



South Florida Water Management District

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PRO ERG

July 20, 1998

Dr. Garth Redfield
Lead Environmental Scientist
Water Resources Evaluation Department
South Florida Water Management District
P.O. Box 24680
West Palm Beach, FL 33416-4680

Dear Dr. Redfield:

SUBJECT: First Quarter 1999 Report to Technical Oversight Committee

Enclosed please find the first quarter 1998 graphs displaying:

- 1) the geometric mean of the total phosphorus (TP) concentration levels measured from March 1995 through March 1998 at 14 stations within the Arthur R. Marshall Loxahatchee National Wildlife Refuge compared to the interim and long-term TP concentration levels;
- 2) the Shark River Slough 12-month moving flow-weighted mean TP concentration data for water years 1987 through 1997 compared to the interim and long-term discharge limits and, for the last 24 months, the 12-month moving average with the composited TP sample concentration for each sampling event;
- 3) the Taylor Slough and Coastal basins 12-month moving flow-weighted mean TP concentration data for water years 1987 through 1997 compared to the long-term 11 ppb discharge limit and, for the last 24 months, the 12-month moving average with the composited TP sample concentration for each sampling event.

The geometric means calculated from the TP concentrations measured in water samples collected in the Arthur R. Marshall Loxahatchee National Wildlife Refuge in January, February and March 1998 were 6.0, 6.9 and 8.4 ppb, respectively (Figure 1). These average concentrations were below the following calculated interim and long-term concentration levels: January 8.3 and 7.2 ppb, February 8.5 and 7.4 ppb and March 10.2 and 8.6 ppb, respectively. Water stage had reached a maximum of 17.56 feet in December and then decreased to 16.73 feet by the end of March. The inverse relationship between the geometric mean total phosphorus concentration and water stage has been observed previously in the Refuge.

The 12-month moving average for the flow-weighted mean concentration (fwmc) of TP entering Shark River Slough was 8.3 ppb in January and February and 8.4 ppb in March (Figure 2). These values were below the interim and long-term discharge limits in January and February. In March the interim limit was met but the long-term limit was essentially the same as the fwmc (8.32 vs 8.35 ppb).

The 12-month moving average for the fwmc of TP entering Taylor Slough and the Coastal Basins was 10.8 ppb in January, 10.7 ppb in February and 10.4 ppb in March (Figure 3). These flow-weighted mean concentrations have been slowly decreasing since a maximum value of 11.2 ppb was calculated in November 1997.

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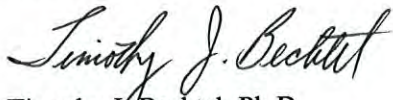
Dr. Garth Redfield
July 20, 1998
Page 2

The frequency of composited samples for each sampling event exceeding 10 ppb within a given 12-month period was included in the Settlement Agreement as an additional aid in tracking compliance. For Shark River Slough a frequency or percentage limit for samples greater than 10 ppb is based on observed flow. Taylor Slough and the Coastal Basins have a fixed limit of less than 53.1%. The following table indicates for Shark River Slough and Taylor Slough the actual frequency exceedence and the calculated frequency limits for the previous twelve 12-month moving averages. Some of the "Actual" data in this table have changed since the last quarterly report due to a QA/QC review of total phosphorus data collected in March and April 1997.

<u>Year</u> <u>Ending</u>	<u>Shark River Frequency</u> <u>Actual</u>	<u>Exceedance</u> <u>Limit</u>	<u>Taylor Slough</u> <u>Actual</u>	<u>Frequency Exceedance</u> <u>Limit</u>
Apr 1997	40.7	47.7	4.6	53.1
May 1997	40.0	47.3	4.8	53.1
Jun 1997	34.8	47.5	9.5	53.1
Jul 1997	27.3	47.6	9.5	53.1
Aug 1997	31.8	47.6	9.5	53.1
Sep 1997	31.8	46.7	9.1	53.1
Oct 1997	33.3	46.3	9.1	53.1
Nov 1997	33.3	47.2	9.1	53.1
Dec 1997	25.0	47.4	9.1	53.1
Jan 1998	30.0	45.9	13.6	53.1
Feb 1998	25.0	44.7	13.6	53.1
Mar 1998	22.7	43.4	16.7	53.1

If you have questions regarding the reported results, please call me at (561) 682-6392.

