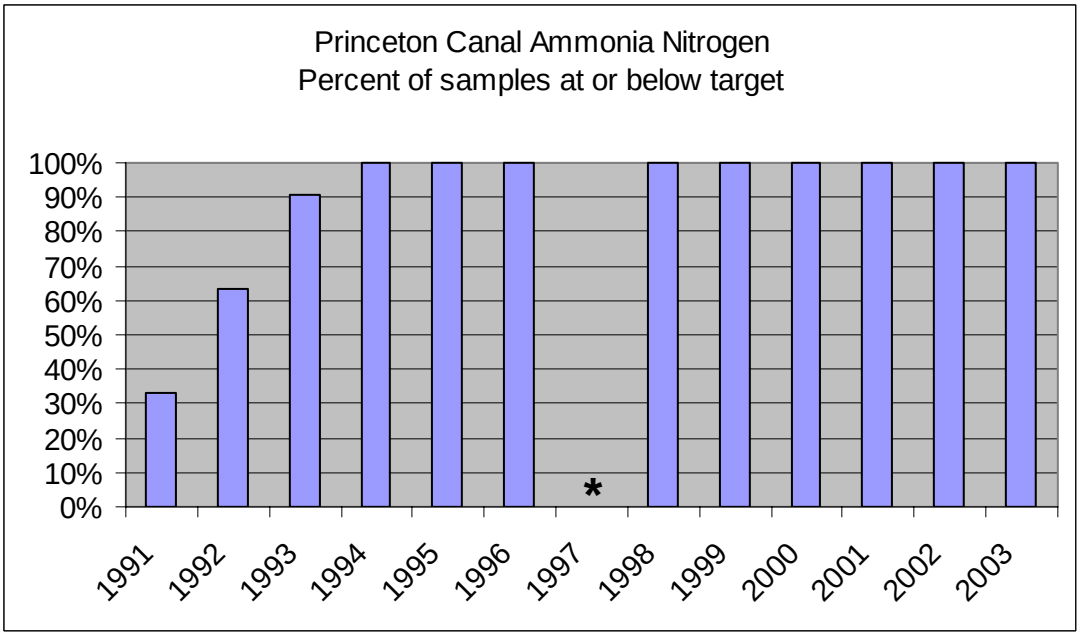

Figure 29. The percentage of samples by year as monitored by Miami-Dade County DERM at station PR03 that was at or below the total ammonia nitrogen concentration criterion of 0.1 mg/L. (* missing data)

