Settlement Agreement
July - September 2008 Report

Revisions were made to this document on the following dates:
March 28, 2011: Note added to cover page
January 26, 2009: See pages 5 and 6
December 23, 2008: See page 9, Table 2

Prepared for the
Technical Oversight Committee
December 9, 2008

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March 28, 2011: Based on a recommendation by the Special Master in his January 4, 2011 report, the Water Year 2008 Compliance Calculation (12-month flow weighted mean) was revised from 10.2 ppb to 10.6 ppb for Shark River Slough. The revised value was published in the Settlement Agreement Report, October – December 2010, Figure 5, page 10 and Table 3, page 11. At the March 1, 2011 meeting, the TOC determined substantial evidence indicates this exceedance was due to error as described on page A-4 of Appendix A of the 1995 Amended Consent Decree.

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ARTHUR R. MARSHALL LOXAHATCHEE NATIONAL WILDLIFE REFUGE

The 1991 Settlement Agreement ended the Everglades lawsuit and was entered into by the federal government, the State of Florida and the South Florida Water Management District. The subsequent Consent Decree, as modified in 1995, specified that interim and long-term total phosphorus (TP) concentration levels for the Arthur R. Marshall Loxahatchee National Wildlife Refuge (Refuge) must be met by February 1, 1999, and December 31, 2006, respectively. Both the interim and long–term concentration levels vary monthly because they are calculated as a function of water stage measured at gauging stations 1-7, 1-8C and 1-9 within the Refuge. The stage range within which the interim and long-term concentration levels are applicable is 15.42 to 17.14 feet in National Geodetic Vertical Datum of 1929 (NGVD29). The monthly TP concentrations are determined from water samples collected at 14 interior marsh stations, LOX 3 through LOX 16 (**Figure 1**). As required in the Consent Decree, the concentrations are converted to a geometric mean, which is compared to the interim and long-term concentration levels.

Average stages in the Refuge were 16.37, 16.39 and 16.81 feet in July, August, and September 2008, respectively (**Figure 2** and **Table 1**). The geometric means, calculated from TP concentrations measured in water samples collected in July, August, and September 2008 were 9.2, 8.6 and 7.7 parts per billion (ppb), respectively. The geometric means were lower than the long-term levels, which became effective on December 31, 2006, for the months of July, August, and September 2008.

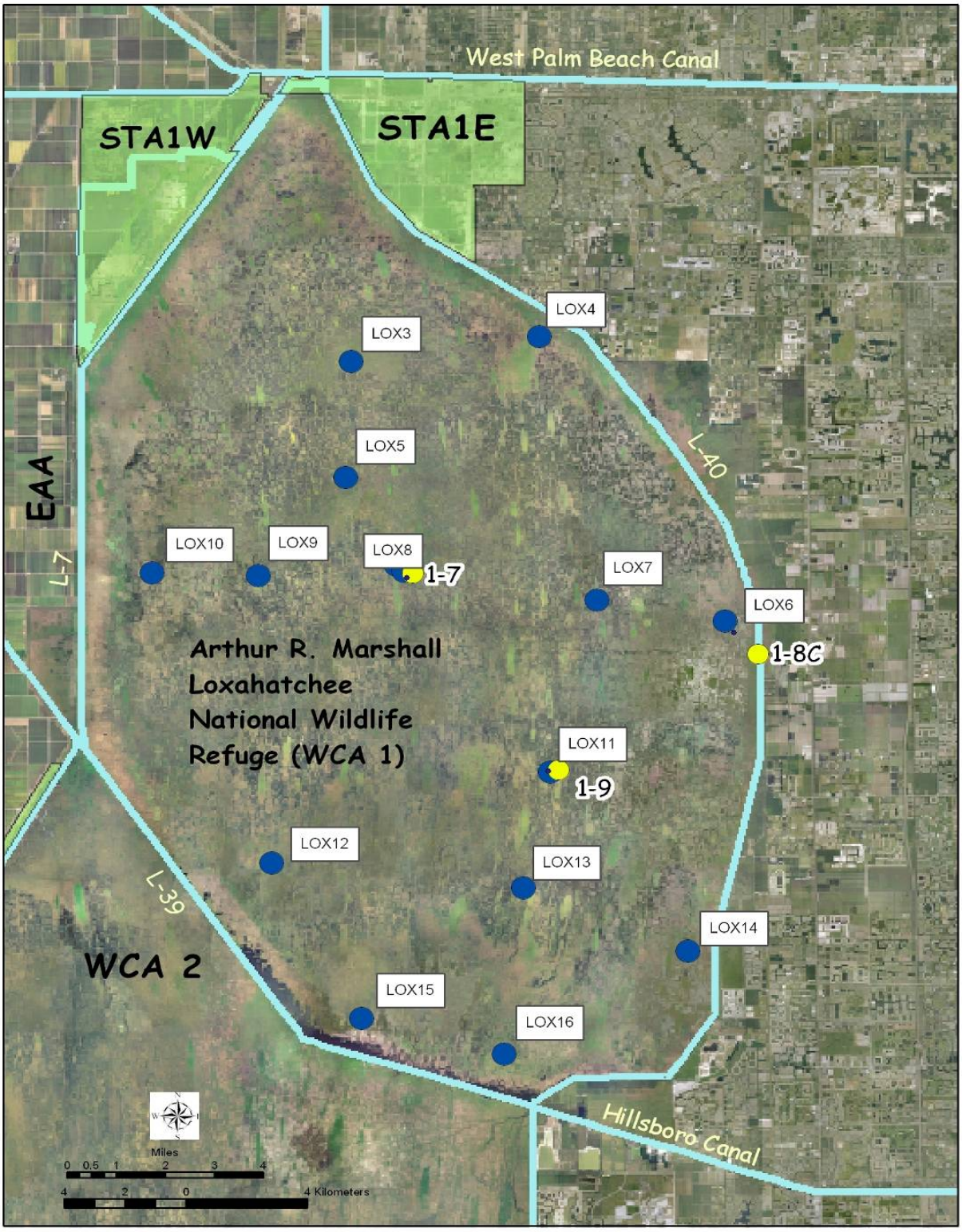

Figure 1. A.R.M. Loxahatchee National Wildlife Refuge Water Quality Sampling and Stage Measurement Sites

