Appendix 3-2: Annual Permit Report for the Non-Everglades Construction Project

Permit Report (May 1, 2010–April 30, 2011)
Original Permit Number: 06, 502590709
Current Permit Number: 0237803

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SUMMARY

Based on Florida Department of Environmental Protection (FDEP) permit reporting guidelines, **Table 1** shows key permit-related information and **Table 2** lists attachments included with this report. Attachment A, Table A-1, of this appendix shows specific conditions, actions taken, and cross-references presented for the Non-Everglades Construction Project (EFA, Permit number 0237803) in this report. Additional supporting documentation for this annual reporting is provided in Attachments B–G.

During Water Year 2011 (WY2011) (April 1, 2010–May 30, 2011), there were no excursions for Class III water quality standards for the non-Everglades Construction Project (non-ECP) monitoring sites. The highest flow-weighted mean (FWM) total phosphorus (TP) concentrations for the "into" structures were observed at S-190 (Feeder Canal Basin) and S-140 (L-28 Basin) at 45 and 39 ppb parts per billion [ppb, or micrograms per liter (µg/L)], respectively. In the C-11 West Basin, the S-9 and S-9A structures had FWM TP concentrations of 13 and 12 ppb, respectively. The Feeder Canal, L-28, and C-11 West basins are designated as sites of "potential concern" for TP. The lowest FWM TP concentrations were observed at the C-111 Basin, which is the subject of interim and long-term compliance limits stipulated in the federal Settlement Agreement; currently, there is no concern for TP in the C-111 Basin.

Four surface water samples were collected on a quarterly basis at each site and analyzed for all designated parameters. Pesticides with surface water concentrations greater than their respective state Class III criteria or toxicity limits were assigned to the "concern" excursion category, whereas those higher than the practical quantitation limit (PQL) were assigned to the "potential concern" excursion category. None of the pesticide detections were of concern. Two sediment samples were collected at each site and analyzed for all designated parameters. Pesticides with sediment concentrations greater than the PQL were assigned to the "potential concern" excursion category. Dichlorodiphenyldichloroethylene (DDE), the environmental dehydrochlorination product of dichlorodiphenyltrichloroethane (DDT) was detected in sediment at two locations—G-123 (North New River Canal Basin) and S-178 (C-111 Basin)—at levels of "potential concern."

In this appendix, data from compliance monitoring of atmospheric mercury (Hg) influx and bioaccumulation in fish and wading bird feathers from the downstream receiving waters of the Everglades Protection Area (EPA) is summarized for the reporting period (see Attachment F). Total annual wet deposition of Hg displayed the third consecutive year of decline. During WY2011, total mercury (THg) concentrations decreased by 17 and 30 percent in mosquitofish (*Gambusia holbrooki*) and sunfish (*Lepomis* spp.) and increased by about 33 percent in largemouth bass (*Micropterus salmoides*), respectively. Based on guidance from the U.S. Fish and Wildlife Service (USFWS) and the U.S. Environmental Protection Agency (USEPA) on Hg concentrations in fish, localized populations of fish-eating birds and mammals continue to be at potential risk from adverse effects due to mercury exposure depending on their respective foraging areas. As such, most of South Florida remains under fish consumption advisories for the protection of human health.

Table 1. Key permit-related information.

Project Name	Non-Everglades Construction Project
Permit Number	06, 502590709, 0237803
Permit Application Date	September 30, 1994
First Issue and Expiration Date	Issue: April 20, 1998 Expiration: April 20, 2003
Permit Reissue and Expiration Date (mod.)	Issue: April 21, 2003 Expiration: The permit was administratively extended in 2008 until such time that the Long-Term Compliance Permit required by the Everglades Forever Act (EFA) is issued.
Permit Condition Requiring Annual Monitoring Report	Specific Condition 5
Relevant Period of Record	May 1, 2010—April 30, 2011
Report Generators	Shi Kui Xue, Steven Hill, Richard Pfeuffer and Binhe Gu sxue@sfwmd.gov 561-682-2333
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Table 2. Attachments included with this report.

Attachment	Title
A	Specific Conditions and Cross-References
B	Non-Everglades Construction Project Water Quality Sampling Sites, Monitoring Schedule and Flow Volumes
C	Summary Statistics of Non-Everglades Construction Project Water Quality Monitoring Data for Water Year 2011
D	Time-Series and Box Plots for Non-Everglades Construction Project Water Quality Monitoring Data Exhibiting Excursions from Class III Numeric Standards for Water Year 2011
E	Time-Series and Box Plots of Total Phosphorus at Non-Everglades Construction Project Monitoring Sites for Water Year 2011 and Earlier Periods
F	Annual Permit Compliance Monitoring Report for Mercury in Downstream Receiving Waters of the Everglades Protection Area
G	Statements of Authenticity for Analytical and Sampling Programs
H	Water Quality Data
I	Hydrologic Data

INTRODUCTION

The non-Everglades Construction Project (non-ECP) permit [Florida Department of Environmental Protection (FDEP) No. 0237803] authorizes the South Florida Water Management District (SFWMD or District) to operate and maintain structures, in compliance with the reporting requirements stated in Specific Conditions 5 and 12 of the non-ECP permit.

METHODS

WATER QUALITY AND HYDROLOGIC DATA

The water quality and hydrologic data evaluated in this appendix were retrieved from the South Florida Water Management District's DBHYDRO database. Before water quality data are entered into the database, the District follows strict quality assurance/quality control (QA/QC) procedures outlined in the District's Chemistry Laboratory Quality Manual and Field Sampling Quality Manual (SFWMD, 2010b and 2011b). The laboratory manual was developed in accordance with the National Laboratory Accreditation Conference (NELAC) requirements and both laboratory and the field manuals in accordance with Florida Department of Environmental Protection (FDEP) Quality Assurance Rule [Chapter 62-160, Florida Administrative Code (F.A.C.)]. The quality manuals provide assurances that the water quality monitoring program is providing accurate data and that sufficient progress is being made toward achieving water quality standards.

The standards used to evaluate the accuracy of the rating for flow calculations are consistent with the SFWMD Standard Operating Procedures (SOP) for Flow Data Management in the

District Hydrologic Database (Akpoji et al., 2003) and U.S. Geological Survey approach as outlined by Novak (1985). Four accuracy classifications are adopted to assess a rating's accuracy. The rating is classified as (1) excellent when about 95 percent of the predicted flow rates are within ±5 percent of the measured discharges, (2) good if they are within ±10 percent, (3) fair if they are within ±15, and (4) poor when they are not within ±15 percent.

PERMIT SAMPLING SITES

In addition to authorizing the operation and maintenance of non-ECP structures, the non-ECP permit requires a routine water quality monitoring program to characterize the quality of water discharged through District structures. Currently, the non-ECP permit requires monitoring at four additional C-111 Basin structures (upstream) that are controlled by the District.

The District typically collects water quality samples on the upstream side of a structure or at a nearby location representative of the quality of water flowing through a structure. Structure locations are shown in **Figure 1**. In accordance with Specific Condition 16, the District submitted a Monitoring Locations Report to the FDEP on July 15, 1998, that included detailed information on the specific locations for sample collection for 44 structures. On August 9, 2001, the District submitted a minor modification to the non-ECP permit to include Phase I of the Western C-11 Basin Critical Restoration Project (including operation and maintenance of the S-9A pump station). Various modifications have been made and the current monitoring program encompasses 37 locations that provide the representative information to characterize the quality of water discharged through the 37 structures. The structure names, representative water quality monitoring location names, and sampling frequencies of the various categories of chemical constituents and physical properties required by the monitoring schedule denoted in the permit, monthly and annual flow volumes are shown in Attachment B, Table B-1, of this appendix.

PERMIT DATA ANALYSIS PERIODS

Specific Condition 12 requires the District to submit annual monitoring reports providing updates on water quality data and associated comparisons with state water quality standards. The water quality characterization includes an evaluation of compliance with Class III criteria for each monitoring location representative of a non-ECP structure. This appendix provides the annual update of the non-ECP permit monitoring program (Specific Condition 12) and a comparison of water quality data at non-ECP structures to state water quality standards from Water Year 2011 (WY2011) (May 1, 2010–April 30, 2011; SFWMD, 2011c), the fourteenth year of non-ECP data. These comparisons fulfill the non-ECP permit requirements to measure progress toward achieving and maintaining compliance with state water quality standards.

Method Detection Limits

Each water quality constituent has a method detection limit (MDL) that essentially defines the minimum concentration, or level, at which the presence of the constituent can be positively verified; it is usually twice the background noise level associated with a test. The MDL does not represent a level at which an exact measurement can be determined. The practical quantitation limit (PQL) represents the lowest level at which a measurement can be considered quantifiably reliable for a constituent that is achievable (among laboratories within specified limits during routine laboratory operations). Generally, the PQL is four times the MDL, although different laboratories may establish PQLs at two to five times the MDL. In this appendix, trace metal data that were reported to be less than the MDL were assigned a value equal to the MDL. Total phosphorus (TP) data that were less than the MDL of 2.0 micrograms per liter (μg/L) [or parts per billion (ppb)] were assigned a value of 2.0 ppb to provide a conservative basis for statistical analysis. For pesticide detections, concentrations greater than the PQL were considered reliable.

