



# South Florida Water Management District

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## PRO ERG

April 23, 1998

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

Dear Dr. Redfield:

**SUBJECT: Fourth Quarter 1997 Report to Technical Oversight Committee**

Enclosed please find the fourth quarter 1997 graphs displaying:

- 1) the geometric mean of the total phosphorus (TP) concentration levels measured from January 1995 through December 1997, 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.

A geometric mean of 8.3 ppb was calculated from the TP concentrations measured in water samples collected in the Arthur R. Marshall Loxahatchee National Wildlife Refuge in October 1997. This value was less than the interim concentration level of 8.6, but greater than the long-term level of 7.5 (Figure 1). As water stage increased from 17.08 to 17.56 feet in November and December due to above average rainfall, total phosphorus levels decreased and were less than both the interim and long-term levels in November and December. The geometric means were 6.8 ppb in November and 6.7 ppb in December. The interim and long-term limits for November were 8.5 and 7.4 ppb, respectively, and for December were 8.3 and 7.2 ppb, respectively.

The 12-month moving average for the flow-weighted mean concentration (fwmc) of TP entering Shark River Slough was 8.0 ppb in October, 8.3 ppb in November and 8.0 ppb in December. These values were all below the interim and long-term discharge limits (Figure 2).

The 12-month moving average for the fwmc of TP entering Taylor Slough and the Coastal Basins was 10.9 ppb in October, 11.2 ppb in November and 11.0 ppb in December (Figure 3). Although the individual sampling event composite concentrations were less than 10 ppb this quarter, the 12-month moving average was still effected by two high composite concentrations earlier in the year.

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Page 2

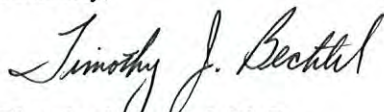
The frequency of composited samples for each sampling event exceeding 10 ppb within a given 12-month period was included in the Settlement Agreement as an additional aid in tracking compliance. For Shark River Slough a frequency or percentage limit for samples greater than 10 ppb is based on observed 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.

<u>Year</u> <u>Ending</u>	<u>Shark River Frequency Exceedance</u>		<u>Taylor Slough Frequency Exceedance</u>	
	<u>Actual</u>	<u>Limit</u>	<u>Actual</u>	<u>Limit</u>
Jan 1997	44.4	46.3	0.0	53.1
Feb 1997	50.0*	47.2	4.2	53.1
Mar 1997	43.8	47.5	4.2	53.1
Apr 1997	36.7	47.7	8.3	53.1
May 1997	35.7	47.4	8.3	53.1
Jun 1997	29.6	47.5	12.5	53.1
Jul 1997	23.1	47.6	12.5	53.1
Aug 1997	26.9	47.6	12.5	53.1
Sep 1997	26.9	46.7	12.0	53.1
Oct 1997	28.0	46.3	12.0	53.1
Nov 1997	29.2	47.2	12.5	53.1
Dec 1997	22.7	47.4	13.0	53.1