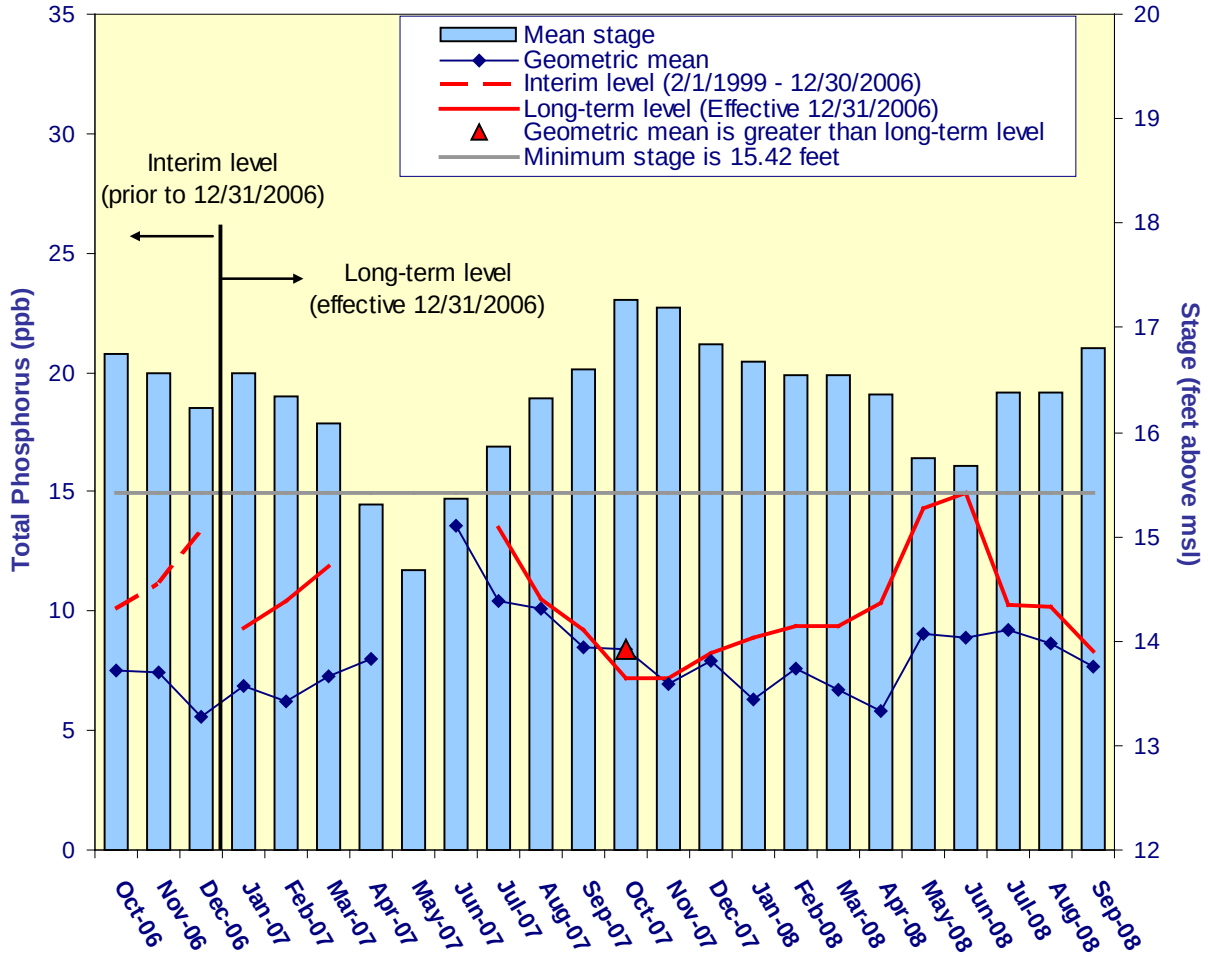

Figure 2. Monthly TP geometric mean concentrations for the Arthur R. Marshall Loxahatchee National Wildlife Refuge compared to the interim and long-term levels. The calculated concentration levels are adjusted for fluctuations in stage. The long-term levels were not applicable for April 2007 through June 2007 because the average stage was less than 15.42 feet. The geometric mean was greater than the long-term level in October 2007.

Table 1. Loxahatchee National Wildlife Refuge TP Compliance Tracking.

Month - Year	Geometric Mean Concentration (ppb)	Interim Level[a] (ppb) Effective 2/1/99-12/30/06	Long-Term Level[a] (ppb) Effective 12/31/06	Average Stage[b] (ft NGVD)	Number of TP Samples	Number of Stage Measure-ments
Oct-2006	7.5	10.1	8.6	16.74	14	3
Nov-2006	7.4	11.1	9.4	16.56	14	3
Dec-2006	5.6	13.4	11.0	16.23	11	3
Jan-2007	6.9	11.1	9.3	16.57	14	3
Feb-2007	6.2	12.6	10.4	16.34	13	3
Mar-2007	7.3	14.5	11.8	16.10	10	3
Apr-2007	8.0	N/A	N/A	15.30	3	3
May-2007	n/a	N/A	N/A	14.68	0	3
Jun-2007	13.6	N/A	N/A	15.37	4	3
Jul-2007	10.4	16.8	13.5	15.86	13	3
Aug-2007	10.1	12.7	10.5	16.33	13	3
Sep-2007	8.5	10.9	9.2	16.59	14	3
Oct-2007	**8.4**	**8.3**	**7.2**	**17.26**	**14**	**3**
Nov-2007	7.0	8.3	7.2	17.19	14	3
Dec-2007	7.9	9.6	8.2	16.84	14	3
Jan-2008	6.3	10.5	8.9	16.68	14	3
Feb-2008	7.6	11.2	9.4	16.55	14	3
Mar-2008	6.7	11.2	9.4	16.54	14	3
Apr-2008	5.8	12.5	10.3	16.36	14	3
May-2008	9.1	17.9	14.3	15.76	9	3
Jun-2008	8.9	18.8	14.9	15.68	8	3
Jul-2008	9.2	12.4	10.3	16.37	14	3
Aug-2008	8.6	12.3	10.2	16.39	14	3
Sep-2008	7.7	9.8	8.3	16.81	14	3

[a] *N/A denotes that the level was not applicable because the average stage was less than 15.42 feet.*
[b] *Average stage is calculated using stage elevations at stations 1-7, 1-8C, and 1-9 on the sampling dates.*

Notes: Highlighted row indicates the month (October 2007) when an excursion over the long-term level occurred.

EVERGLADES NATIONAL PARK

Shark River Slough

The Consent Decree of 1995 specified that interim and long-term total phosphorus (TP) concentration limits for discharges into the Everglades National Park (ENP) (**Figure 3**) through Shark River Slough be met by October 1, 2003, and December 31, 2006, respectively. It was specified that the TP concentrations be presented as 12-month flow-weighted means. Only the TP concentrations for the water year ending September 30th are evaluated for compliance with the Consent Decree limits. The long-term TP concentration limit for inflows to Shark River Slough through structures S12A, S12B, S12C, S12D and S333 represents the concentrations delivered during the Outstanding Florida Waters baseline period of March 1, 1978, to March 1, 1979, and is adjusted for variations in flow. Inflow concentrations of TP through Shark River Slough are compared to the interim and long-term limits at the end of each water year (October 1st through September 30th) from 1991 to 2008 (**Figure 4**). The 12-month flow-weighted mean TP concentration for October 2007 through September 2008 was 10.2 ppb. The corresponding long-term limit, which became effective on December 31, 2006, was also 10.2 ppb.

Table 2 presents the 12-month flow-weighted mean concentrations for each month as well as the corresponding interim and long-term TP concentration limits, calculated using the 12-month period flow. Supplemental water quality samples were collected at some of the Shark River Slough monitoring sites from January 2006 through September 2007, but only the bi-weekly compliance monitoring grab concentration data were used for flow-weighted mean TP concentration calculations. Routine monitoring was changed to weekly[1] for all Shark River Slough sites beginning in October 2007. In accordance with Appendix A of the Consent Decree, only the every-other-week grab concentration data were used for the flow-weighted mean calculations from October 2007 forward[2]. For the 12-month periods ending in July, August, and September 2008, the 12-month flow-weighted mean TP concentrations were 12.4, 12.0 and 10.2[3] ppb, respectively. The long-term limits were 12.2*, 11.4* and 10.2* ppb, respectively. The 12-month flow-weighted mean TP concentrations were higher than the long-term limits for the month of July and August 2008; but the 12-month flow-weighted mean TP concentration was equal to the limit for the month of September 2008.

[1] *S12A and S333 are sampled weekly if flowing, otherwise monthly. S12B, S12C, and S12D are sampled weekly if flowing.*

[2] *The 12-month flow-weighted mean TP concentrations using all available weekly grab concentration data instead of bi-weekly grab data were 12.2, 11.6, and 10.2 ppb for July, August, and September 2008, respectively; the 12-month flow-weighted mean TP concentrations using the alternative set of bi-weekly grab concentration data were 12.1, 11.3, and 9.9 ppb for July, August, and September 2008, respectively.*

[3] *See Appendix A for details.*

* *Long-term limits were revised from 12.1, 11.3, and 10.2 ppb on January 26, 2009.*

The Consent Decree stipulates that the percentage of flow-weighted mean TP concentrations greater than 10 ppb from each sampling event in any 12-month period must not exceed a guideline value based on flow into Shark River Slough for the same 12-month period. For the 12-month periods ending July, August, and September 2008, the sampling event TP concentrations greater than 10 ppb were 76.5, 77.8 and 70.0 percent, respectively. The observed percentages of the sampling event flow-weighted mean TP concentrations greater than 10 ppb were more than the guidelines for July, August and September 2008 (**Table 2**). The 12-month flow-weighted mean TP concentrations and the flow-weighted mean TP concentrations for individual sampling events are presented in **Figure 5**.