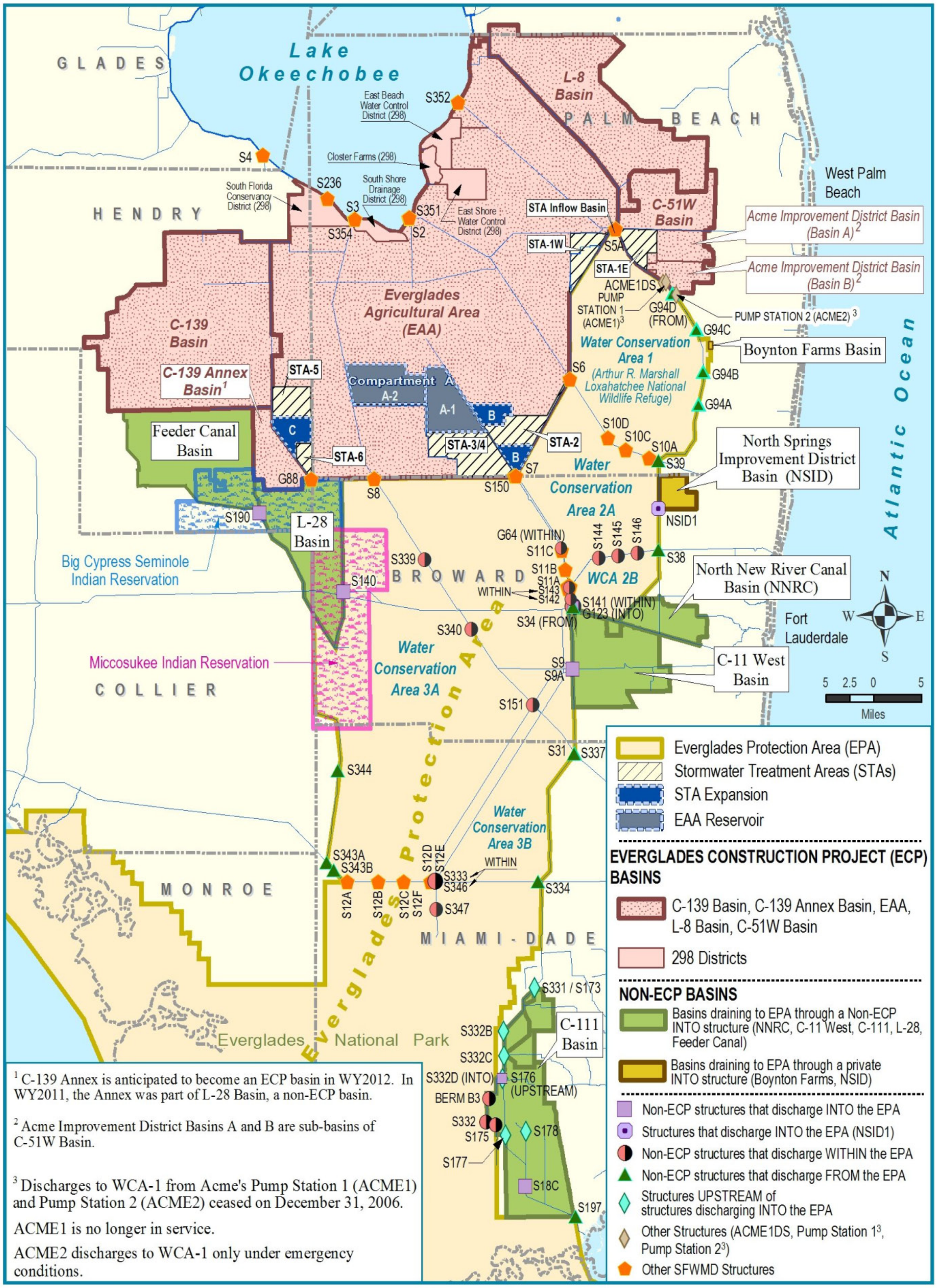


Figure 1. Non-Everglades Construction Project (non-ECP) discharge structures and additional upstream structures.

EXCURSION ANALYSIS FOR CLASS III CONSTITUENTS AND PESTICIDES

To evaluate compliance with water quality criteria in WY2011, constituent concentrations were compared to their respective Class III numeric criteria. If a constituent concentration exceeded its numeric criterion, then an excursion was recorded and the total number of excursions and the percent of excursions for the non-ECP structures were tabulated.

Total Phosphorus

The data for total phosphorus (TP) are presented in this appendix in time-series plots and statistical box plots. For TP, any site with data greater than 50 ppb is viewed as a concern, any site with data greater than 10 ppb is viewed as a potential concern, and any site with data less than 10 ppb is viewed as no concern. This approach is consistent with the federal Settlement Agreement (i.e., Settlement Agreement dated July 26, 1991, entered in Case No. 88-1886-Civ-Hoeveler, U.S. District Court for the Southern District of Florida, as modified by the Omnibus Order entered in the case on April 27, 2001). The Settlement Agreement indicates that the Everglades Stormwater Treatment Areas (STAs) are located and sized to deliver a uniform, long-term, annual flow-weighted mean (FWM) TP concentration of 50 ppb or less at each inflow point to the Everglades Protection Area (EPA). Additionally, the Everglades Forever Act (EFA) mandates that the default TP criterion shall be 10 ppb in the EPA in the event that the FDEP did not adopt by rule such a criterion by December 31, 2003. Because final agency action by the FDEP did not occur prior to December 31, 2003, as a result of unresolved administrative challenges, a default TP criterion of 10 ppb became effective as specified by the EFA. There are additional TP concentration compliance limits for inflows to the Everglades National Park (ENP or Park) by way of Shark River Slough (S-12s and S-333), and the coastal basin (S-18C) outlined in Appendix A of the Settlement Agreement. However, this appendix does not track compliance with the interim or long-term TP concentration limits set forth in the Settlement Agreement.

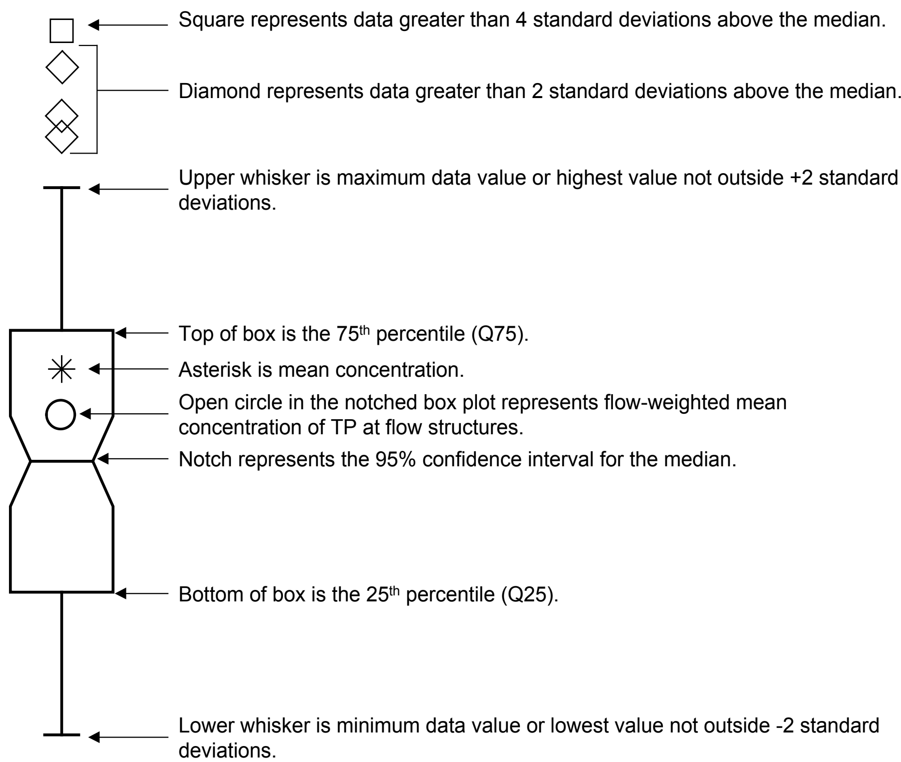
The District's categories of concern, potential concern, and no concern are based on a common-sense understanding of water resources protection. These terms, however, are not intended to be interpretations of state water quality standards or state water quality law. The FDEP, not the District, is responsible for interpreting whether a given constituent violates the numeric criterion, the narrative criterion, a water body's designated uses, or the anti-degradation policy.

DESCRIPTION OF NOTCHED-BOX-AND-WHISKER PLOTS

Notched-box-and-whisker plots were created to summarize data for each constituent that exceeded its numeric criteria. These plots also summarize the TP data collected at all monitoring locations. A notched-box-and-whisker plot summarizes selected statistical properties of the datasets. Notched-box-and-whisker plots can be used to test for statistical significance between datasets at roughly a 95 percent confidence interval to detect changes in constituent concentration variability over time and to determine if trends exist. The notched-box-and-whisker plots used for these summaries are based on McGill et al. (1978) (**Table 3**).

It is recognized that using notched-box-and-whisker plots to determine differences between datasets with large differences in sample size may cause apparently significant findings that are artifacts of the number of samples and the amount of variation in the datasets. The objective of providing the plots was to compare data from WY2011 to those in previous individual permit water years (WY1998–WY2010) and previously established baseline datasets for the non-ECP discharge structures.

Table 3. Description of notched-box-and-whisker plots used in this appendix.



1. Notches surrounding the medians provide a measure of the significance of differences between notched-box plots. If the notches surrounding two medians do not overlap, then the medians are significantly different at about a 95 percent confidence level.
2. At times, the variability in a dataset may be quite high. When highly variable data are presented in a notched-box-and-whisker plot, the width of the notch may be greater than the 25th or 75th percentile. When this occurs, the box plot appears as if it is folded from the end of the notch back towards the median. This is done automatically by the statistics program to save space within the figure being presented.
3. Notches are calculated using the following equation:

$$Notch = Median \pm \frac{1.58(Q75 - Q25)}{\sqrt{n}}$$

Where n = number of data points shown on the bottom of **Figures 2a-2d**

RESULTS: WATER QUALITY EVALUATION AND EXCURSION ANALYSIS

In accordance with Specific Conditions 5 and 12(h) of the non-ECP permit, this section presents an update of constituent concentrations and physical properties measured during WY2011, the fourteenth year of non-ECP permit monitoring. For standards with numeric criteria, the data from the structures were assessed for compliance with those standards using the procedures in Rule 62-4.246, F.A.C. For parameters that have narrative water quality criteria, the concentrations obtained at each structure were reported using plots and summary statistics.