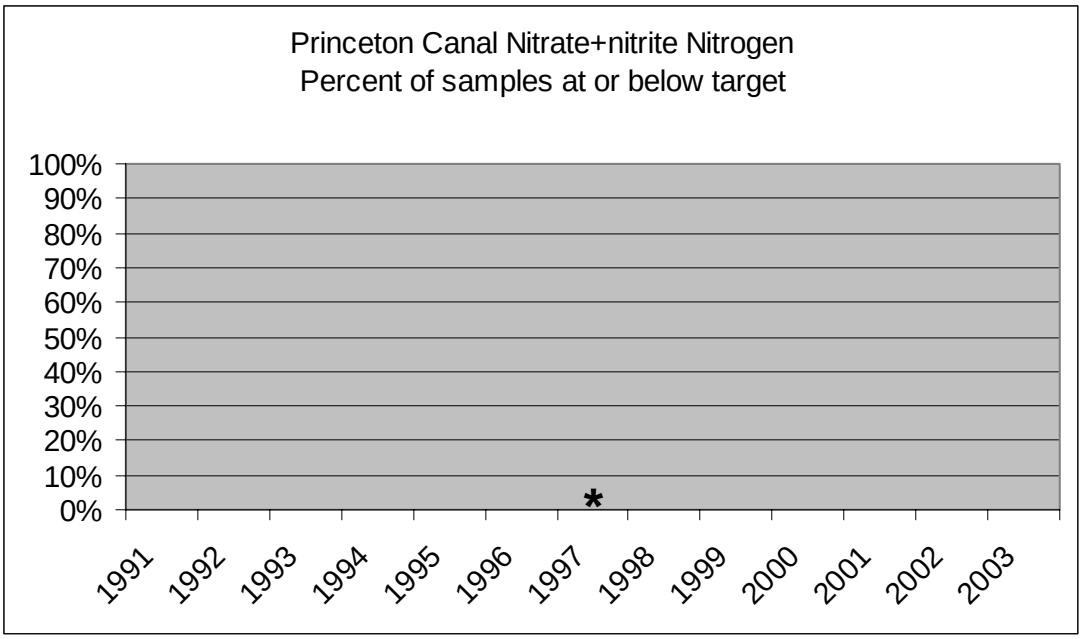

Figure 30. The percentage of samples by year as monitored by Miami-Dade County DERM at station PR03 that was at or below the total nitrate/nitrite nitrogen concentration criterion of 0.05 mg/L. Note: All percentages were zero. (* missing data)

MILITARY CANAL

Military Canal (not a primary canal) discharges into Biscayne National Park south of Fender Point.

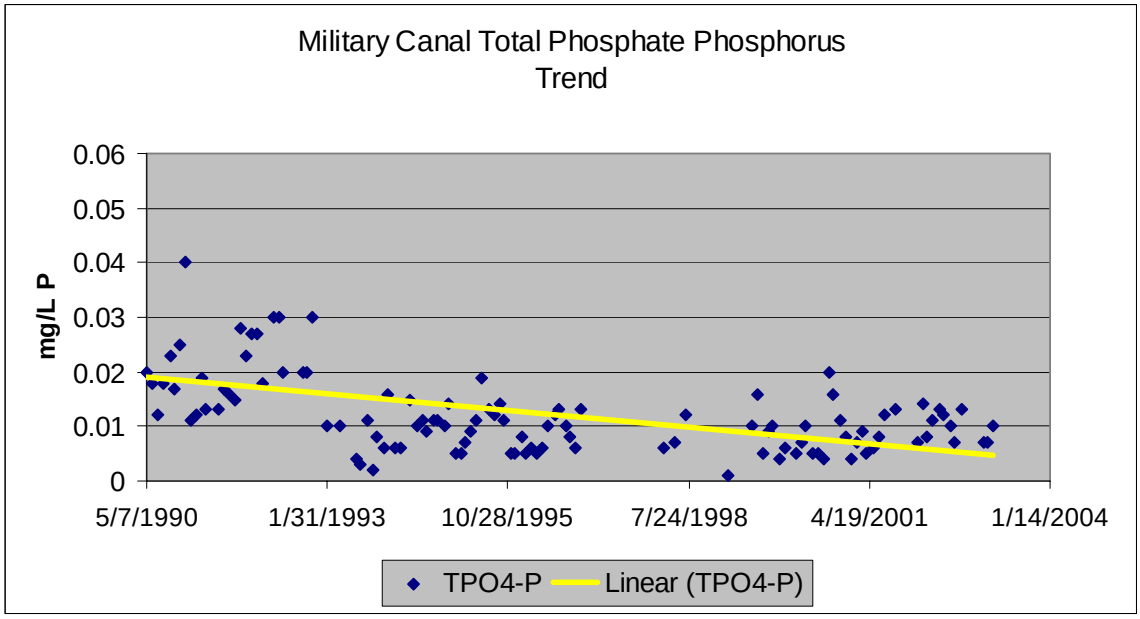

Figure 31. Total phosphate phosphorus concentrations as monitored by Miami-Dade County DERM at station MI03. Trend should be flat or declining.