The daily flows through the individual Shark River Slough structures from October 2006[1] through September 2008 are presented in **Figure 6**.

For additional information on the WCA 3A regulation schedule, please visit

http://www.saj.usace.army.mil/h2o/plots/wca3ahp.pdf

S12A, S12B, and S12C were closed until mid-July 2008. S12D was utilized during most of the quarter. There was discharge throughout the quarter at S333 but almost none of the flow was diverted to S334 until mid-September 2008 (**Figure 7**).

The relationship between the sum of the daily flows at Shark River Slough structures and corresponding flow-weighted mean TP concentrations for individual sampling events is presented in **Figure 8**. Flow and TP concentrations for waters entering the ENP through Shark River Slough had been following an inverse relationship in previous periods. TP concentrations continuously declined as flow was increased during the quarter.

[1] *Beginning date was changed from July 2006 to October 2006 for consistency with Figure 6 on January 26, 2009.*

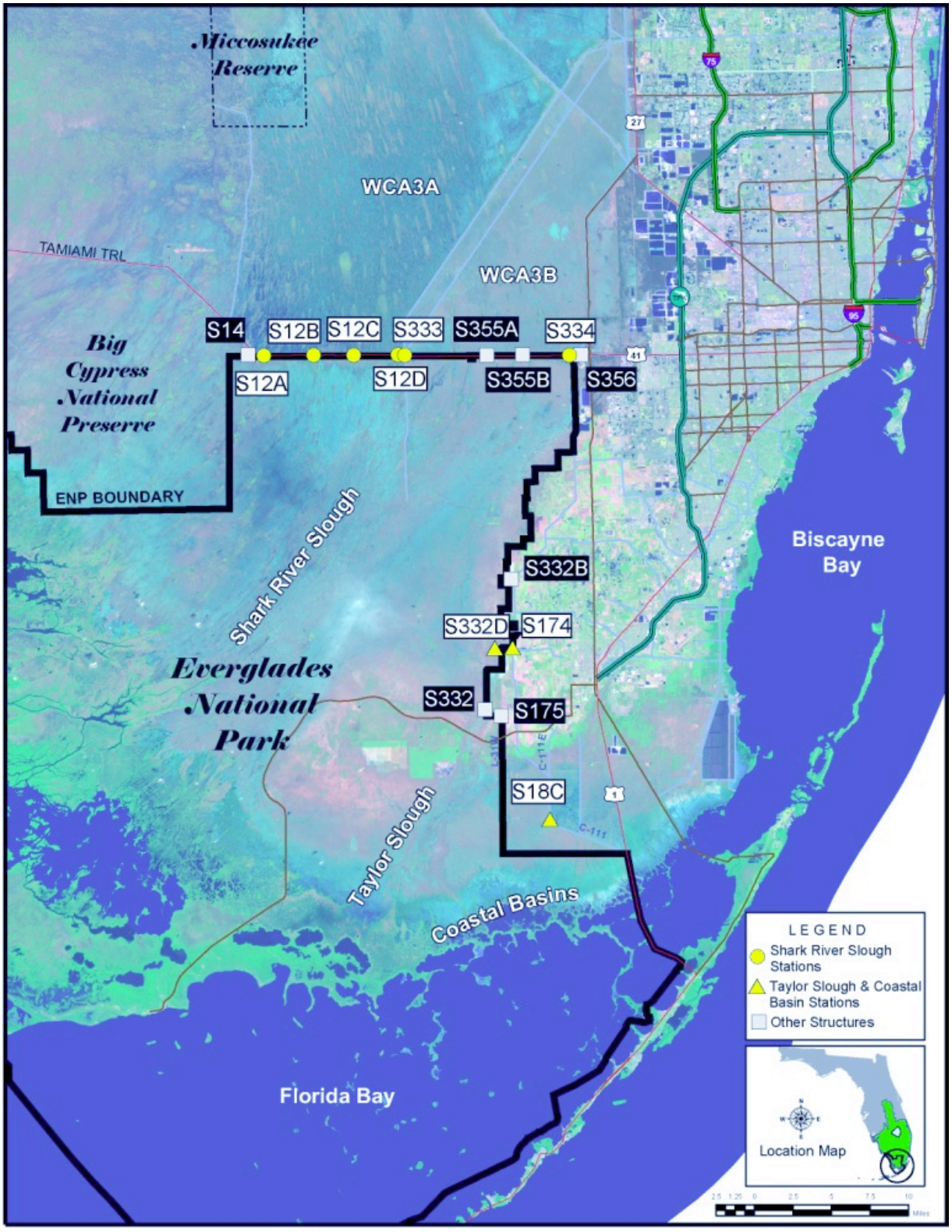

Figure 3. Everglades National Park flow structures

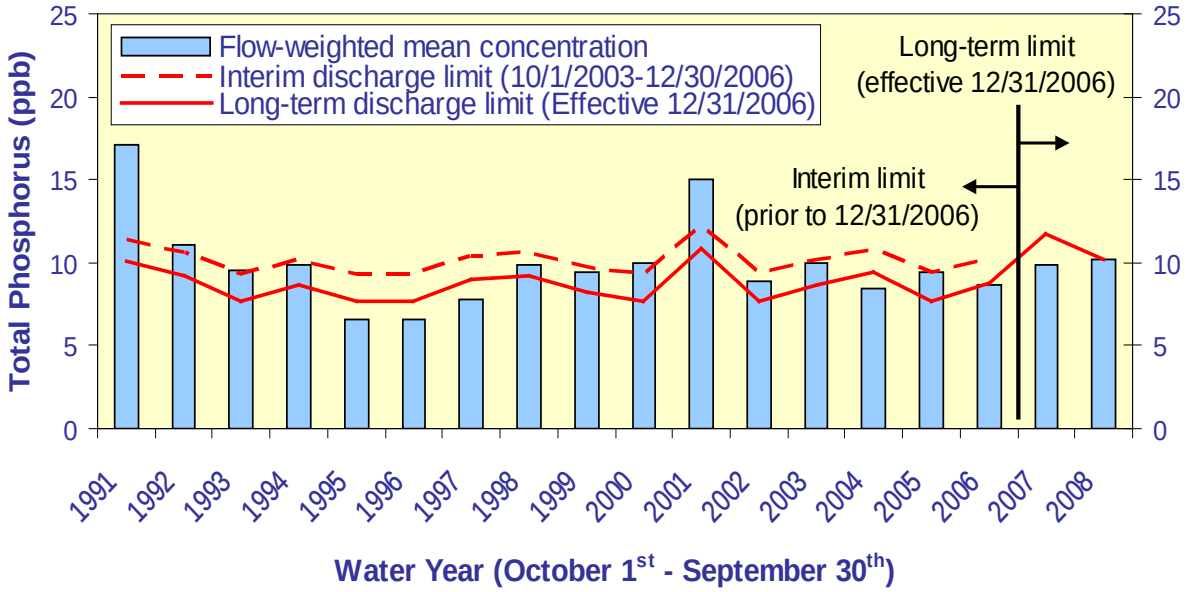

Figure 4. The 12-month flow-weighted mean TP concentrations in inflows to Everglades National Park through Shark River Slough at the end of each water year compared to the TP interim and long-term limits. The 12-month flow-weighted mean concentrations had met the interim limits since they became effective on October 1, 2003. The 12-month flow-weighted mean TP concentration for the compliance year through September 2008 was 10.2 ppb and equal to the long-term limit.