MONITORING OF PHYSICAL PARAMETERS, NUTRIENTS AND MAJOR IONS

Descriptive Statistics

A summary of the data begins with a presentation of descriptive statistics for all water quality constituent concentrations and physical properties (excluding pesticides and priority pollutants) measured for non-ECP monitoring locations during WY2011 (Attachment C, Table C-2). The descriptive statistics (summary tables) are presented by monitoring location for each water quality parameter collected for the site. A reference is also provided in Attachment C, Table C-1, reflecting current state Class III criteria.

The statistical summary tables report the range of constituent concentrations, median values, the number of sample observations, selected data percentiles (25^{th} and 75^{th}), and flag parameters exhibiting excursions from Class III numeric criteria. Concentrations observed to be less than the lower limit of the analytical method (MDL) were set equal to the MDL for statistical analysis.

For parameters such as nutrients that have only narrative criteria, the tables provide basic information to assist with identifying water quality constituents that might be of concern. TP is the nutrient deemed to be of particular concern for the non-ECP structures.

Excursions from Class III Criteria (Numeric)

Further analysis of excursions from Class III criteria was accomplished by summarizing the excursions, plotting the data for parameters exhibiting the excursions, discussing the parameters, and noting which ones are a concern. The excursion analysis is based on 11 water quality parameters (with numeric criteria), shown in **Table 4**, that were collected for the non-ECP monitoring program and can be compared with applicable Class III water quality criteria listed in Rule 62-302.530, F.A.C.

Table 4. Summary of total number of excursions from state Class III criteria for all non-ECP monitoring sites during Water Year 2011 (WY2011) (May 1, 2010–April 30, 2011) and previous periods.

Parameter	Total Alkalinity	Dissolved Oxygen	Specific Conductance	pH	Turbidity	Un-Ionized Ammonia	Total Iron	Total Cadmium	Total Lead	Total Copper	Total Zinc
EFA Baseline	**(1:2677)**	**(1694:2615)**	**(59:2615)**	**(6:2586)**	**(10:2637)**	**(12:2548)**	**(5:836)**	**(9:362)**	**(1:364)**	**(1:373)**	**(3:363)**
Non-ECP Baseline	(0:2845)	**(2177:3018)**	**(12:3058)**	**(37:3008)**	**(12:2842)**	**(10:2661)**	**(5:1655)**	**(4:785)**	**(2:785)**	(0:779)	**(2:786)**
WY1998	(0:525)	**(459:551)**	**(3:551)**	**(12:551)**	(0:527)	**(7:448)**	(0:261)	**(1:127)**	(0:120)	(0:127)	(0:127)
WY1999	(0:502)	**(485:581)**	(0:589)	**(10:589)**	**(4:504)**	**(20:501)**	**(1:244)**	(0:126)	(0:112)	(0:126)	(0:125)
WY2000	(0:559)	**(558:697)**	**(5:698)**	**(1:698)**	**(3:645)**	**(1:622)**	(0:270)	(0:133)	(0:119)	(0:132)	(0:129)
WY2001	(0:490)	**(455:637)**	**(2:637)**	**(1:637)**	**(1:489)**	**(3:485)**	**(1:186)**	(0:101)	(0:77)	(0:101)	(0:100)
WY2002	(0:475)	**(456:597)**	(0:600)	**(1:611)**	**(2:479)**	(0:478)	(0:74)	(0:30)	(ND)	(0:29)	(0:25)
WY2003	**(1:471)**	**(436:649)**	**(1:664)**	**(2:666)**	**(1:470)**	(0:477)	(0:72)	(0:31)	(ND)	(0:35)	(0:31)
WY2004	(0:506)	**(577:793)**	**(3:761)**	**(1:812)**	(0:519)	(0:522)	(0:70)	(0:31)	(ND)	(0:35)	(0:31)
WY2005	(0:447)	**(584:886)**	(0:862)	**(4:485)**	**(2:523)**	**(1:514)**	(0:89)	(0:38)	(0:2)	(0:40)	(0:36)
WY2006	(0:443)	**(718:905)**	**(1:907)**	**(1:919)**	(0:569)	(0:562)	(0:74)	(0:32)	(ND)	(0:32)	(0:32)
WY2007	(0:373)	**(543:927)**	(0:929)	(0:943)	**(2:462)**	(0:541)	(0:62)	(0:28)	(ND)	(0:28)	(0:44)
WY2008	(0:154)	**(510:872)**	(0:900)	**(2:902)**	**(3:354)**	(0:229)	(0:16)	(ND)	(ND)	(ND)	(ND)
WY2009	(0:2)	**(555:871)**	**(1:882)**	(0:882)	(0:317)	(ND)	(ND)	(ND)	(ND)	(ND)	(ND)
WY2010	(ND)	**(644 : 916)**	(0 : 936)	(0 : 931)	(ND)	(ND)	(0 :11)	(ND)	(ND)	(ND)	(ND)
WY2011	(0:76)	Pass*	(0 : 879)	(0 : 871)	(0:318)	(0:112)	(0 :16)	(ND)	(ND)	(ND)	(ND)

First number indicates number of excursions; Second number indicates total number of samples collected.

ND = no data

WY2011 (May 1, 2010–April 30, 2011) through WY1998 (May 1, 1997–April 30, 1998); Non-ECP Baseline (October 1, 1988 through April 30, 1997); and EFA Baseline (October 1, 1978–September 30, 1988). See 2000–2004 Everglades Consolidated Reports and 2005-2010 South Florida Environmental Reports (SFWMD, 2000–2009; SFWMD 2010c, and 2011a) for previous periods.

*Dissolved oxygen limit was adjusted from 5 milligrams per liter (mg/L) to site-specific alternative criterion (SSAC) in WY2011.

Of the 11 parameters listed in **Table 4**, no parameter exhibited excursions during WY2011. Non-ECP annual monitoring summary tables that show the total number of excursions by individual monitoring location are presented in previous South Florida Environmental Reports. **Table 4** summarizes the previously reported information and compares the results with WY2011. A summary of observed excursions from Class III criteria for individual non-ECP monitoring locations during WY2011 is presented in **Table 5**. The monitoring locations are categorized in the table as "into," "within," "from," or C-111 Basin locations, as defined by the non-ECP permit.

For parameters that exceeded Class III criteria, time-series plots and notched-box-and-whisker plots are provided in Attachment D. These plots report the range of the data and the magnitude of the excursions and assist with detecting whether there are any increasing or decreasing trends observed in the data. To assess how far a physical parameter or major ion deviated above or below a Class III numeric criterion, a percent-departure line has been added to the time-series plots and notched-box-and-whisker plots. These departure lines indicate whether a parameter value ranges more than 1, 10, or 100 percent beyond the numeric criteria. The physical parameters appear as horizontal lines across the plots. For the major ions and trace metals, the criteria change from sample to sample because the criteria for each parameter for a particular sample were calculated based on the hardness data calculated from the same sample. For data that show an excursion, the percentage departure is annotated on the plot above the value.

Dissolved Oxygen

It should be noted that even unimpacted areas of the Everglades commonly have DO concentrations that are below the 5 milligrams per liter (mg/L) standard as part of the warm natural water conditions found in South Florida. Because natural levels commonly fall below the existing standard, the FDEP has adopted a site-specific alternative criterion (SSAC) for DO in the EPA that better reflects naturally occurring conditions (see Volume I, Chapter 3A). Dissolved oxygen conditions for non-ECP were assessed against the Everglades DO site-specific alternative criterion (SSAC). Because a single-value criterion does not adequately account for the wide-ranging natural daily fluctuations observed in the Everglades marshes, the SSAC provides a mechanism to account for the major factors (e.g., time of day and season) that influence natural background DO variation in the Everglades (Weaver, 2004). The SSAC is based on an algorithm that uses sample collection time and water temperature to model the observed natural sinusoidal diel cycle and seasonal variability. This model provides a lower DO limit (DOL) for an individual monitoring station and is described by the equation:

$$\begin{aligned} DOL &= [-3.70 - \{1.50 \cdot \text{sine}\,(2\pi/1440 \cdot t_i) - (0.30 \cdot \text{sine}\,[4\pi/1440 \cdot t_i])\} \\ &\quad + 1/(0.0683 + 0.00198 \cdot C_i + 5.24{\cdot}10^{-6} \cdot C_i^2)] - 1.1 \end{aligned}$$

Where:

DOL_i = lower limit for the i^{th} annual DO measurement in milligrams per liter (mg/L)

t_i = sample collection time in minutes (Eastern Standard Time) since midnight of the i^{th} annual DO measurement

C_i = water temperature associated with the i^{th} annual DO measurement in °Celsius (°C)

The SSAC is assessed based on a comparison between the annual average measured DO concentration and the average of the corresponding DO limits specified by the above equation. During WY2011, there were no DO excursions at individual stations (see **Table 5)**.

Table 5. Summary of excursions from state Class III surface water criteria for individual non-ECP monitoring sites and additional upstream monitoring locations during WY2011.