Sincerely,



Timothy J. Bechtel, Ph.D.
Senior Supervising Environmental Scientist
Resource Assessment Division
Water Resources Evaluation Department

Enclosure
TB/dwp

c: M. Cheesman, WRE
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L. Wedderburn, WRE

Monthly Total Phosphorus Concentration Levels for Loxahatchee National Wildlife Refuge

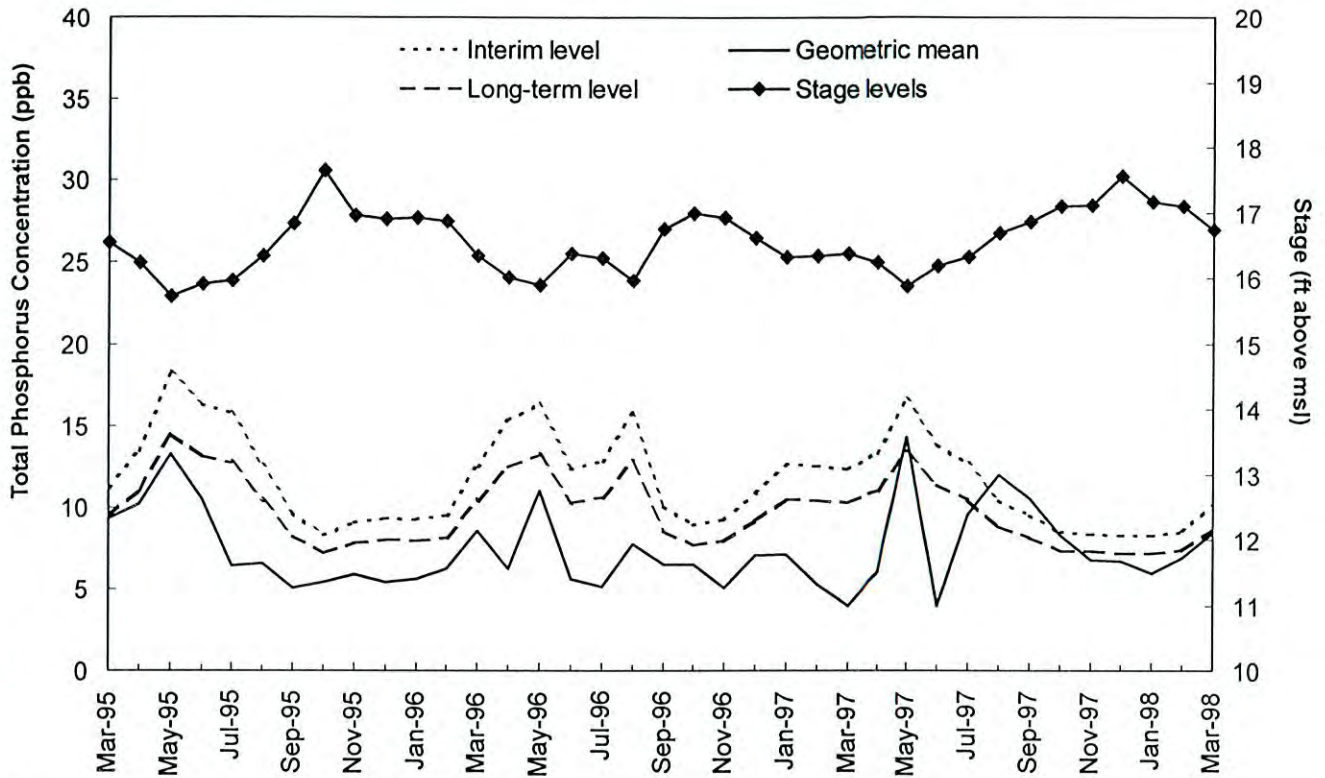


Figure 1. Observed monthly total phosphorus concentration levels for the Loxahatchee National Wildlife Refuge compared to the interim and long-term targets. The geometric means and targets are adjusted for fluctuations of water elevation.

Discharge Limits for Shark River Slough (S12A, S12B, S12C, S12D, and S333)