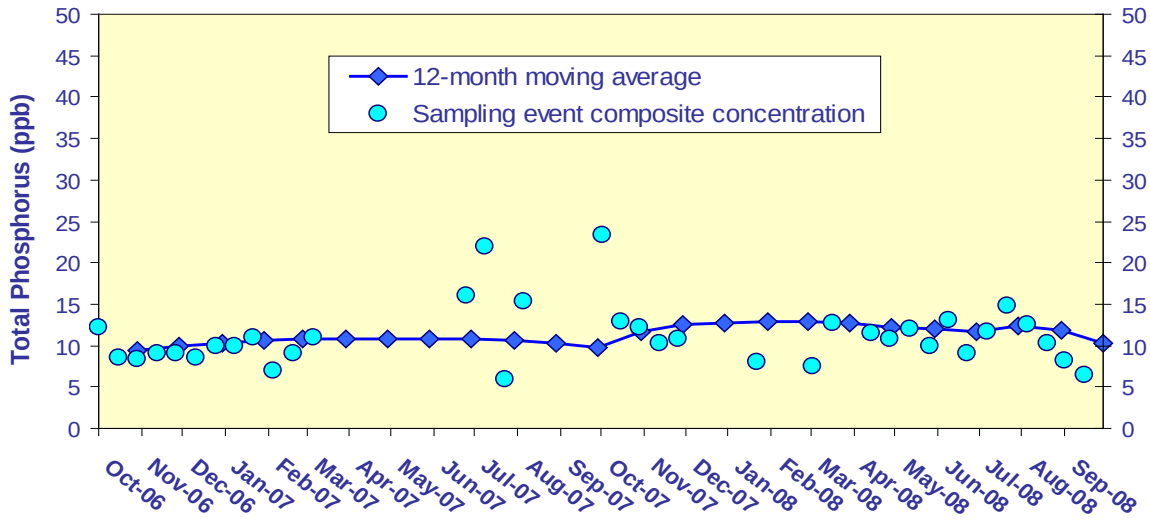

Figure 5. The 12-month flow-weighted mean TP concentrations in inflows to Everglades National Park through Shark River Slough at the end of each month and the flow-weighted mean concentration for each sampling event. There are no sampling event values for some months because there was little or no flow in those periods.

Table 2. Shark River Slough TP Concentration Compliance Tracking.

12-Month Period	Total Flow (kac-ft)	TP Flow Weighted Mean (ppb)	Interim Limit (ppb) Effective 10/1/03-12/30/06	Long-Term Limit (ppb) Effective 12/31/06	Percent of Sampling Events Greater than 10 ppb (%) Guideline	Observed
11/1/2005 - 10/31/2006	779.6[a,b]	9.5	10.5	9.0	46.9	***50.0***
12/1/2005 - 11/30/2006	642.8[a,b]	10.0	11.1	9.7	50.8	50.0
1/1/2006 - 12/31/2006	507.9[a,b]	10.3	11.8	10.5	55.0	50.0
2/1/2006 - 1/31/2007	446.1[a,b]	10.7	12.1	10.9	57.0	55.0
3/1/2006 - 2/28/2007	442.4[b]	10.8	12.1	10.9	57.2	52.4
4/1/2006 - 3/31/2007	456.0[b]	10.8	12.0	10.8	56.7	***57.1***
5/1/2006 - 4/30/2007	449.5[b]	10.8	12.1	10.8	56.9	52.6
6/1/2006 - 5/31/2007	445.5[b]	10.7	12.1	10.9	57.1	47.1
7/1/2006 - 6/30/2007	447.6[b]	10.8	12.1	10.8	57.0	50.0
8/1/2006 - 7/31/2007	444.6[b]	10.6	12.1	10.9	57.1	47.4
9/1/2006 - 8/31/2007	401.0	10.3	12.3	11.1	58.6	44.4
10/1/2006 - 9/30/2007	**289.7**	**9.8**	13.0	**11.8**	**62.6**	**37.5**
11/1/2006 - 10/31/2007	147.9	11.7	13.8	12.7	67.9	50.0
12/1/2006 - 11/30/2007	121.2	12.6	13.9	12.8	68.9	62.5
1/1/2007 - 12/31/2007	118.2	12.8	14.0	12.8	69.1	***71.4***
2/1/2007 - 1/31/2008	115.8	12.9	14.0	12.9	69.2	69.2
3/1/2007 - 2/29/2008	106.8	12.9	14.0	12.9	69.5	***81.8***
4/1/2007 - 3/31/2008	88.9	12.8	14.1	13.0	70.2	***75.0***
5/1/2007 - 4/30/2008	110.9*	12.4	14.0	12.9	69.4*	***78.6***
6/1/2007 - 5/31/2008	142.3*	12.2	13.8	12.7*	68.1*	***75.0***
7/1/2007 - 6/30/2008	153.6*	11.8	13.7	12.6	67.7*	***70.6***
8/1/2007 - 7/31/2008	227.4*	12.4	13.3	12.2*	64.9*	***76.5***
9/1/2007 - 8/31/2008	356.8*	12.0	12.6*	11.4*	60.1*	***77.8***
10/1/2007 - 9/30/2008	**562.0***	**10.2[c]**	11.5	**10.2**	**53.3***	***70.0***

[a] *Flow of 1.82 kac-ft in February 2006 at S355A and S355B was included for the 12-month total flows.*
[b] *Flow of 3.33 kac-ft in August 2006 at S356 structure was included for the 12-month total flows.*
[c] *See Appendix A for details.*

Notes: 1) Highlighted rows indicate the end of the water year, which are the compliance points.
2) Bold italicized values exceeded the guideline percentages.

* *Flow data for S12B from April 29 to May 7, 2008, were updated for consistency with the DBHYDRO database on December 23, 2008.*

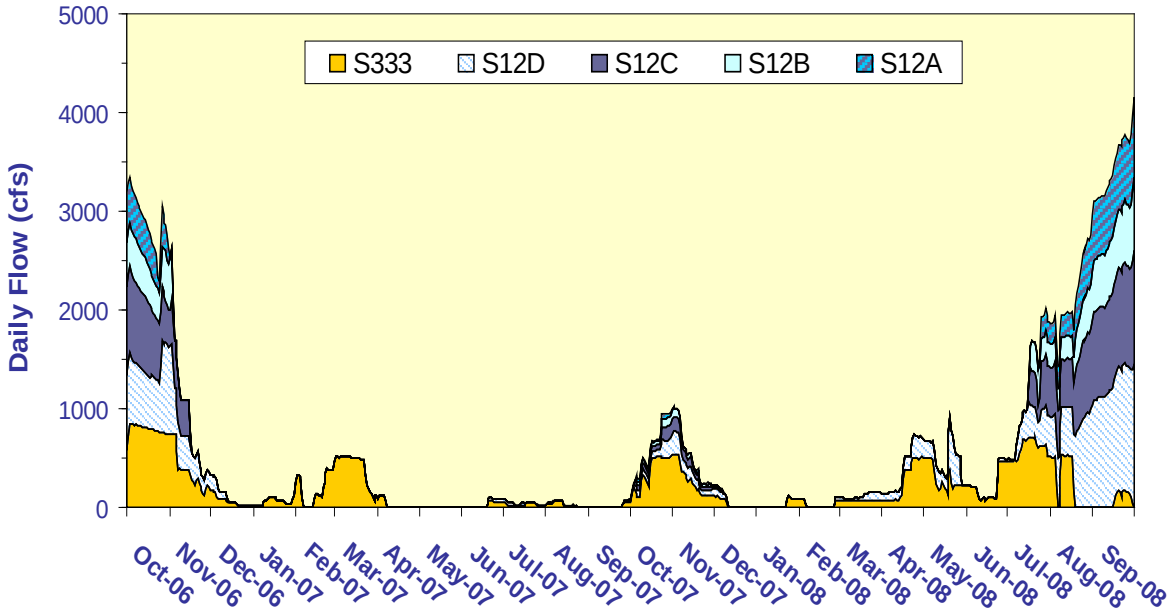

Figure 6. Daily flows into Shark River Slough by structure.