AREA	STRUCTURE	SAMPLING SITE	PARAMETERS: Alkalinity	SSAC Pass/Fail	Specific Conductance	pH	Turbidity	Un-Ionized Ammonia	Iron	Cadmium	Lead	Copper	Zinc
INTO	G-123	G123	-ND-	Pass	(0 : 12)	(0 : 12)	(0 : 14)	-ND-	-ND-	-ND-	-ND-	-ND-	-ND-
	S-9	S9	-ND-	Pass	(0 : 52)	(0 : 52)	(0 : 16)	-ND-	-ND-	-ND-	-ND-	-ND-	-ND-
	S-9A	S9A	-ND-	Pass	(0 : 52)	(0 : 52)	(0 : 22)	(0 : 1)	-ND-	-ND-	-ND-	-ND-	-ND-
	S-18C	S18C	-ND-	Pass	(0 : 52)	(0 : 51)	(0 : 6)	-ND-	-ND-	-ND-	-ND-	-ND-	-ND-
	S-332D	S332DX	-ND-	Pass	(0 : 52)	(0 : 51)	(0 : 6)	-ND-	-ND-	-ND-	-ND-	-ND-	-ND-
	S-140	S140	-ND-	Pass	(0 : 52)	(0 : 52)	(0 : 21)	-ND-	-ND-	-ND-	-ND-	-ND-	-ND-
	S-190	S190	-ND-	Pass	(0 : 52)	(0 : 52)	(0 : 23)	-ND-	-ND-	-ND-	-ND-	-ND-	-ND-
WITHIN	G-64	G64	No Data (Structure Closed)										
	S-346, S-347	S12D	-ND-	Pass	(0 : 32)	(0 : 32)	-ND-	-ND-	-ND-	-ND-	-ND-	-ND-	-ND-
	S-141	S34	Same as Data for S34 Shown Below										
	S-142	S142	-ND-	Pass	(0 : 13)	(0 : 13)	(0 : 13)	-ND-	-ND-	-ND-	-ND-	-ND-	-ND-
	S-143	S11A	(0 : 11)	Pass	(0 : 13)	(0 : 13)	(0 : 11)	(0 : 10)	(0 : 4)	-ND-	-ND-	-ND-	-ND-
	S-144,S-145, S146	S145	(0 : 17)	Pass	(0 : 18)	(0 : 18)	(0 : 17)	(0 : 16)	(0 : 4)	-ND-	-ND-	-ND-	-ND-
	S-151	S151	-ND-	Pass	(0 : 19)	(0 : 19)	(0 : 19)	-ND-	-ND-	-ND-	-ND-	-ND-	-ND-
	S-333	S333	-ND-	Pass	(0 : 52)	(0 : 52)	(0 : 4)	-ND-	-ND-	-ND-	-ND-	-ND-	-ND-
	S-339, S-340	C123SR84	-ND-	Pass	(0 : 12)	(0 : 12)	(0 : 12)	-ND-	-ND-	-ND-	-ND-	-ND-	-ND-
	S-175	S175	-ND-	-ND-	-ND-	-ND-	-ND-	-ND-	-ND-	-ND-	-ND-	-ND-	-ND-
	S-332	S332	-ND-	-ND-	-ND-	-ND-	-ND-	-ND-	-ND-	-ND-	-ND-	-ND-	-ND-
	BERMB3	BERMB3	-ND-	Pass	(0 : 4)	(0 : 4)	(0 : 2)	-ND-	-ND-	-ND-	-ND-	-ND-	-ND-
FROM	G-94A, G-94B, G-94C	G94B	-ND-	Pass	(0 : 13)	(0 : 13)	(0 : 13)	-ND-	-ND-	-ND-	-ND-	-ND-	-ND-
	G-94D	G94D	-ND-	-ND-	-ND-	-ND-	-ND-	-ND-	-ND-	-ND-	-ND-	-ND-	-ND-
	S-31, S-337	S31	-ND-	Pass	(0 : 17)	(0 : 17)	(0 : 19)	-ND-	-ND-	-ND-	-ND-	-ND-	-ND-
	S-34	S34	-ND-	Pass	(0 : 18)	(0 : 18)	(0 : 18)	-ND-	-ND-	-ND-	-ND-	-ND-	-ND-
	S-38	S38	(0 : 25)	Pass	(0 : 24)	(0 : 24)	(0 : 25)	(0 : 23)	(0 : 4)	-ND-	-ND-	-ND-	-ND-
	S-39	S39	(0 : 23)	Pass	(0 : 23)	(0 : 23)	(0 : 23)	(0 : 21)	(0 : 4)	-ND-	-ND-	-ND-	-ND-
	S-197	S197	-ND-	Pass	(0 : 6)	(0 : 6)	(0 : 4)	-ND-	-ND-	-ND-	-ND-	-ND-	-ND-
	S-334	S356-334	-ND-	Pass	(0 : 52)	(0 : 52)	(0 : 4)	-ND-	-ND-	-ND-	-ND-	-ND-	-ND-
	S-343A, S-343B	US41-25	-ND-	Pass	(0 : 15)	(0 : 14)	(0 : 6)	-ND-	-ND-	-ND-	-ND-	-ND-	-ND-
	S-344	S344	-ND-	Pass	(0 : 4)	(0 : 4)	(0 : 4)	-ND-	-ND-	-ND-	-ND-	-ND-	-ND-
C111 Basin	S-176	S332DX	-ND-	Pass	(0 : 52)	(0 : 51)	(0 : 6)	-ND-	-ND-	-ND-	-ND-	-ND-	-ND-
	S-177	S177	-ND-	Pass	(0 : 39)	(0 : 38)	(0 : 6)	(0 : 28)	-ND-	-ND-	-ND-	-ND-	-ND-
	S-178	S178	-ND-	Pass	(0 : 25)	(0 : 24)	(0 : 6)	(0 : 13)	-ND-	-ND-	-ND-	-ND-	-ND-
	S-331, S-173	S331-173	-ND-	Pass	(0 : 52)	(0 : 51)	(0 : 4)	-ND-	-ND-	-ND-	-ND-	-ND-	-ND-
	S-332B	S332B	-ND-	Pass	(0 : 52)	(0 : 51)	-ND-	-ND-	-ND-	-ND-	-ND-	-ND-	-ND-
	S-332C	S332C	-ND-	Pass	(0 : 52)	(0 : 51)	-ND-	-ND-	-ND-	-ND-	-ND-	-ND-	-ND-
Totals			(0 : 76)	(pass : 30)	(0 : 879)	(0 : 871)	(0 : 318)	(0 : 112)	(0 : 16)	-ND-	-ND-	-ND-	-ND-

1st number in parenthesis indicates number of excursions. 2nd number in parenthesis indicates total number of samples collected. Bold numbers indicate excursions from state Class III criteria. -ND- indicates that no data were collected.

Specific Conductance

During WY2011, specific conductance was measured in 879 samples collected from the monitoring sites. No samples exhibited an excursion exceeding the Class III criteria for specific conductance. The criteria for Class III waters requires that specific conductance not exceed a level greater than 50 percent above background, or 1,275 microhms per centimeter (µmhos/cm), whichever is greater.

pH

The pH of a solution is defined as the negative base-10 logarithm of the hydrogen ion activity and can range from 0 (very acidic) to 14 (very alkaline). For freshwater systems, the Class III criterion for pH ranges from 6.0 to 8.5 units. For WY2011, there was no excursion for the pH criterion among 871 samples collected.

Alkalinity

The criterion for Class III waters requires that alkalinity not measure below 20 mg/L. Alkalinity parameter was deleted from monitoring plan of Everglades National Park Inflows East (PIE) dated on April 1, 2008; none of the 76 sample values were flagged as a potential excursion in previous years. Alkalinity does not appear to be a parameter of concern, as excursions have only occurred once during the past 14 water years.

Turbidity

The criterion for Class III waters requires that turbidity not exceed 29 nephelometric turbidity units (NTU) above natural background conditions. In general, the median value can be used to determine the average background levels on a site-to-site basis for the non-ECP monitoring locations to compare the measured turbidity at a site with Class III criteria. For instance, if background levels at a particular location indicate a median turbidity level of approximately 3 NTU and a turbidity measurement of 30 NTU was measured, then this would indicate that the measurement is 27 NTU above background levels. This measurement would not be considered an excursion, although the 30 NTU measurement might be construed as exceeding the criterion in the absence of sufficient background data to calculate a median value for comparison. There were no excursions for turbidity for 318 samples collected during WY2011, as shown in **Table 5**.

Evaluation of Total Phosphorus

The non-ECP permit established the monitoring schedule shown in Attachment B for the collection of TP at non-ECP structures. Sample collection is accomplished mainly through a grab-sample collection program. Grab samples are collected biweekly for a majority of the structures when flow is occurring at the structure; otherwise, collection is conducted at least once a month. A few exceptions exist for some non-ECP structures, where sampling is conducted biweekly only during flow events. Nutrients are the most frequently sampled parameters in the non-ECP monitoring program. Starting from October 2009, grab samples were taken biweekly when there was recorded flow at S-38, S-39, S-145, and S-11A.

During WY2011, auto-samplers collected TP samples at the S-9, S-9A, S-18C, S-190, S-140 and S-332D structures. Samples were not collected at NSID1, as there was no flow at the stations in WY2011. Deployment of the auto-samplers at these locations was previously identified as an improvement in the monitoring program for collecting TP data at into structures. Auto-samplers also collected samples at the S-332B and S-332C structures located in the C-111 Basin that discharge water into the detention areas east of the Park.