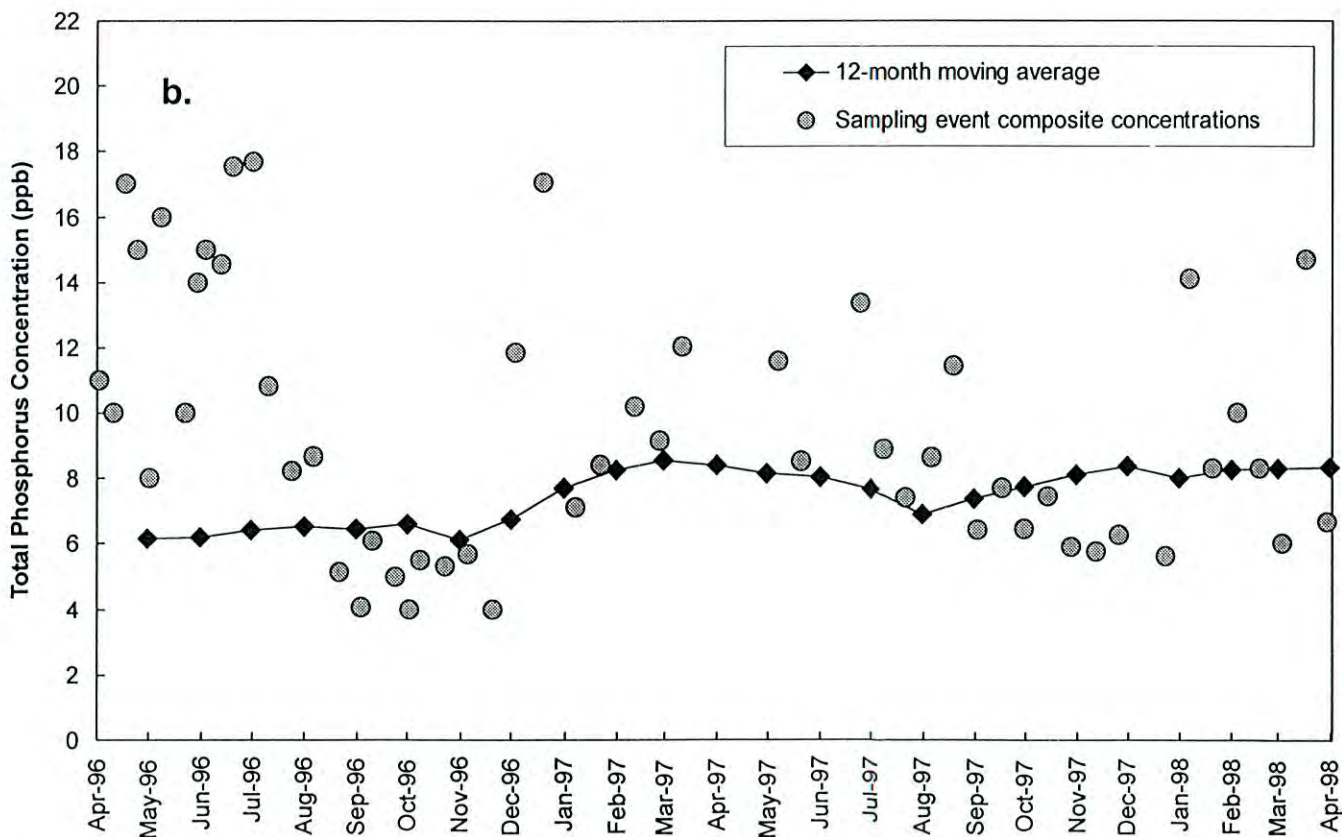
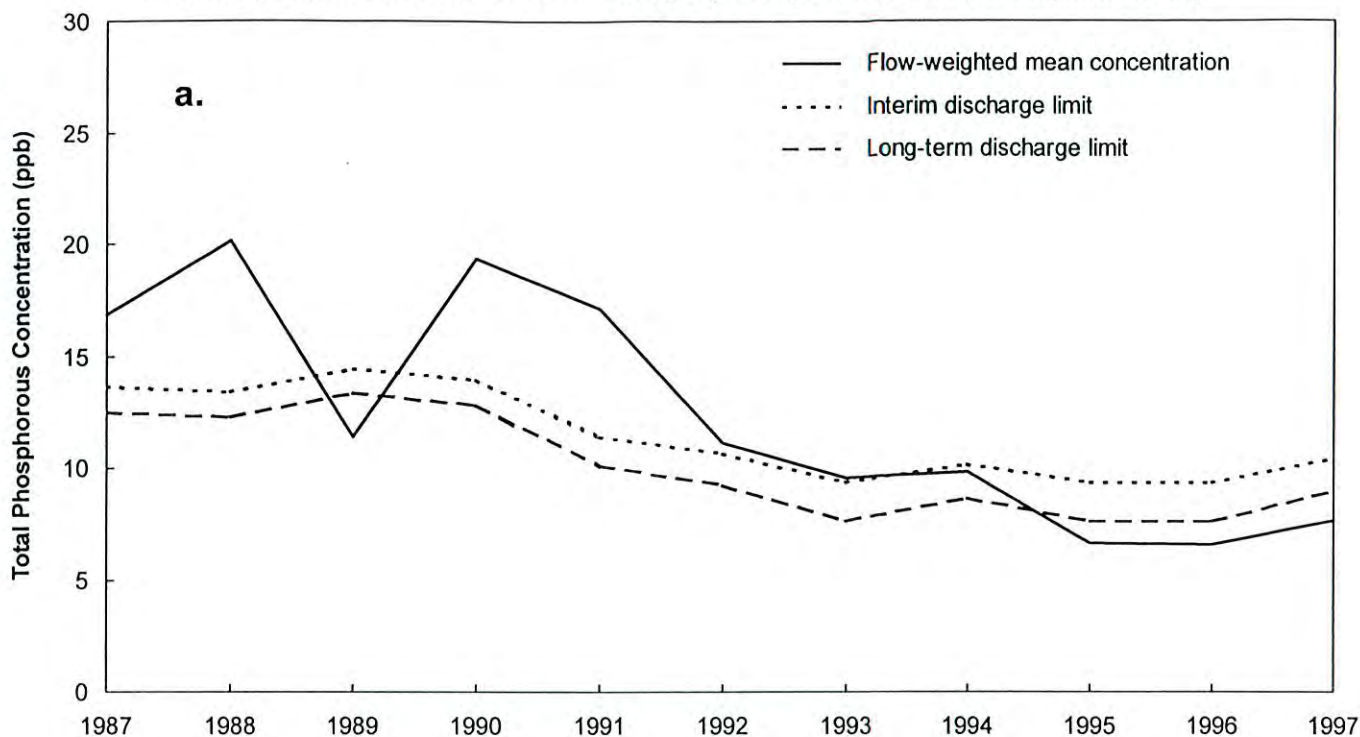