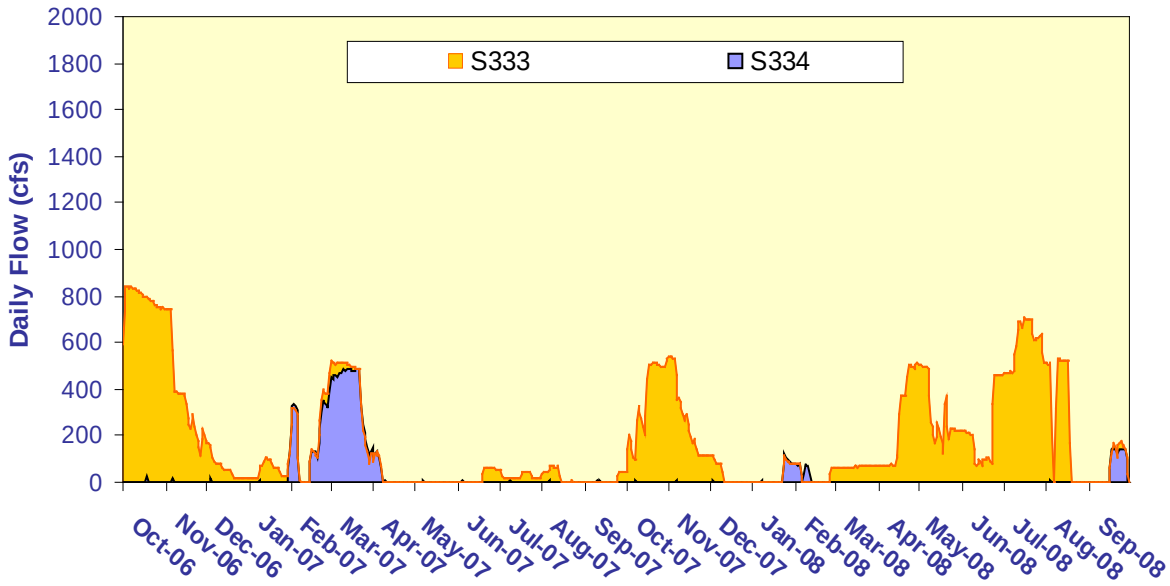

Figure 7. Daily flows comparison between S333 and S334

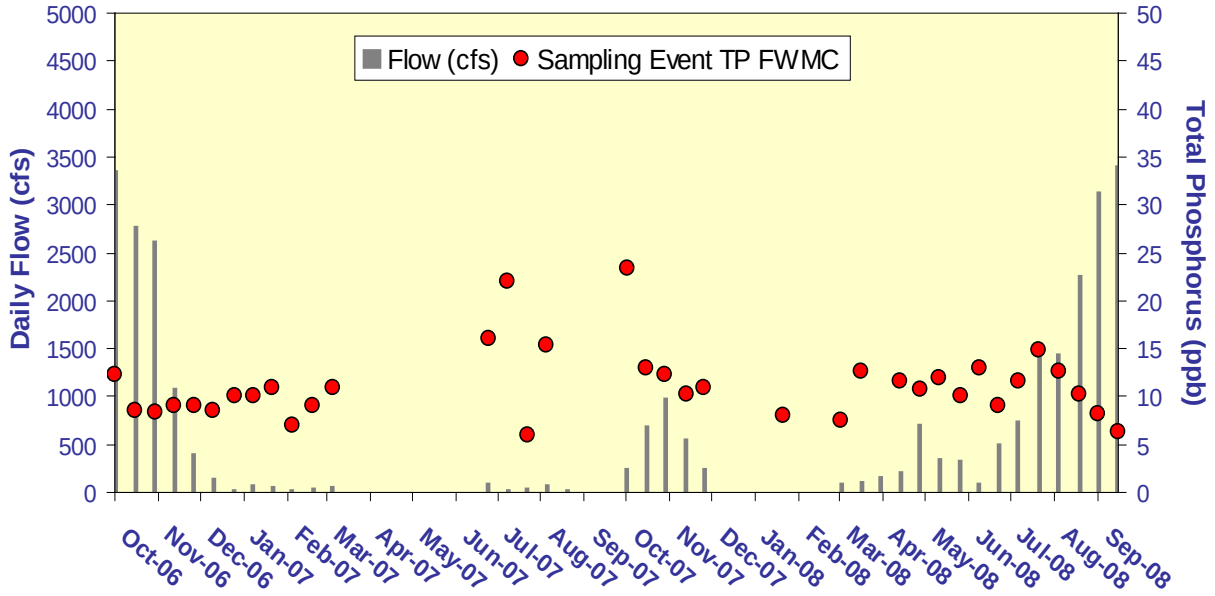

Figure 8. The relationship between daily flow at Shark River Slough structures and the corresponding flow-weighted mean TP concentrations for individual sampling events.

Taylor Slough and the Coastal Basins

Under the Consent Decree, a single total phosphorus (TP) long-term limit of 11 ppb, to be met by December 31, 2006, was set for the two points of inflow to Taylor Slough (S332 and S175) and the inflow point to the Coastal Basins (S18C). The 12-month flow-weighted mean concentrations have consistently been lower than the long-term limit of 11 ppb.

C-111 Project Structures and Detention Areas

Beginning in August 1999, structure S332D, a pump station constructed by the U.S. Army Corps of Engineers (USACE), began operation. The structure is adjacent to spillway S174 and pumps water from the L31N Canal into the L31W Canal. The S332D and S174 structures became the new inflow compliance monitoring sites for Taylor Slough on October 1, 1999, replacing S332 and S175.

The USACE completed construction of the remaining C-111 project structures and detention areas along the eastern boundary of the ENP in June 2002. The project was authorized by the USACE in 1995 to restore more natural hydrologic conditions in Taylor Slough and to maintain flood protection to the east of the L31N and C-111 canals. Project facilities consist of pump stations S332B, S332C and S332D, detention cells, Cell 1 through Cell 5, a connector cell between Cell 2 and Cell 3, a flow way cell originating at Berm 3 of Cell 5, and four diversion structures, DS1 through DS4 (**Figure 9**). The flow way cell is the only location to routinely discharge surface water into the ENP from this project.

The construction of these facilities was accelerated to respond to U.S. Fish and Wildlife requirements to give immediate relief to water conditions that threaten the Cape Sable Seaside Sparrow, an endangered species. The USACE signed a Record of Decision on July 2, 2002, that authorizes the implementation of an Interim Operational Plan (IOP) to govern the operation of the new facilities. Since July 31, 2002, the USACE has been operating the project under Emergency Orders issued by the Florida Department of Environmental Protection (FDEP).

The USACE and the South Florida Water Management District (District) will monitor the implementation of the IOP under the terms and conditions of the C-111 Project Cooperation Agreement executed in 1995. The District, on behalf of the USACE, has implemented a monitoring plan approved by FDEP that assesses the hydrologic, environmental, and surface and ground water quality changes that may occur as a result of the IOP. The District started the routine sampling in September 2003.

The monitoring plan treats the detention areas as a single project with five cells, three inflows and a single outflow to ENP. The diversion structures DS2 and DS4 would discharge into the ENP if utilized. Overflows periodically occurred at DS2 between September 2001 and September 2003. Data from these overflows were presented graphically in previous reports.

Discharges from the diversion structures DS1 and DS3 would flow onto District property and eventually into the L31N Canal. The majority of the water pumped into the detention cells, as well as rainfall, is expected to seep into the Biscayne Aquifer directly below the project site and provide a hydrologic “curtain” to reduce groundwater seepage in an easterly direction from ENP.

The stage gauge at S332B West (Cell 2) was off-line due to construction activities in the area since last quarter. No information was available regarding any potential overflow in Cell 2 for the reporting quarter.