The TP concentration data collected for all monitoring locations during WY2011 (the fourteenth year of non-ECP permit monitoring) are plotted in time-series and notched-box-and-whisker plots in Attachment E. The plots are provide a comparison of TP concentration data between WY2011 and previous periods (WY1998–WY2010, EFA baseline, and non-ECP baseline) to detect changes and trends in TP concentrations at non-ECP monitoring locations. To assist with evaluation of the TP concentration data for a particular location discharging into, within, or from the EPA, horizontal lines representing the 10 ppb and 50 ppb concentration levels were added to the TP time-series and notched-box-and-whisker plots. TP concentrations are reported in ppb (or µg/L), unless otherwise noted.

For WY2011, a statistical comparison of TP concentration data for all monitoring locations is presented as notched-box-and-whisker plots in **Figures 2a** through **2d**. The figures represent "into" (**Figure 2a**), "within" (**Figure 2b**), and "from" (**Figure 2c**) monitoring locations. Additionally, notched-box-and-whisker plots were constructed for TP concentration data for the upstream C-111 Basin monitoring locations (**Figure 2d**). Summary statistics of TP data collected for all monitoring locations are presented separately as Attachment C, Table C-3 (grab and auto-sampler data are reported separately.)

"Into" Structures

The highest TP concentrations for non-ECP structures discharging directly to the EPA during WY2011 were observed for the monitoring locations at the Feeder Canal (S-190), followed by S-140 (L-28 Basin), with median TP concentrations of 24 ppb (grab) and 43 ppb (auto) at S-190, and 31 ppb (grab) and 36 ppb (auto) at S-140. During WY2011, structure S-190 discharged 40,228 acre-feet (ac-ft) and S-140 discharged 77,688 ac-ft into the western portion of Water Conservation Area 3A (WCA-3A).

The lowest TP concentrations were observed at structures in the C-111 Basin at S-177, S-331–S-173, and S-332D. The S-332D structures are now modified as "into" structures and S-174 was plugged in September 2007; S-175, S-332, and BERMB3 are modified as "within" structures. These structures discharge to the southeastern portion of the Park via the C-111 Canal and Taylor Slough. The TP data for these monitoring locations had median concentrations of 5 ppb (grab) and 7 ppb (auto) for S-18C, and 6 ppb (grab) and 7 ppb (auto) for S-332D, with 75 percent of the samples having concentrations below 6 ppb (grab) and 7 ppb (auto) for S-18C, and 7.5 ppb (grab) and 10 ppb (auto) for S-332D. During WY2011, the structure discharged 105,084 ac-ft from S-332D to Everglades National Park, a significant decrease from last year (181,197 ac-ft). The S-18C structure discharged approximately 130,130 ac-ft to the lower C-111 Canal, which was also a significant decrease from last year (249,357 ac-ft). S-178 had a median concentration of 21 ppb for the grab samples, the highest TP concentration in the C-111 Basin; the structure did not have any discharge in WY2011. The TP concentrations are usually slightly higher in grab samples than in autosamples. There are multiple factors could cause higher TP in auto samples than in grab samples. Some major factors could be (1) autosampler can pick up the peak flow that grab sample could normally miss; and (2) autosampler can pick up sediments when water depth is shallow, which could avoid picking up such sediments by grab sample.

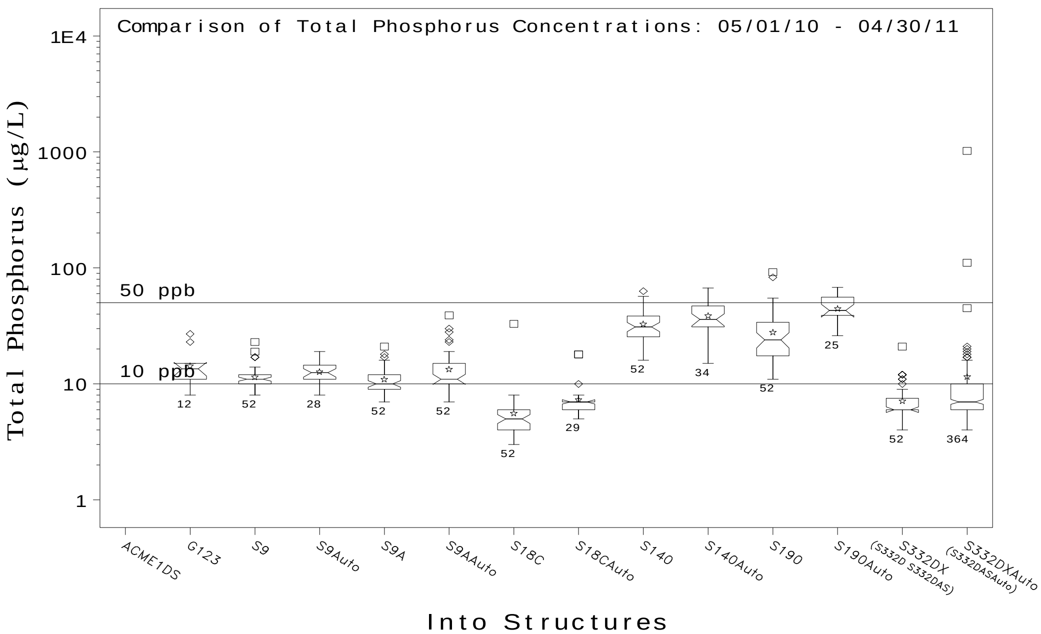


Figure 2a. Comparison of total phosphorus (TP) concentrations for “into” structures during WY2011.

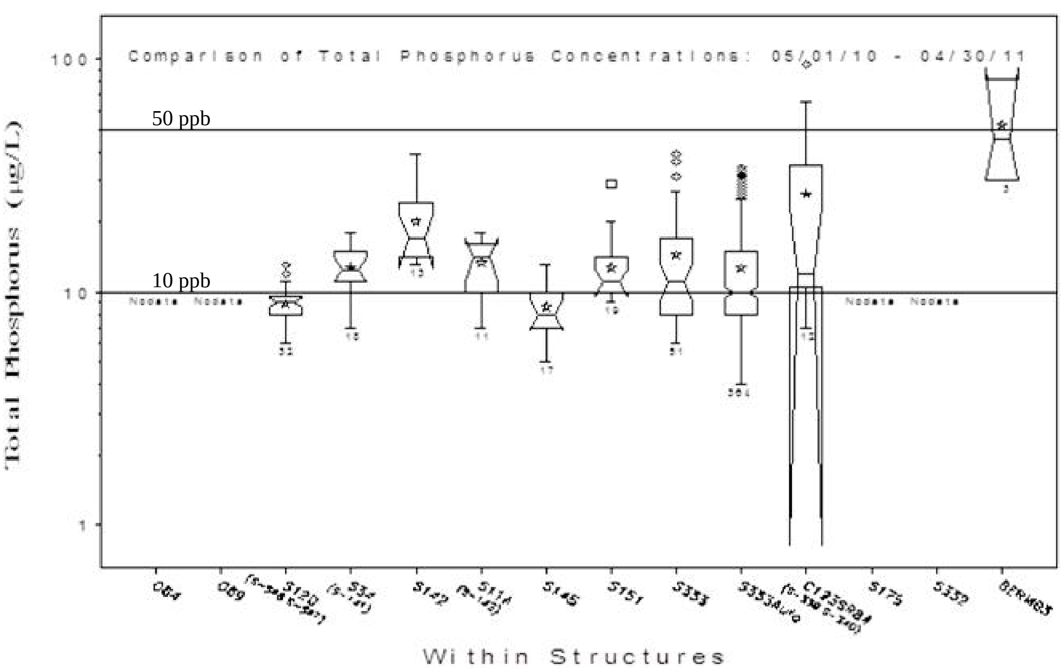


Figure 2b. Comparison of TP concentrations for “within” structures during WY2011.

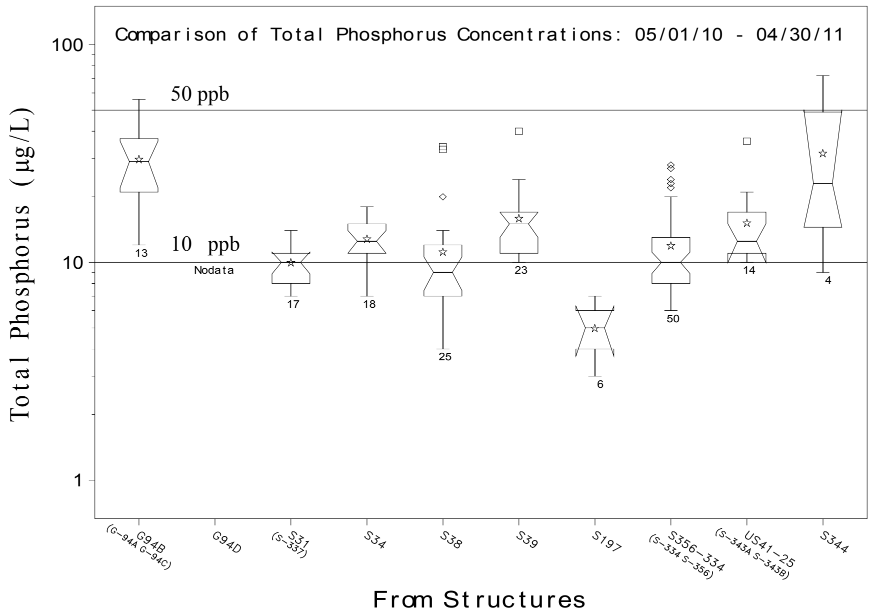


Figure 2c. Comparison of TP concentrations for "from" structures during WY2011.