\* Exceeded limit for this time period

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

Sincerely,

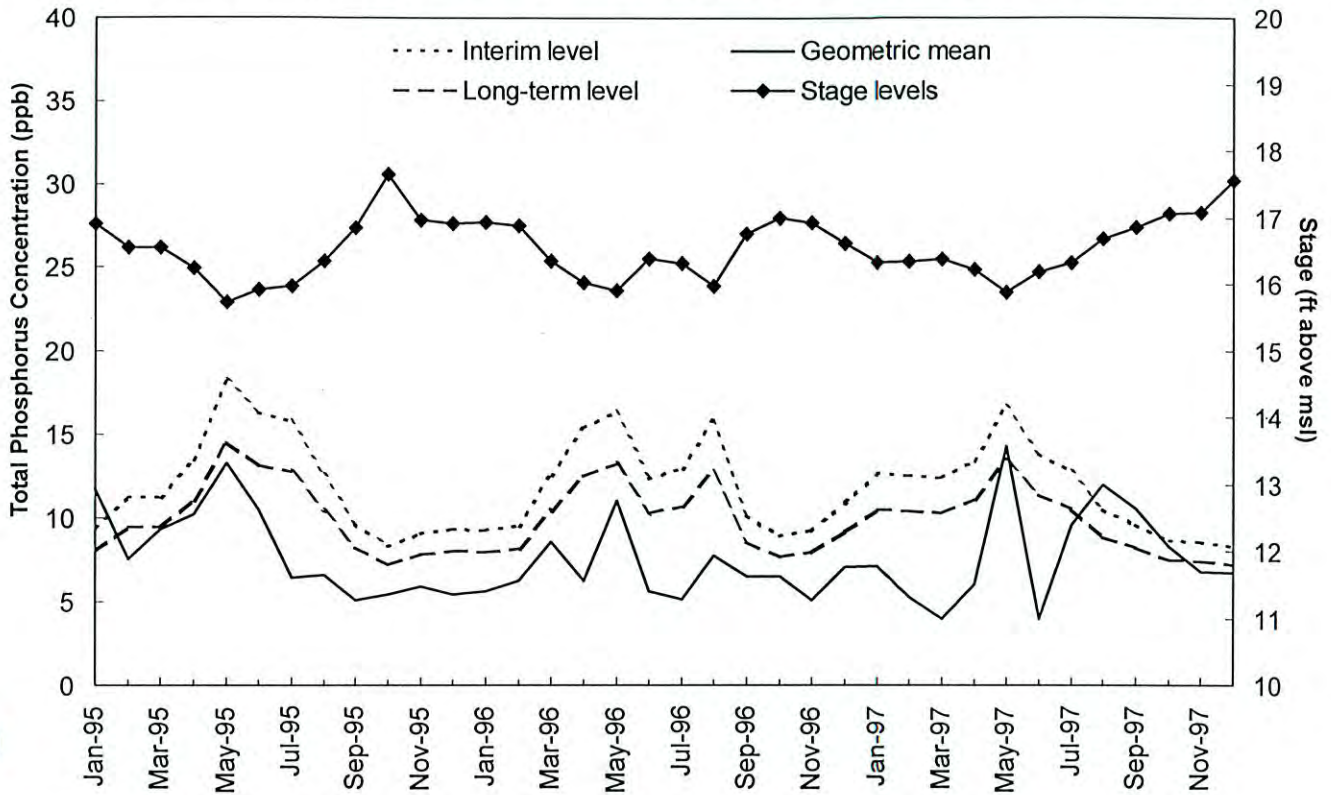


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Enclosure  
TB/dwp

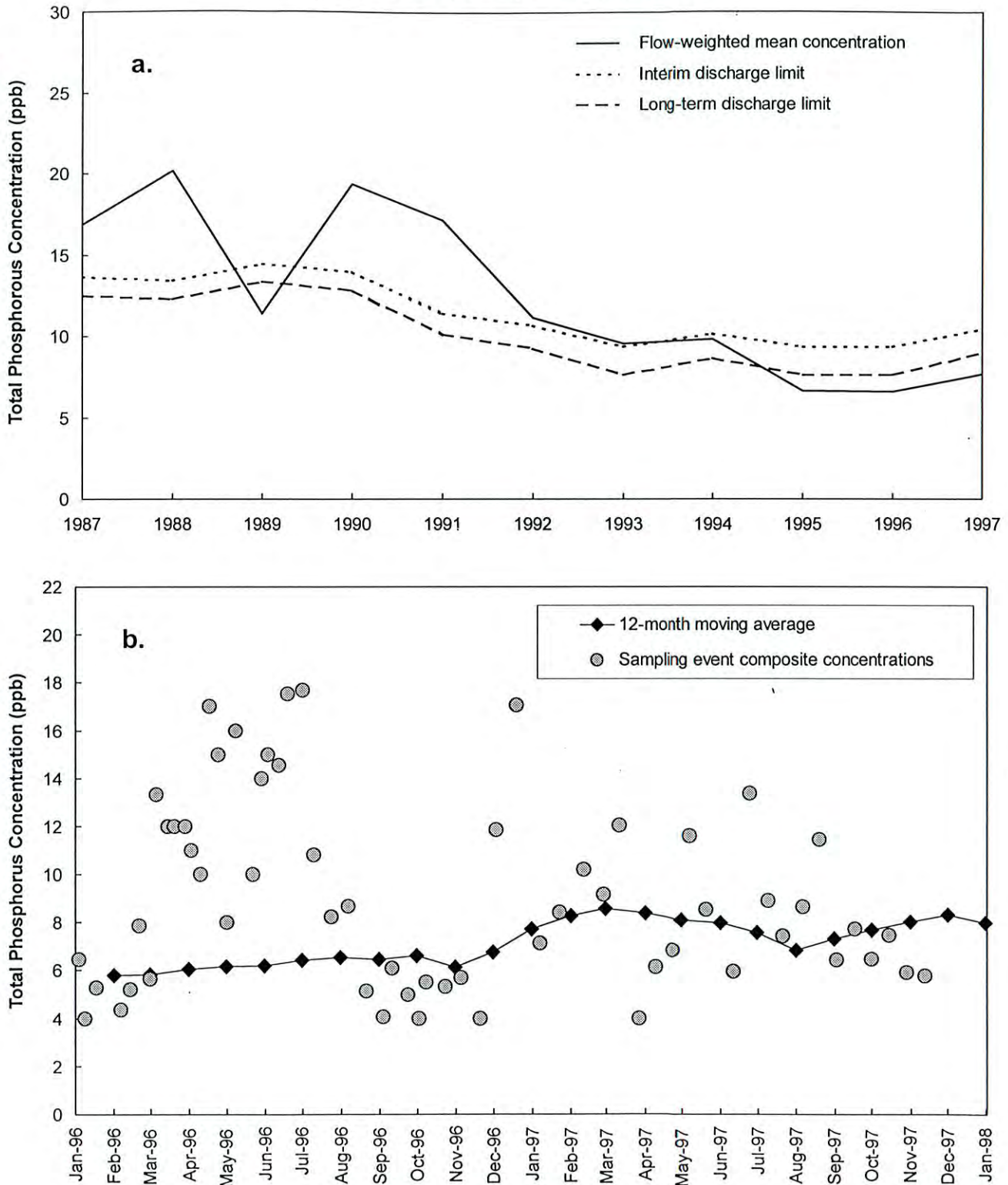
c: M. Cheesman, WRE  
L. Lindstrom, WRE  
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### Monthly Total Phosphorus Concentration Levels for Loxahatchee National Wildlife Refuge