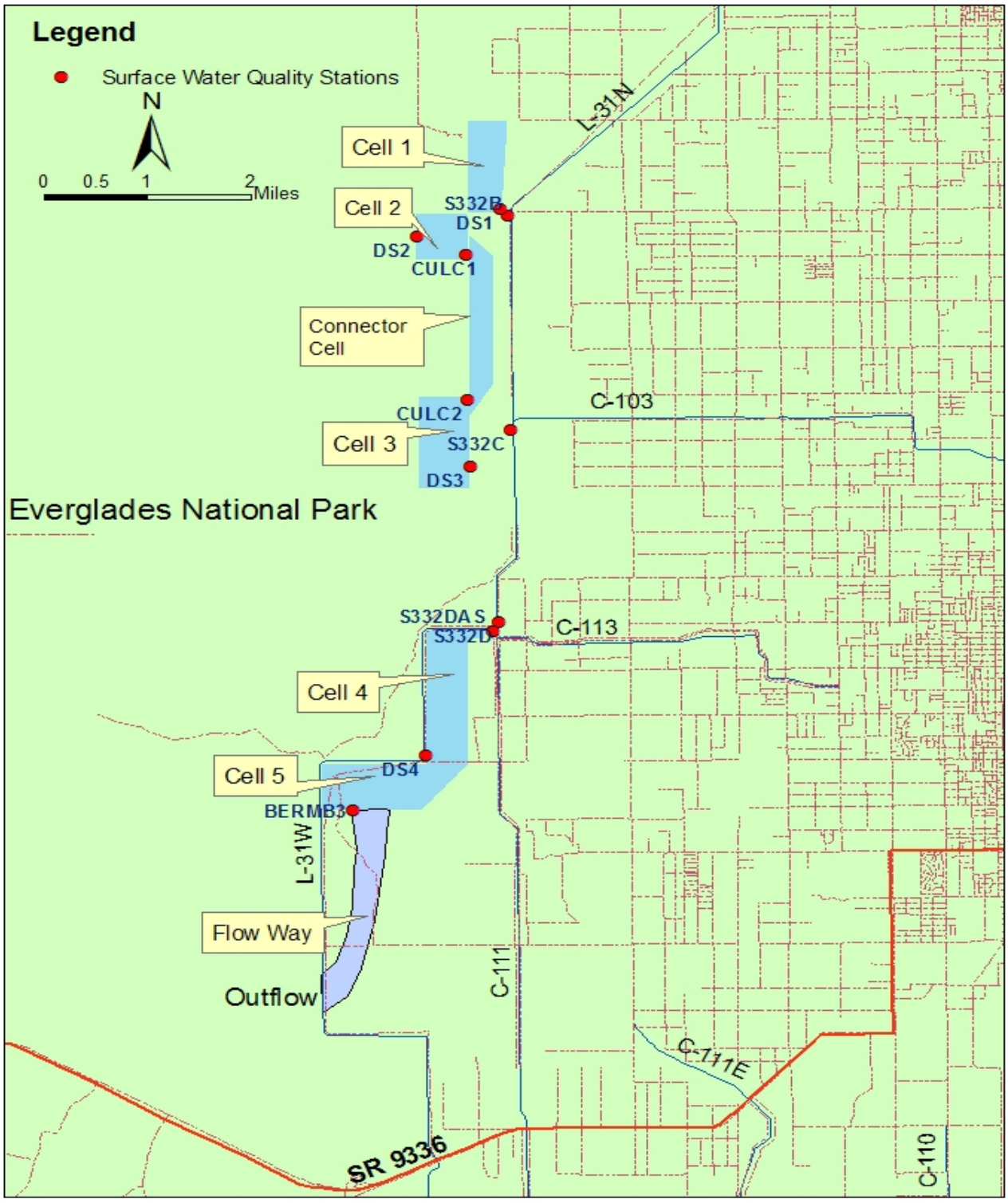

Figure 9. C-111 Project facilities.

Compliance with Consent Decree

Inflow TP concentrations to the ENP through Taylor Slough and the Coastal Basins are compared to the 11 ppb limit at the end of each water year using data from both the old (S175, S332, S18C) and new (S174, S332D, S18C) combinations of structures (**Figure 10**). The bars in **Figure 10** represent the 12-month flow-weighted mean TP concentrations from S332, S175 and S18C for water years 1989 through 2002. The diamond point values for water years 1999 through 2008 represent the new combination of structures.

TP and flow data from both sets of structures presented in prior editions of this report through December 2001 (April 2002 report) showed that, beginning in October 2000, the 12-month moving total flow for S332D, S174 and S18C was consistently greater than flow at S332, S175 and S18C. There was also a shift in flow-weighted mean TP concentration data whereby S332D, S174 and S18C concentrations became equal to and then consistently lower than the concentrations at S332, S175 and S18C. These changes reflected the switch made from S332 to S332D for water delivery to Taylor Slough between July 3 and July 5, 2000. Consequently, as of the July 2002 report, only S332D, S174 and S18C data are presented for monthly tracking of data in **Figure 10.** However, there had been almost no flow at S174 since March 2006. The site was plugged in September 2007, preventing any flow through S174.

Figure 11 presents the 12-month and individual sampling event flow-weighted mean TP concentrations at the S332D and S18C structures. All TP grab sample concentrations taken on positive flow days reported for surface water monitoring at the sites were used for the compliance calculations.

For the combined flow through S332D and S18C, the 12-month flow-weighted mean TP concentrations were 5.0, 5.5 and 5.6 ppb, respectively, for the 12-month periods ending in July, August and September 2008 (**Table 3**). The Consent Decree stipulates that the percent of flow-weighted mean TP concentrations greater than 10 ppb from each sampling event in any 12-month period must not exceed a fixed guideline of 53.1 percent. There was only one sampling event flow-weighted mean TP concentration greater than 10 ppb for the combined flow through S332D and S18C since March 2007.

The daily flows into the ENP through S332D, S174 and S18C are presented in **Figure 12**. The sampling event flow-weighted mean concentrations remained very low. There was no sampling event flow-weighted mean TP concentration greater than 11 ppb since December 2006 except 23 ppb on July 14th, 2008 taken at S18C. **Figure 13** shows the relationship between the daily inflows and the corresponding flow-weighted mean TP concentrations for each sampling event.

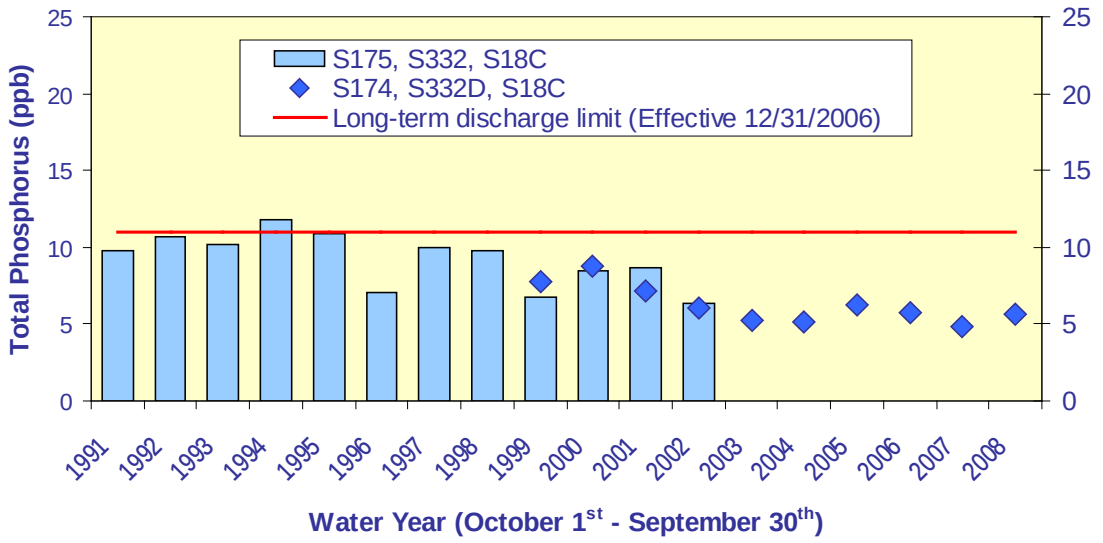

Figure 10. The 12-month flow-weighted mean TP concentrations in inflows to Everglades National Park through Taylor Slough and the Coastal Basins at the end of each water year compared to the 11 ppb long-term TP limit.