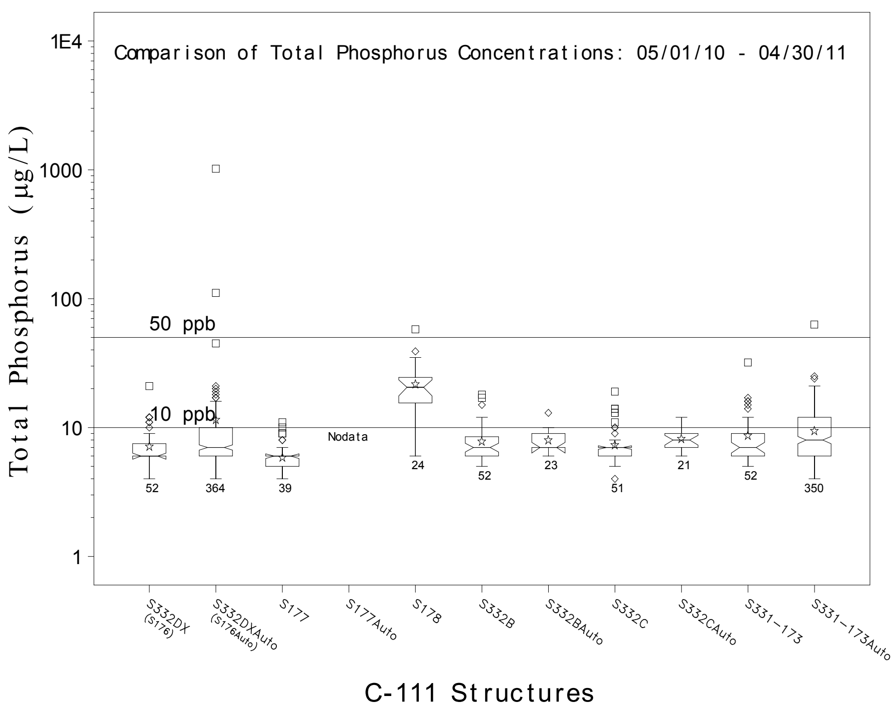


Figure 2d. Comparison of TP concentrations for C-111 structures during WY2011.

Structures S-9, S-9A (C-11 West Basin), and G-123 (North New River Canal Basin) discharge directly to the eastern side of WCA-3A. The notched-box-and-whisker plot for S-9, which is based on grab-sample data, indicates a TP concentration of less than 12 ppb for 75 percent of the data, a median concentration of 11 ppb, and a maximum concentration of 23 ppb (**Figure 2a**). Seventy-five percent of the data collected by the auto-sampler at S-9 was below 15 ppb, with a median concentration of 13 ppb, and a maximum concentration of 19 ppb. The notched-box-and-whisker plot for S-9A, which is based on grab-sample data, indicates a TP concentration of less than 12 ppb for 75 percent of the data, a median concentration of 10 ppb, and a maximum concentration of 21 ppb (**Figure 2a**). Seventy-five percent of the data collected by the auto-sampler at S-9A was below 15 ppb, with a median concentration of 11 ppb and a maximum concentration of 39 ppb. The monitoring schedule for structure G-123 requires biweekly grab sampling during flow events; otherwise, the samples are collected monthly. There was no flow during WY2011 at G-123; therefore, no sample was collected from the auto-sampler. During WY2011, 14 grab samples were collected. The grab samples at G-123 had a median TP concentration of 14 ppb. Seventy-five percent of the data collected by grab samples at G-123 was below 15 ppb, with a maximum concentration of 27 ppb.

The NSID operates several pumps at two pump stations to remove excess runoff from the basin, but only NSID pump station 1 is capable of discharge to the EPA. The flow-proportional auto-sampler and data recorder monitor flow both to the EPA and to the Hillsboro Canal. During WY2011, there were no TP data at the NSIDSP01 site because there was no flow for the structure. FWM TP concentrations cannot be calculated because there was no flow in WY2011.

During WY2011, no water quality samples were collected in the Boynton Farms Basin. The Arthur R. Marshall National Wildlife Refuge (Refuge) headquarters property, which is owned by the SFWMD and operated by the U.S. Fish and Wildlife Service, is bordered by several farms immediately east of the property boundary that discharge onto the property. The headquarters property is identified in the EFA as being within the EPA boundary, but the property east of the protective levee has no connection to discharge westward to Water Conservation Area 1 (WCA-1) and is an isolated parcel. The District is evaluating alternatives to reduce or eliminate discharge of elevated levels of nutrients from the Boynton Farms Basin to the EPA.

Table 6. Annual flow-weighted mean TP concentrations and TP loads for WY2011.

Hydrologic Basin	Structure	Water Quality Station ID	Total Flow Volume (acre-feet)	Number of Days with Positive Flow	Sample Type	Sample Size (Grab)	Arithmetic Average (Grab)(ppb)	Sample Size (Comp)	Arithmetic Average (Flow)(ppb)	Arithmetic Average (Non-Flow)(ppb)	Flow-Weighted Mean Concentration (ppb)	TP Load (kg)
North New River	G-123	G123	0	0	Auto [2] & Grab [1]	12	14	0	N/F[3]	14	N/F[3]	0
C-11 West	S-9	S9	58,172	82	Auto [2] & Grab [1]	52	12	28	13	11	13	967
	S-9A	S9A	90,047	346	Auto [2] & Grab [1]	52	11	52	12	12	12	1,364
C-111	S-332D	S332DX	105,084	220	Auto [2] & Grab [1]	52	7	52	9	9	14	1,847
	S-18C	S18C	130,130	259	Auto [2] & Grab [1]	52	6	29	6	5	8	1,207
L-28	S-140	S140	77,688	243	Auto [2] & Grab [1]	52	33	34	36	31	39	3,774
Feeder Canal	S-190	S190	40,228	163	Auto [2] & Grab [1]	52	28	25	41	21	45	2,241

Notes:

1) Grab indicates samples collected by grab sampling methodology.

2) Auto indicates that samples were collected by automatic composite samplers.

3) N/F no flow.

"Within" Structures

For structures discharging within the EPA during WY2011, low TP concentrations were observed for structures S-12D and S-333, which convey discharges from WCA-3A to the Park (**Figure 2b**). The monitoring location for S-12D serves as a surrogate monitoring location for the non-ECP permit structures S-346 and S-347. The median TP concentrations at these monitoring locations were 9 ppb at S-12D and 11 ppb at S-333, with 75 percent of the data below 10 ppb at S-12D and 17 ppb at S-333. The maximum concentration observed was 13 ppb for S-12D and 39 ppb at S-333, respectively. The discharge volumes for the period were 182,852 ac-ft for S-346 and S-347, and 205,054 ac-ft for S-333, respectively.

Structures S-145 and S-146 convey discharges from WCA-2A to WCA-2B. The structures usually operate simultaneously. The maximum concentration was 13 ppb, median value was 8 ppb, and 75 percent of the data (25 samples) were below 10 ppb at S-145. Discharge volumes ranged from 27,112 ac-ft at S-145 to 14,153 ac-ft at S-146.

In addition to monitoring the water quality at S-34, the data from the location are representative of the water quality conditions for S-141, which conveys discharges from WCA-2B to the North New River Canal just upstream of S-34. The TP concentrations from the S-34 location ranged from 7 ppb to 18 ppb, with a median value of 13 ppb.

The highest TP concentrations were observed at the monitoring site C123SR84 (the surrogate location for structures S-339 and S-340), with levels ranging from 7 to 94 ppb, with a median value of 12 ppb. S-151 discharged approximately 118,922 ac-ft during WY2011. TP concentrations ranged from 9 ppb to 29 ppb, with a median value of 11 ppb. Both S-339 and S-340, located upstream of S-151 in the Miami Canal, discharged 0 ac-ft in WY2011.

During WY2011, TP concentration was not monitored at S-332 because there was no flow at this site. S-175 discharged 1 ac-ft, with a FWM TP concentration of 6 ppb. Three grab samples were collected at BERMB3 with an average TP concentration of 52 ppb; there was no discharge at BERMB3 during the reporting period.

"From" Structures

TP concentrations observed during WY2011 for the structures classified as "from" are summarized in the notched-box-and-whisker plot shown in **Figure 2c**. The water quality at structure G-94D was not monitored because there was no flow at this structure. G-94B exhibited the highest TP concentrations, which ranged from 12 to 56 ppb. The median TP concentration at G-94B was 29 ppb, with 75 percent of the data below 37 ppb. G-94B is also the surrogate sampling site for G-94A and G-94C. All three structures, which are owned and maintained by the District but operated by the Lake Worth Drainage District (LWDD), are located at the L-40 levee on the eastern side of the Refuge and provide water supply releases from the Refuge to the LWDD. G-94A, G-94B, and G-94C, when open, allow interior LWDD canals to fill. The direction of flow typically has been toward the LWDD canal system. The G-94C structure was used intermittently for water supply. Total discharge from the Refuge to the LWDD system was approximately 6,736 ac-ft (Attachment B, Table B-2). Water supply releases to LWDD canals during WY2011 were 26,646 ac-ft at G-94A and no flow at G-94B and G-94D.

In WY2011, the TP concentrations observed at S-39 ranged from 10 to 40 ppb, with a median value of 15 ppb; the structure discharged approximately 41,096 ac-ft. During this period, 25 grab samples and 350 samples from the auto-sampler were collected at S-356-334. At these locations, TP concentrations ranged from 6 to 28 ppb (grab) and from 6 to 44 ppb (auto), with a median concentration of 10 ppb (both grab and auto).

For the remainder of the "from" structure monitoring locations (S-31, S-34, S-38, S-337, S-343A, and S-343B), 75 percent of the observed TP concentration were below 17 ppb, with median values ranging from 9 to 13 ppb. S-344 had the highest TP concentration; 75 percent of the observed TP concentrations at S-344 were below 49 ppb, with a median value of 23 ppb.