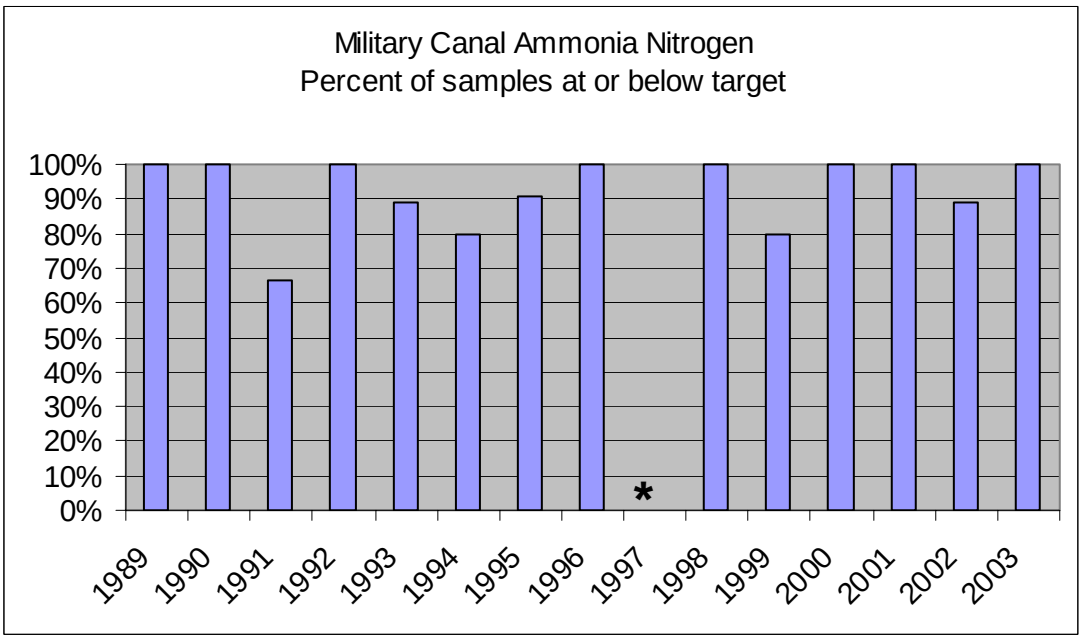

Figure 32. The percentage of samples by year as monitored by Miami-Dade County DERM at station MI03 that was at or below the total ammonia nitrogen concentration criterion of 0.1 mg/L. (* missing data)