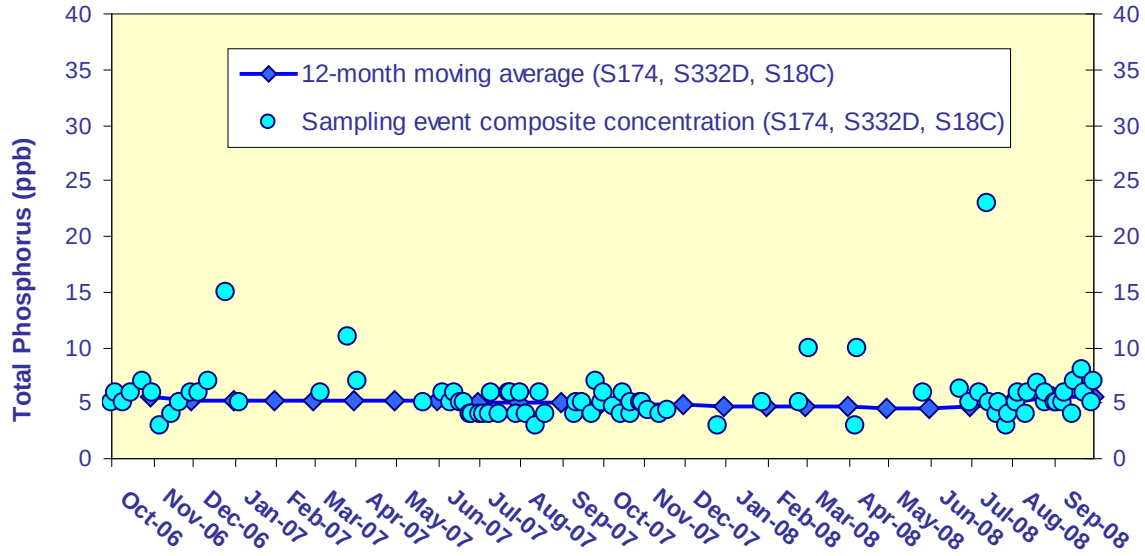

Figure 11. 12-month flow-weighted mean TP concentrations in inflows to Everglades National Park through Taylor Slough and the Coastal Basins at the end of each month and the flow-weighted mean TP concentration for each sampling event.

Table 3. Taylor Slough and the Coastal Basins TP Concentration Compliance Tracking.

12-Month Period	Total Flow (kac-ft)	TP Flow Weighted Mean (ppb)	Long-Term Limit (Effective 12/31/06) (ppb)	Percent of Sampling Events Greater than 10 ppb (%)	
				Guideline	Observed
11/1/2005 - 10/31/2006	179.5	5.6	11.0	53.1	3.9
12/1/2005 - 11/30/2006	158.8	5.3	11.0	53.1	3.9
1/1/2006 - 12/31/2006	137.4	5.2	11.0	53.1	6.0
2/1/2006 - 1/31/2007	127.6	5.2	11.0	53.1	6.4
3/1/2006 - 2/28/2007	125.4	5.2	11.0	53.1	7.0
4/1/2006 - 3/31/2007	123.8	5.2	11.0	53.1	10.0
5/1/2006 - 4/30/2007	125.4	5.2	11.0	53.1	10.0
6/1/2006 - 5/31/2007	126.1	5.2	11.0	53.1	7.5
7/1/2006 - 6/30/2007	153.0	5.1	11.0	53.1	6.5
8/1/2006 - 7/31/2007	153.4	5.1	11.0	53.1	6.4
9/1/2006 - 8/31/2007	143.6	5.0	11.0	53.1	6.4
10/1/2006 - 9/30/2007	**120.8**	**4.8**	**11.0**	**53.1**	**4.6**
11/1/2006 - 10/30/2007	150.5	4.8	11.0	53.1	4.2
12/1/2006 - 11/30/2007	155.8	4.8	11.0	53.1	4.3
1/1/2007 - 12/31/2007	154.8	4.7	11.0	53.1	2.3
2/1/2007 - 1/31/2008	155.5	4.7	11.0	53.1	2.3
3/1/2007 - 2/29/2008	156.1	4.7	11.0	53.1	2.3
4/1/2007 - 3/31/2008	155.4	4.7	11.0	53.1	0.0
5/1/2007 - 4/30/2008	157.1	4.6	11.0	53.1	0.0
6/1/2007 - 5/31/2008	155.9	4.6	11.0	53.1	0.0
7/1/2007 - 6/30/2008	145.0	4.8	11.0	53.1	0.0
8/1/2007 - 7/31/2008	130.0	5.0	11.0	53.1	2.6
9/1/2007 - 8/31/2008	165.6	5.5	11.0	53.1	2.5
10/1/2007 - 9/30/2008	**207.7**	**5.6**	**11.0**	**53.1**	**2.2**

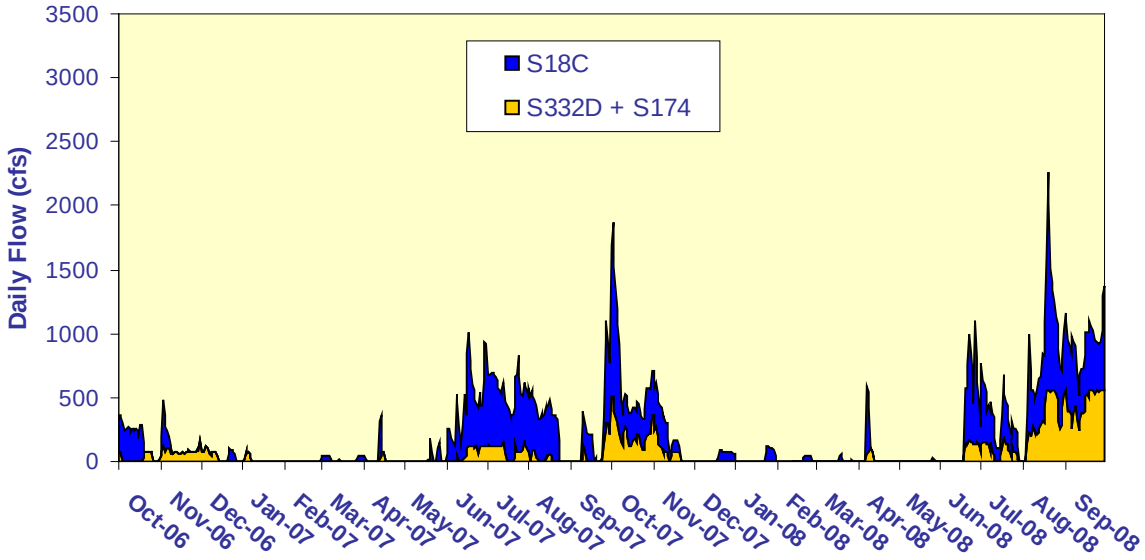

Figure 12. Daily flows into Everglades National Park through Taylor Slough (S332D+S174) and S18C; S174 was plugged in September 2007.