C-111 Basin Upstream Structures

Structures S-176, S-177, S-178, S-332B, S-332C, and S-331/S-173, shown in **Figure 2d**, are C-111 Basin structures located upstream of into structures S-18C and S-332D. Auto-samplers were installed at S-176, S-331-173, S-332B, and S-332C sites. For S-331/S-173, S-176, and S-177, 75 percent of the TP concentration data collected for these structures was below 12 ppb, with the median values ranging between 6 and 8 ppb. The maximum TP measured at S-178 was 58 ppb, with a median TP concentration of 21 ppb for grab samples, which was slightly higher than the rest of the C-111 Basin upstream structures. In WY2011, there was no flow at S-178 and grab samples were collected at upstream of S178 structure during no-flow conditions. S-332B discharged 143,543 ac-ft of water to the detention area, with a median TP concentration of 7 ppb for both grab samples and auto-samplers; S-332C discharged 82,072 ac-ft water to the detention area, with a median TP concentration of 7 ppb (grab) and 8 ppb (auto).

Flow-Weighted Mean Total Phosphorus Concentrations for All Structures

Extending the analysis from previous water years, FWM TP concentrations were calculated for non-ECP structures during WY2011. FWM TP concentrations were collected only for those structures having sufficient TP data and available flow data for WY2011. The annual FWM TP concentrations and monthly and annual flow volumes for the "into," "within," "from," and C-111 Basin structures during WY2011 are provided in Attachment B, Table B-2**.** A more detailed analysis of the WY2011 annual FWM TP concentration data for each into structure is shown in **Table 6**. The calculations use an estimation algorithm to determine TP concentrations on all days with positive flow for which no observed values are available.

Table 6 presents the results for the FWM TP concentrations at "into" sites during WY2011. The highest FWM TP concentration for the "into" structures during WY2011 was observed at S-190 (45 ppb in the Feeder Canal Basin) and S-140 (39 ppb in the L-28 Basin). S-9 and S-9A had FWM TP concentrations of 13 and 12 ppb, respectively. The Feeder Canal, L-28, and C-11 West basins are designated as sites of potential concern for TP. It should be noted that the FWM TP concentration would be 8.3 ppb at S-332D if an outlier TP concentration (1,020 ppb) from the auto-sampler on July 27, 2010, is removed; this outlier is very likely a recording error, based on comparison to historical TP values and other TP concentrations collected from the auto-sampler during the same week at this location (6-9 ppb).

The lowest FWM TP concentrations were observed at S-18C (8 ppb). This monitoring location is the subject of interim and long-term compliance limits stipulated in the federal Settlement Agreement; currently, there is no concern for TP in the C-111 Basin.

PESTICIDE MONITORING

The EPA pesticide monitoring program includes non-ECP permitted structures. For purposes of this appendix, the WY2011 surface water pesticide analyses are presented in tables for the non-ECP structures only. Sediment pesticide analyses for WY2011 are presented separately. Five upstream structures in the C-111 Basin are included in the pesticide monitoring program and represent potential warning sites for pesticides that might be discharged into the Park.

Pesticides in Surface Water and Sediment

The quarterly surface water and semiannual sediment pesticide sampling events at the 11 non-ECP sites (**Figure 3**) for WY2011 were conducted during September 2010, December 2010, March 2011, and April 2011. Modifications to the non-ECP permit changed the requirement for sampling at S-142 to only during discharge or flow events. For this reporting period, samples were not collected for any of the sampling events. Representative MDLs and PQLs for the pesticide analytes are listed in **Table 7**. The FDEP Central Laboratory in Tallahassee, FL, performed all pesticide analyses (refer to the *Quality Assurance Evaluation* section of the individual pesticide event reports for a summary of any limitations on data validity that might influence the utility of these data; these reports are available on the District's website at www.sfwmd.gov/library, under pesticide reports).

To evaluate potential impacts on aquatic life resulting from intermittent pesticide exposure, the maximum observed concentration is compared to the criterion maximum concentration published by the USEPA under Section 304 (a) of the Clean Water Act, and as promulgated in Chapter 62-302, F.A.C. For compounds not specifically listed, Rule 62-302.200, F.A.C., allows for acute and chronic toxicity standards. These standards are calculated as one-third and one-twentieth, respectively, of the amount lethal to 50 percent of the test organisms in 96 hours, where the 96-hour EC_{50} or LC_{50} is the lowest value determined for a species significant to the indigenous aquatic community. **Table 8** lists representative toxicity levels for selected freshwater aquatic invertebrates and fishes.

Table 9 lists the pesticides detected in surface water samples collected during WY2011. Four surface water samples were collected at each site and were analyzed for all designated parameters. Pesticides with concentrations greater than their respective state Class III criteria or toxicity limits were assigned to the "concern" excursion category, whereas those higher than the PQL were assigned to the "potential concern" excursion category. Atrazine at S-9, S-190, S-332DX, S-177, and S-178, atrazine desethyl at S-178, and alpha endosulfan at S-177 were detected as "potential concern". None of the pesticide was detected as "concern". There was "no concern" for rest of sites monitored.

Table 10 lists the pesticides detected in the sediment samples collected during WY2011. Two sediment samples were collected at each site and were analyzed for all designated parameters. Pesticides with concentrations greater than the PQL were assigned to the "potential concern" excursion category. Dichlorodiphenyldichloroethylene (DDE), the environmental dehydrochlorination product of dichlorodiphenyltrichloroethane (DDT) was detected at two locations – G-123 (North New River Canal Basin) and S-178 (C-111 Basin) – at levels of "potential concern."

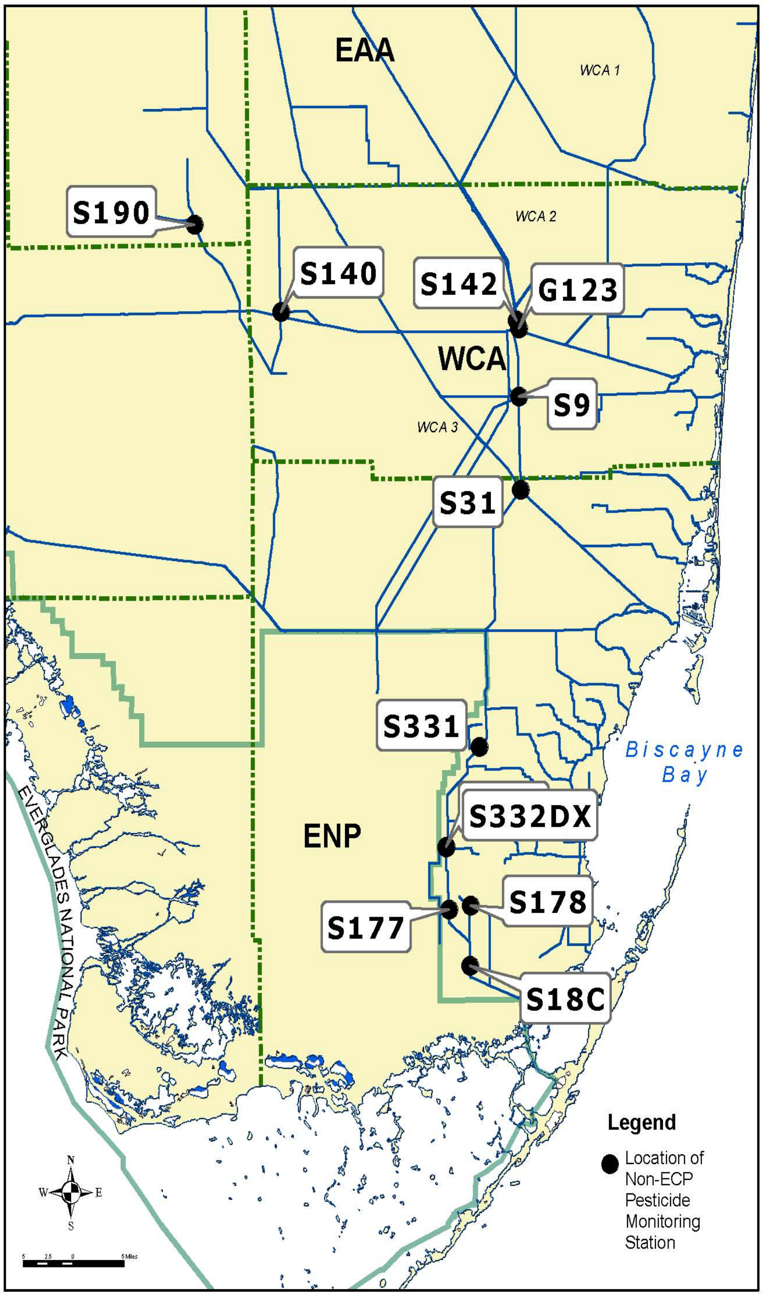


Figure 3. Pesticide monitoring network for non-ECP structures.

Table 7. Method detection limits (MDLs) and practical quantitation limits (PQLs) for pesticides measured in April 2011.