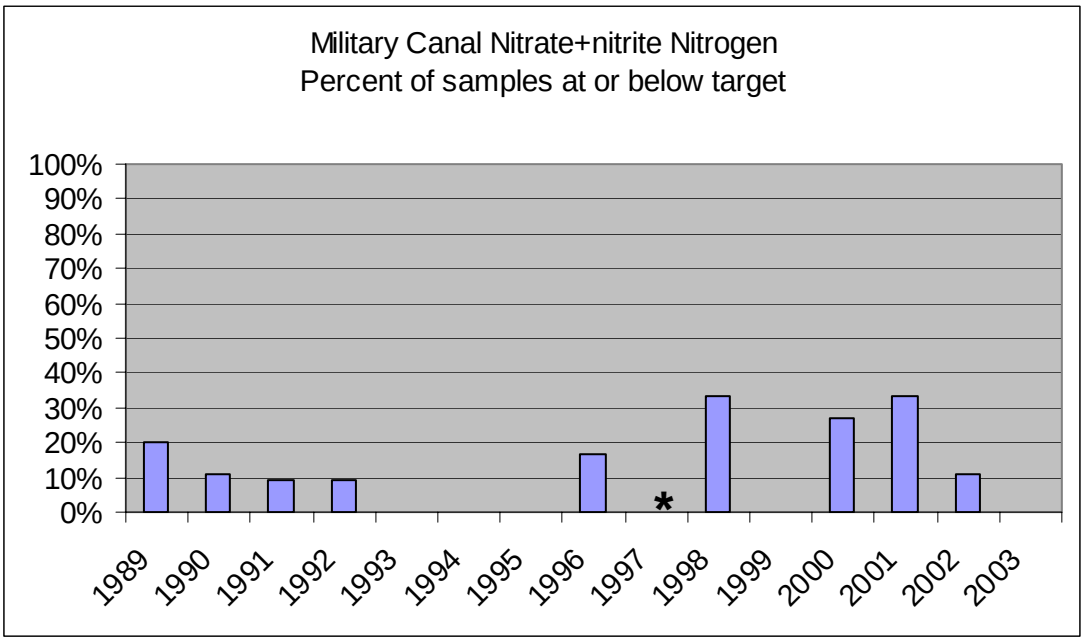

Figure 33. The percentage of samples (all 0) by year as monitored by Miami-Dade County DERM at station MI03 that was at or below the total nitrate/nitrite nitrogen concentration criterion of 0.05 mg/L. (* missing data)

MOWRY CANAL

Mowry Canal (C-103) discharges to Biscayne National Park north of Convoy Point.

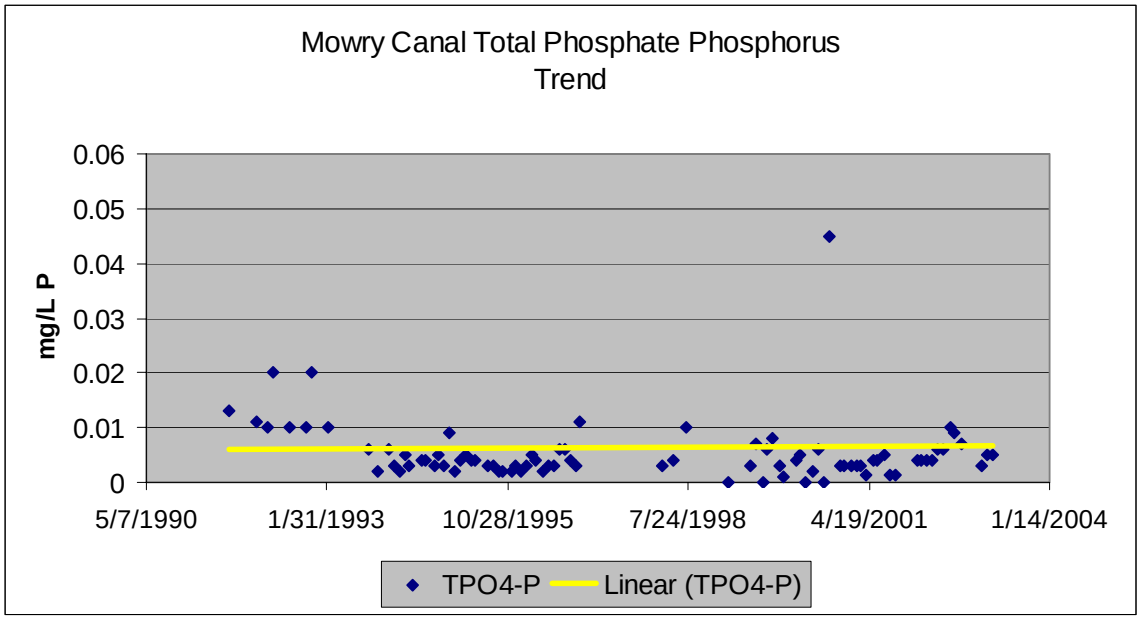

Figure 34. Total phosphate phosphorus concentrations as monitored by Miami-Dade County DERM at station MW04. Trend should be flat or declining.