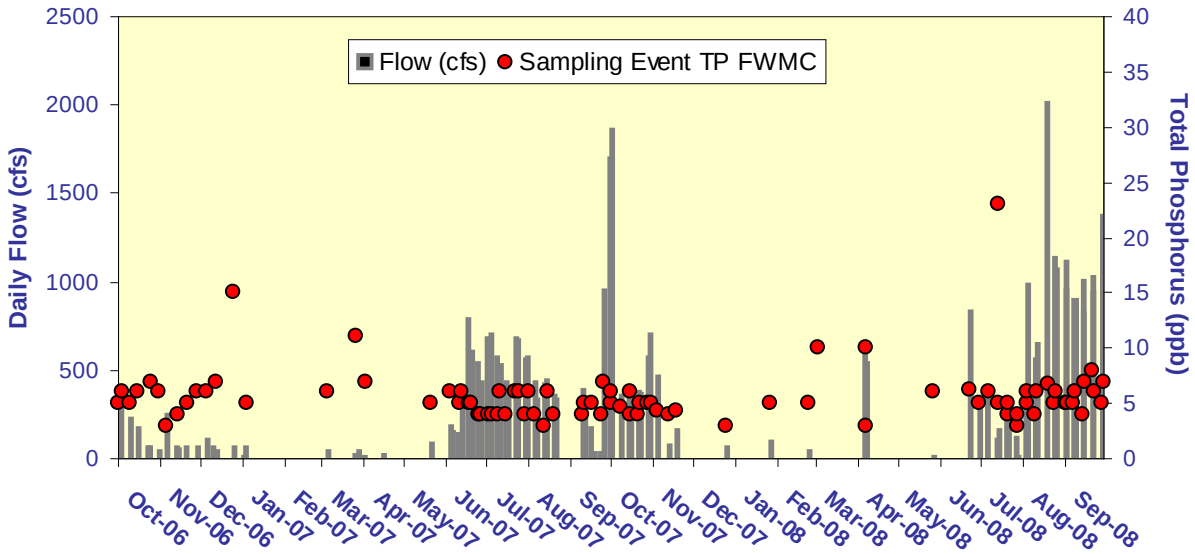

Figure 13. The relationship between daily flows at Taylor Slough structures (S332D + S174) and S18C and the corresponding flow-weighted mean TP concentrations for individual sampling events.

Appendix A

12-Month Flow-Weighted Mean TP Concentrations for Shark River Slough (October 1, 2007 – September 30, 2008)

Compliance with the Settlement Agreement's long-term phosphorus limits for inflows to Shark River Slough is based on the 12-month, flow-weighted mean concentration (FWMC) for the water year ending on September 30th. Inflow concentrations are measured bi-weekly at structures S12A, S12B, S12C, S12D, and S333 - S334 (e.g., net flow for S333 minus S334).

Preliminary data for the 2008 water year indicated that inflow concentrations were 10.2 ppb, which equaled the long-term limit of 10.2 ppb. It was subsequently discovered, however, that the field-cleaned equipment blank (FCEB) used during the September 3, 2008, sampling event had a TP concentration of 3 ppb and, as a result, that data was qualified. If the September 3, 2008, data is excluded, the FWMC for water year 2008 increases to 10.6 ppb -- exceeding the long-term limit by 0.4 ppb.

As discussed below, a review of other, contemporaneously collected data reflect that the September 3, 2008, data is accurate. In addition, if, in fact, the samples were exposed to any extraneous phosphorus (as suggested by the FCEB), this would mean that the September 3, 2008, reported concentrations would potentially be over-estimated to some extent.

Background

The field-cleaned equipment blank (FCEB) for the Shark River Slough sampling trip on September 3, 2008, had a TP concentration of 3 ppb, one ppb over the District laboratory's Method Detection Limit (MDL). FCEB's are used to assure that field equipment is properly rinsed with deionized water and used following standard protocols. The District's laboratory protocol specifies that if the FCEB has a detected TP concentration above the MDL then the associated samples should be qualified unless the sample concentration is more than 5 times the FCEB concentration (so that any bias that may have been introduced is essentially trivial in the sample itself). Contamination detected in a FCEB indicates the possibility that associated samples may also be contaminated and the data user should proceed with caution in using the data.

The measured TP concentrations for the Shark River stations ranged from 7 to 13 ppb for the September 3, 2008, sampling event, with an average concentration of 9 ppb. Table A-1 depicts the September 3, 2008, TP concentrations collected by grab samples at the S12A and S333 stations and by the autosamplers on the same day. As indicated, substantial evidence exists demonstrating that the initially reported concentrations for September 3, 2008, were accurate.

Table A-1. Shark River Slough Grab TP Concentration Data in August and September 2008 and Daily Time Composite Autosampler Data around 9/3/2008

Date	Sample Type	S12A	S12B	S12C	S12D	S333
8/6/2008*	Grab	8	9	15	14	10
8/13/2008	Grab	7	7	9	13	13
8/21/2008*	Grab	6	7	10	14	12
8/27/2008	Grab	6	6	9	12	10
9/2/2008	Daily Autosampler	8				10
9/3/2008*	Grab**	**7**	**6**	**8**	**10**	**13**
9/3/2008	Daily Autosampler	8				11
9/10/2008	Grab	6	6	9	9	8
9/17/2008*	Grab	6	5	8	6	9
9/24/2008	Grab	6	5	6	8	10

* Shaded row indicates compliance data.
** Results for the September 3, 2008 sampling event grabs were qualified based on the District's laboratory protocol for detections in the associated FCEB.

Flows into Shark River Slough were well below normal for most of the 2008 federal water year, October 1, 2007, through September 30, 2008, with the majority of flow for the year occurring in August and September 2008. As a result, the year-long FWMC is strongly influenced by the status of the September data.

Alternative Compliance Scenarios

Historically, the District collected bi-weekly, grab samples at the Shark River Slough stations to calculate the 12-month FWMC for Settlement Agreement compliance. This year, however, the sampling frequency at the stations was changed from bi-weekly to weekly to accommodate other District program needs as described in the TOC-approved monitoring plans known as the PIE and PIN. In addition, daily autosamplers have been installed at the S12A and S333 inflow stations to Shark River Slough. This additional data provides useful information with which to analyze the accuracy of the September 3, 2008, sampling results.

Table A-2 depicts the 2008 federal water year 12-month FWMC with, and without, the September 3, 2008, results, plus four alternative scenarios using the weekly sampling results stemming from the PIN monitoring regime.

Table A-2. WY2008 12-month FWMC Calculations for Shark River Slough

Scenario	Description	Qualified 9/3/2008 Data Used?	12-month TP FWMC (ppb)	Met Long-Term Limit (10.2 ppb)?	Comments
1	Bi-weekly with 9/3/2008 data	Yes	10.2	Yes	Standard compliance calculation with 9/3/2008 data
2	Bi-weekly without 9/3/2008 data	No	10.6	No	Standard compliance calculation without 9/3/2008 data
3	Bi-weekly with 8/27/2008 and 9/10/2008 data	No	10.2	Yes	Used average TP from 8/27/2008 and 9/10/2008 events
4	Alternate bi-weekly data	No	9.9	Yes	Used alternate sampling events normally excluded from compliance calculations
5	Weekly data	No	10.2	Yes	Used all unqualified data for weekly sampling events

Recommendations

Although the September 3, 2008, TP results were qualified based on the District's current data validation protocol for FCEB's, the District recommends inclusion of these data as reflecting the best available data and most representative FWMC for the following reasons:

- TP concentrations for the September 3, 2008 sampling event were consistent with results for adjacent weeks and the historical period of record.
- TP concentrations for the September 3, 2008 sampling event were consistent with the autosampler TP concentrations at S12A (8 ppb) and S333 (11 ppb) for the same day.
- If any contamination was introduced during sampling, the sample results would be biased high (e.g., actual TP concentrations would be less than or equal to the reported values).
- Unusual flow patterns associated with the 2007-2008 drought resulted in most of the annual flow occurring in August and September 2008. Therefore, excluding one sampling event in September has a significant impact on the annual 12-month FWMC calculation and produces unwarranted bias in the resulting FWMC.
- The TP concentration detected in the FCEB (3 ppb) was slightly above the District's MDL (2 ppb) but in the range of substantial likelihood of occurring by chance.