Figure 2. 12-month moving flow-weighted mean total phosphorus concentrations in the inflows to Everglades National Park (ENP) through Shark River Slough compared to the interim and long-term targets. **a.** Concentrations at the end of each water year. **b.** 12-month moving average concentration at the end of each month and the composite concentration for each sampling event.

Discharge Limits for Taylor Slough (S332 and S175) and the Coastal Basins (S18C)

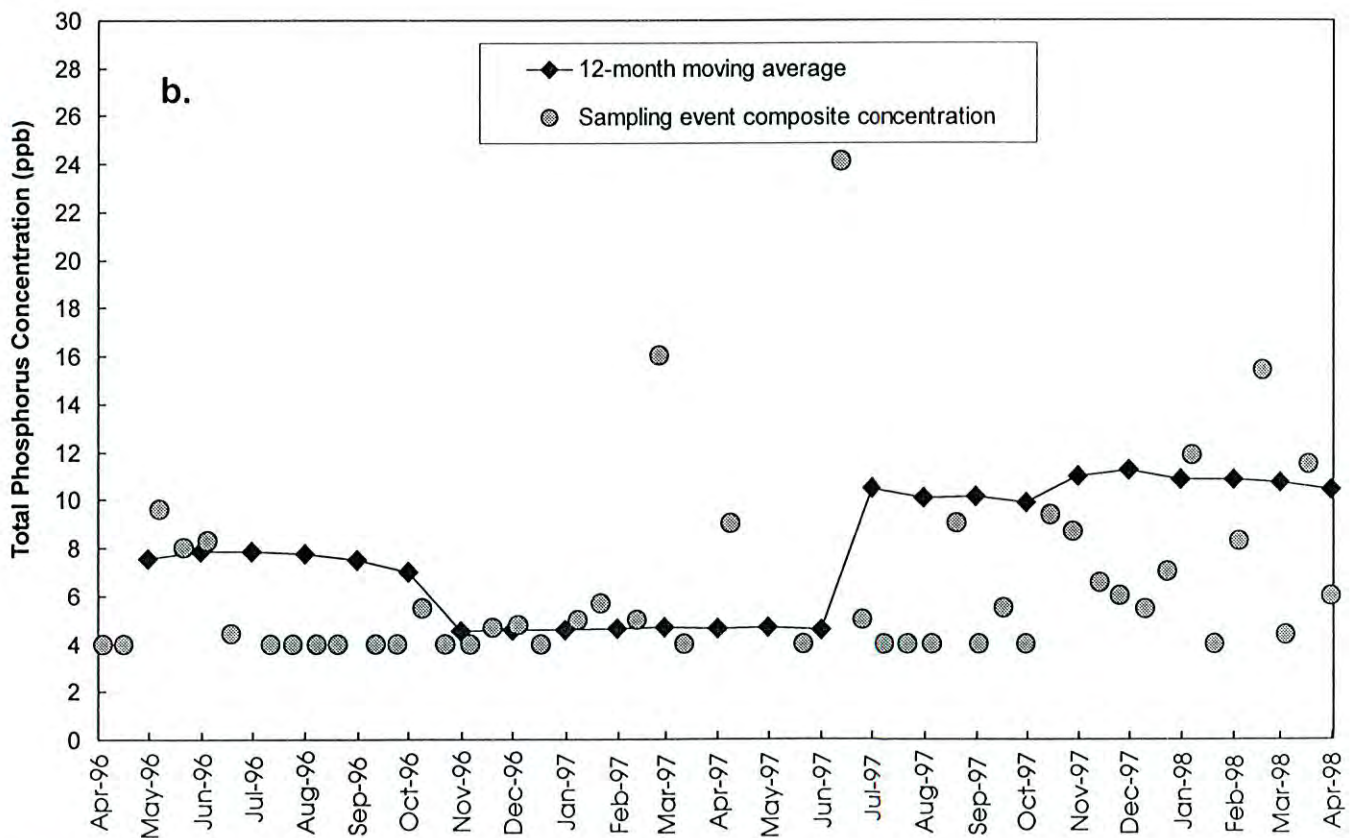
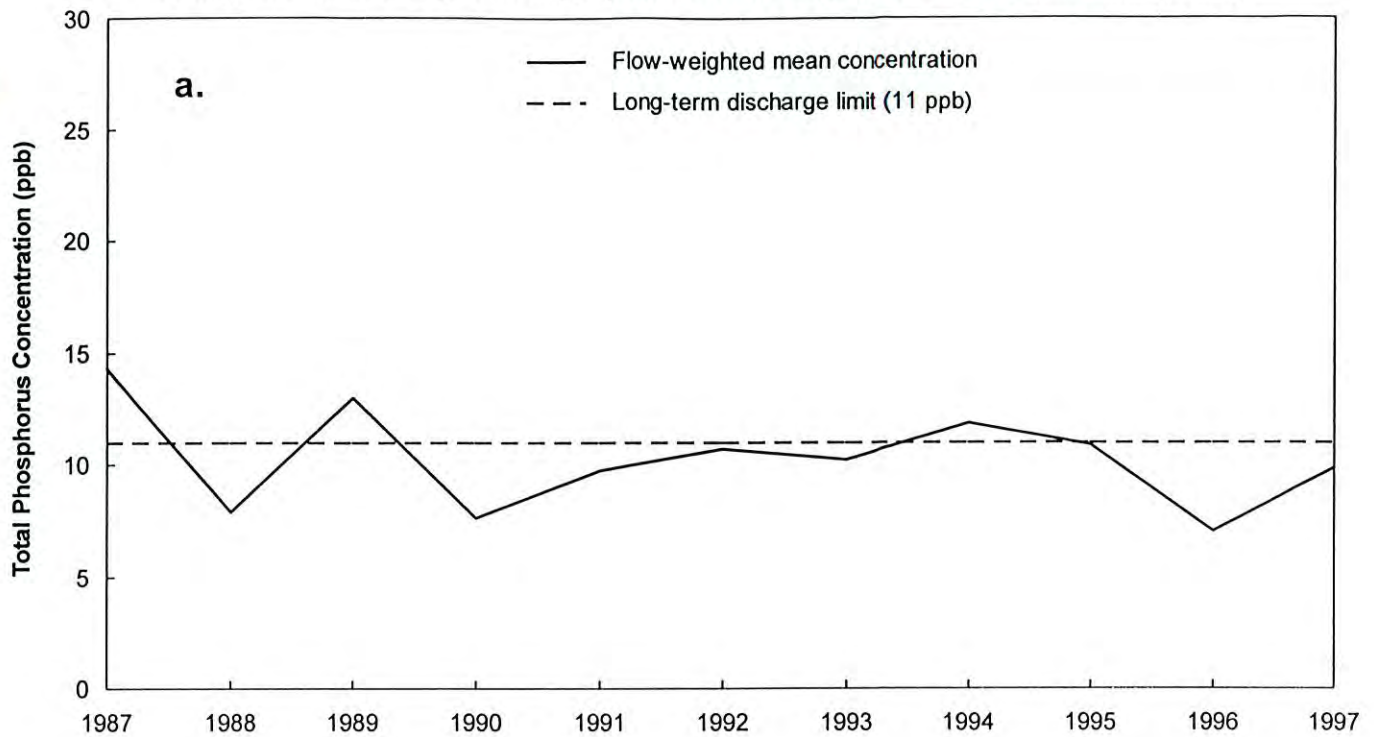


Figure 3. 12-month moving flow-weighted mean total phosphorus concentrations in the inflows to Everglades National Park (ENP) through Taylor Slough and the Coastal Basins compared to the long-term target. **a.** Concentrations at the end of each water year. **b.** 12-month moving average concentration at the end of each month and the composite concentration for each sampling event.