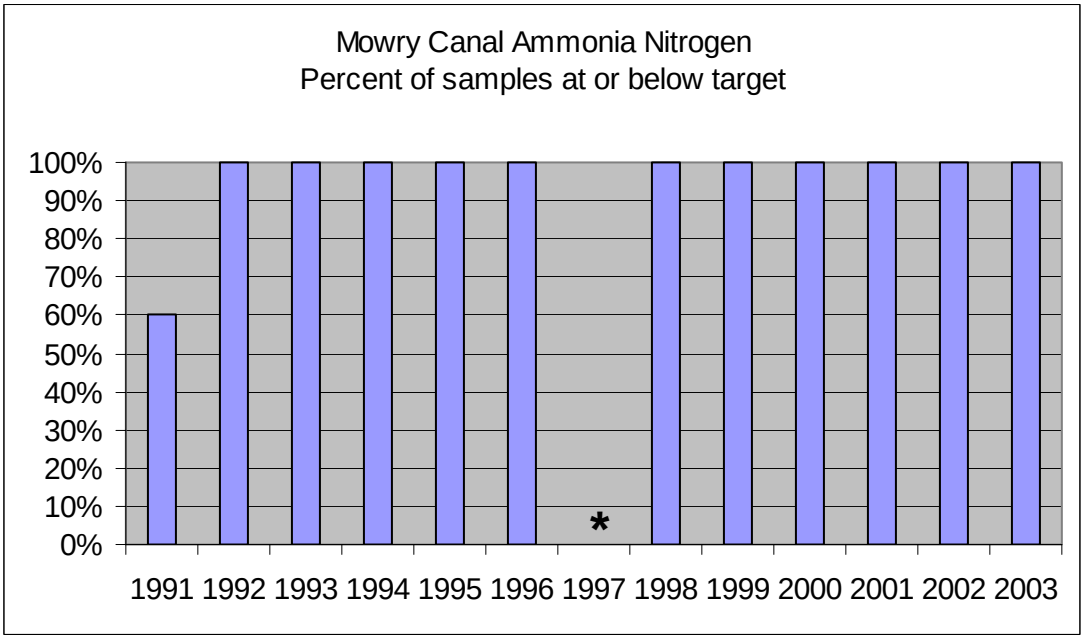

Figure 35. The percentage of samples by year as monitored by Miami-Dade County DERM at station MW04 that was at or below the total ammonia nitrogen concentration criterion of 0.1 mg/L. (* missing data)

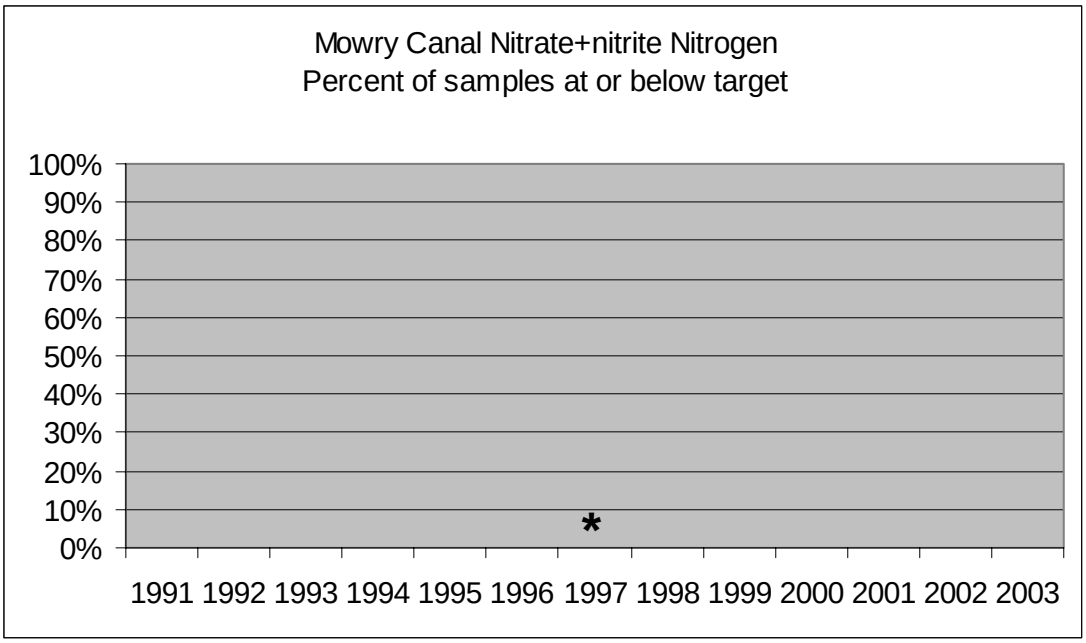

Figure 36. The percentage of samples by year as monitored by Miami-Dade County DERM at station MW04 that was at or below the total nitrate/nitrite nitrogen concentration criterion of 0.05 mg/L. Note: All percentages were zero. (* missing data)

AEROJET CANAL

Aerojet Canal (C-111) discharges to Biscayne Bay at Manatee Bay.