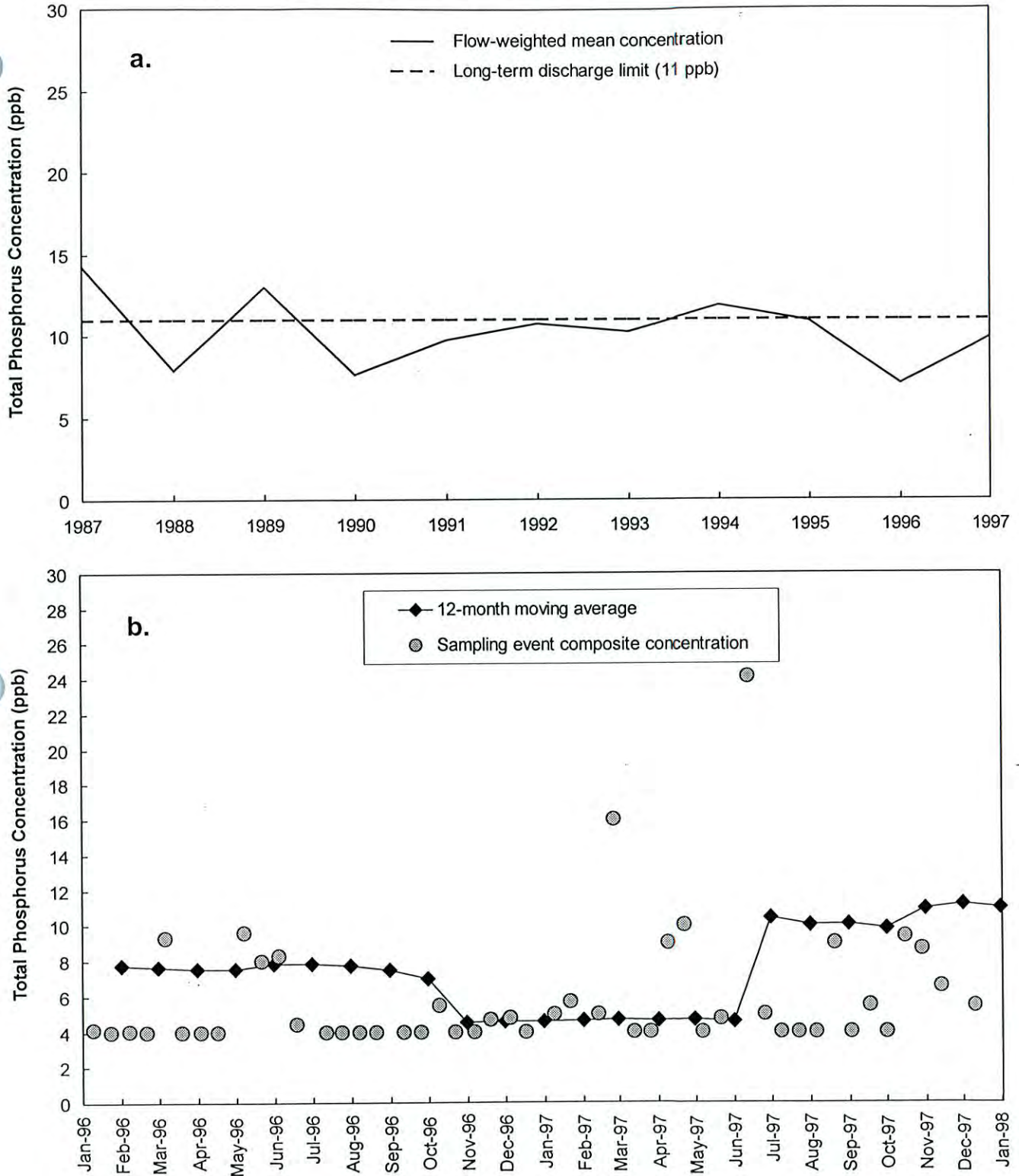
**Figure 1.** Observed monthly phosphorus concentration levels for the Loxahatchee National Wildlife Refuge compared to the interim and long-term targets. The geometric means and targets are adjusted for fluctuations of water elevation.

### 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.