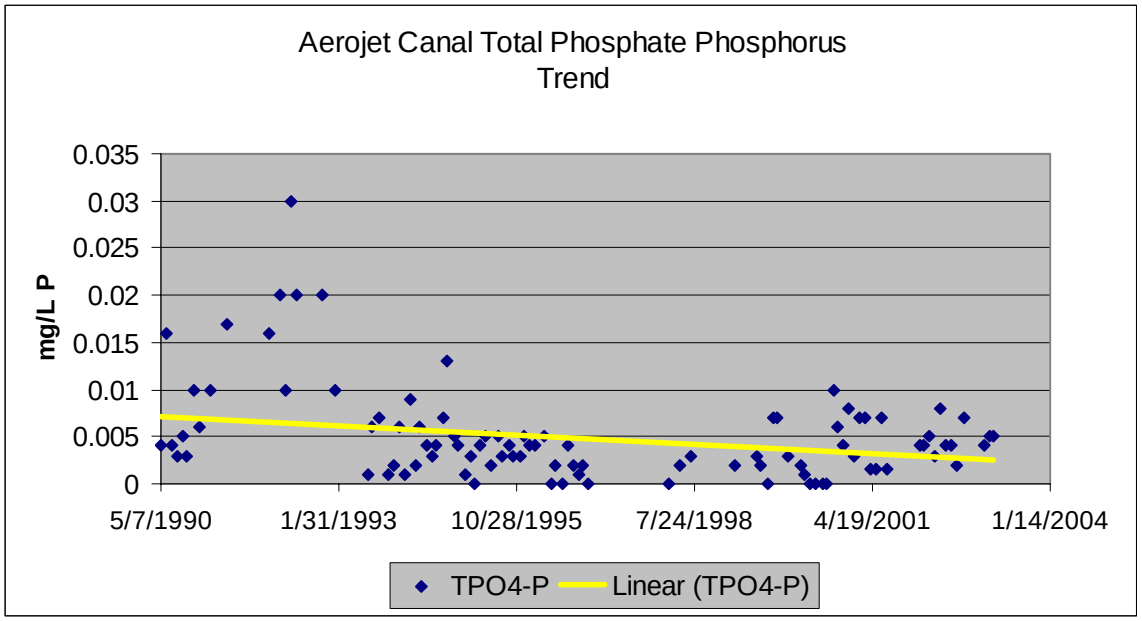

Figure 37. Total phosphate phosphorus concentrations as monitored by Miami-Dade County DERM at station AR03. Trend should be flat or declining.

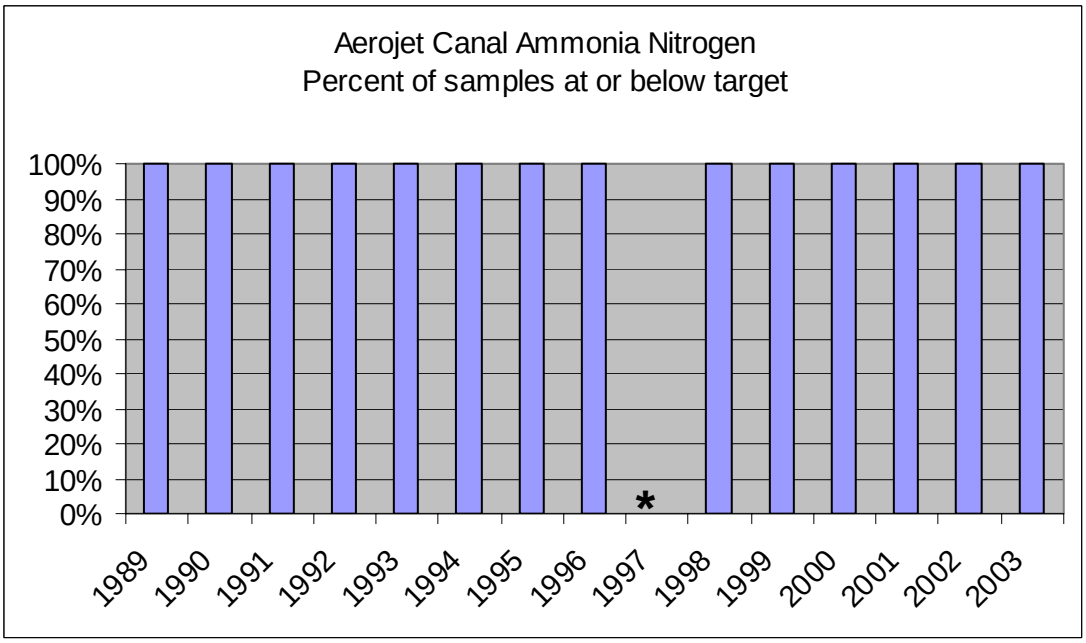

Figure 38. The percentage of samples by year as monitored by Miami-Dade County DERM at station AR03 that was at or below the total ammonia nitrogen concentration criterion of 0.5 mg/L. (* missing data)

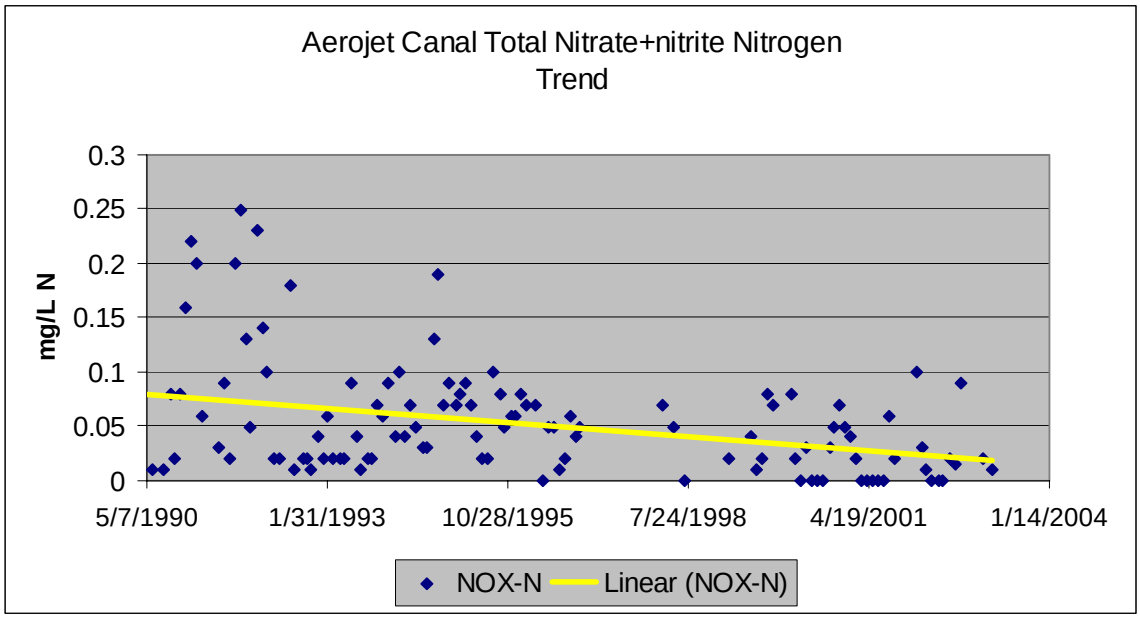

Figure 39. Total nitrate+nitrite nitrogen concentrations as monitored by Miami-Dade County DERM at station AR03. Trend should be flat or declining.