Pesticide or metabolite	Water: range of MDLs -PQLs (µg/L)	Sediment: range of MDLs - PQLs (µg/Kg)	Pesticide or metabolite	Water: range of MDLs -PQLs (µg/L)	Sediment: range of MDLs - PQLs (µg/Kg)
2,4-D	0.2 - 0.62	9 - 190	endrin aldehyde	0.0042 - 0.016	0.93 - 27
2,4,5-T	0.2 - 0.62	9 - 190	ethion	0.0095 - 0.04	2.3 - 67
2,4,5-TP (silvex)	0.2 - 0.62	9 - 190	ethoprop	0.0095 - 0.04	2.3 - 67
acifluorfen	0.2 - 0.62	9 - 190	fenamiphos	0.038 - 0.16	4.6 - 130
alachlor	0.057 - 0.24	14 - 400	fonofos	0.0095 - 0.04	2.3 - 67
aldrin	0.0019 - 0.008	0.46 - 13	heptachlor	0.0023 - 0.0096	0.46 - 13
ametryn	0.0095 - 0.04	2.3 - 67	heptachlor epoxide	0.0019 - 0.008	0.46 - 13
atrazine	0.0095 - 0.2	2.3 - 67	hexazinone	0.019 - 0.08	4.6 - 130
atrazine desethyl	0.0095 - 0.048	N/A	imidacloprid	0.21 - 0.71	N/A
atrazine desisopropyl	0.0095 - 0.04	N/A	linuron	0.21 - 0.71	8.3 - 180
azinphos methyl	0.028 - 0.12	6.9 - 200	malathion	0.028 - 0.12	4.6 - 130
α-BHC (alpha)	0.0021 - 0.0088	0.46 - 13	metalaxyl	0.047 - 0.2	N/A
β-BHC (beta)	0.0032 - 0.014	0.46 - 13	methamidophos	N/A	23 - 670
δ-BHC (delta)	0.0019 - 0.01	0.93 - 27	methoxychlor	0.0095 - 0.04	2.3 - 67
γ-BHC (gamma) (lindane)	0.0019 - 0.008	0.46 - 13	metolachlor	0.057 - 0.24	14 - 400
bromacil	0.047 - 0.3	9.3 - 270	metribuzin	0.019 - 0.08	4.6 - 130
butylate	0.019 - 0.08	N/A	mevinphos	0.057 - 0.24	9.3 - 270
carbophenothion (trithion)	0.015 - 0.064	2.3 - 67	mirex	0.011 - 0.048	1.9 - 53
chlordane	0.019 - 0.08	6.9 - 200	monocrotophos	N/A	23 - 670
chlorothalonil	0.015 - 0.064	2.3 - 67	naled	0.076 - 0.32	19 - 530
chlorpyrifos ethyl	0.0095 - 0.04	2.3 - 67	norflurazon	0.019 - 0.08	4.6 - 130
chlorpyrifos methyl	0.019 - 0.08	4.6 - 130	parathion ethyl	0.019 - 0.08	4.6 - 130
cypermethrin	0.019 - 0.08	2.3 - 67	parathion methyl	0.019 - 0.08	4.6 - 130
DDD-P,P’	0.0046 - 0.019	0.93 - 27	PCB-1016	0.019 - 0.08	14 - 400
DDE-P,P’	0.0038 - 0.016	0.93 - 27	PCB-1221	0.019 - 0.08	9.3 - 270
DDT-P,P’	0.0057 - 0.024	1.4 - 40	PCB-1232	0.019 - 0.08	21 - 600
demeton	0.028 - 0.12	6.9 - 200	PCB-1242	0.019 - 0.08	14 - 400
diazinon	0.019 - 0.08	2.3 - 67	PCB-1248	0.019 - 0.08	9.3 - 270
dicofol (kelthane)	0.042 - 0.18	6.9 - 200	PCB-1254	0.019 - 0.08	9.3 - 270
dieldrin	0.0019 - 0.008	0.46 - 13	PCB-1260	0.019 - 0.08	14 - 400
disulfoton	0.019 - 0.08	2.3 - 67	permethrin	0.015 - 0.064	2.8 - 80
diuron	0.21 - 0.71	8.3 - 180	phorate	0.0095 - 0.04	2.3 - 67
α-endosulfan (alpha)	0.0038 - 0.016	0.46 - 13	prometryn	0.019 - 0.08	4.6 - 130
β-endosulfan (beta)	0.0038 - 0.016	0.46 - 13	prometon	0.019 - 0.08	N/A
endosulfan sulfate	0.0046 - 0.02	0.93 - 27	simazine	0.0095 - 0.04	2.3 - 67
endrin	0.0095 - 0.04	2.3 - 67	toxaphene	0.095 - 0.4	35 - 1000
			trifluralin	0.0076 - 0.032	1.9 - 53

N/A - not analyzed

Table 8. Toxicity of pesticides (in µg/L) for selected freshwater aquatic invertebrates and fishes.

Common Name	48 hr EC_{50} Water flea *Daphnia magna*		Acute Toxicity (*)	Chronic Toxicity (*)	96 hr LC_{50} Bluegill *Lepomis macrochirus*		Acute Toxicity	Chronic Toxicity	96 hr LC_{50} Largemouth Bass *Micropterus salmoides*		Acute Toxicity	Chronic Toxicity	96 hr LC_{50} Channel Catfish *Ictalurus punctatus*		Acute Toxicity	Chronic Toxicity
ametryn	28,000	(7)	9,333	1,400	4,100	(6)	1,367	205	-		-	-	-		-	-
atrazine	6,900	(7)	2,300	345	16,000	(6)	5,333	800	-		-	-	7,600	(6)	2,533	380
DDE-p,p'	-		-	-	240	(1)	80	12	-		-	-	-		-	-
endosulfan	166	(7)	55	8	1	(1)	0.33	0.05	-		-	-	1	(1)	0.3	0.05
	-		-	-	2	(4)	0.67	0.10	-		-	-	1.5	(7)	0.5	0.08
	166	(8)	55	8	1.7	(8)	0.57	0.09	-		-	-	-		-	-
malathion	1	(1)	0.3	0.05	103	(1)	34	5.2	285	(1)	95	14	8,970	(1)	2,990	449
	1.8	(5)	0.6	0.09	110	(2)	37	5.5	-		-	-	7,620	(7)	2,540	381
	-		-	-	12	(3)	4	0.6	-		-	-	-		-	-
	1.0	(9)	0.33	0.05	30	(9)	10	1.5	-		-	-	-		-	-
metribuzin	4,200	(7)	1,400	210	80,000	(6)	26,667	4,000	-		-	-	100,000	(7)	33,333	5,000
	4,200	(10)	1,400	210	75,900	(10)	25,300	3,795	-		-	-	-		-	-
norflurazon	15,000	(7)	5,000	750	16,300	(7)	5,433	815	-		-	-	>200,000	(6)	>67,000	>10,000
	>15000	(11)	>5,000	>750	16,300	(11)	5,433	815	-		-	-	-		-	-

(*) Florida Administrative Code (FAC) 62-302.200, for compounds not specifically listed, acute and chronic toxicity standards are calculated as one-third and one-twentieth, respectively, of the amount lethal to 50% of the test organisms in 96 hours, where the 96 hour LC50 is the lowest value which has been determined for a species significant to the indigenous aquatic community.

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Table 9. Pesticide detections and excursions for surface water samples collected from September 2010–April 2011.[1]

Structure	ametryn	atrazine	atrazine desethyl	alpha endosulfan	malathion	netribuzin	norflurazon
G-123	—	—	—	—	—	—	—
S-9	—	0:1:0	1:0:0	—	—	—	—
S-18C	—	—	—	—	—	—	—
S-140	—	1:0:0	—	—	—	—	3:0:0
S-190	—	1:1:0	1:0:0	—	—	1:0:0	—
S-31	1:0:0*	1:0:0	—	—	—	—	—
S-332DX	—	1:1:0	—	—	—	—	—
S-177	—	0:1:0	—	0:1:0	—	—	—
S-178	—	1:1:0	0:1:0	—	1:0:0	—	—
S-331	—	—	—	—	—	—	—

[1] Four samples were collected for each site and analyzed for all parameters. Table cells only represent concentrations above the detection limit.

* Number of samples < = PQL (no concern); number of samples > PQL (potential concern); and number of samples exceeding criterion or toxicity limit (concern).

Table 10. Pesticide detections and excursions for sediment samples collected in December 2010 and April 2011.[1]

Structure	alpha endosulfan	beta endosulfan	endosulfan sulfate	DDE-p,p’
G-123	--	--	--	0 : 2
S-9	--	--	--	--
S-18C	--	--	--	--
S-140	--	--	--	--
S-190	--	--	--	--
S-31	--	--	--	2 : 0
S-332DX	--	--	--	--
S-177	--	--	--	1 : 0
S-178	1 : 0*	1 : 0	2 : 0	0 : 2
S-331	--	--	--	1 : 0

[1] Two sediment samples were collected for each site (except S-142) and analyzed for all parameters. Table cells only represent concentrations above the detection limit.

* Number of samples < PQL (no concern); and number of samples > PQL (potential concern).

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Attachment A: Specific Conditions and Cross-References

Table A-1. Specific conditions, actions taken, and cross-references presented for the Non-Everglades Construction Project (EFA, Permit number 0237803) in this report.

Specific Condition	Applicable Phase	Action & Frequency	Reported in 2012 SFER (Note: " V1"= Volume 1, "V2"=Volume 2, "V3" = Volume 3, Appendix 3-2)			
			Table Number	Narrative (Page Number)	Figure Number	Attachment
1. Sovereign Lands	Operation	Not Needed				
2. Historical or Archaeological Artifacts	Operation	Not Needed				
3. Water Quality Certification	Operation	Not Needed				
4. New Permit and Permit Modification	Operation	No modification this year				
5. Non-ECP Annual Reports	Operation	Done annually as required	1-10	V3: 1-27	1-3	
6. Land Acquisition and Water Treatment Facility Status Updates	Operation	Done every other year as required		V2: Chapter 6A		
7. Data Evaluations	Operation	Not Needed				
8. Regulatory Action	Operation	Done annually as required		V1: Chapter 4		
9. Schedule and Strategies	Operation	Not Needed				
10. Data Quality Assurance	Operation	Done annually as required		V3: 27, SFWMD. 2010b. Chemistry Laboratory Quality Manual		V3: G
11. Mercury Screening Program	Operation	Done annually as required		V3: 95-121		V3: F
12(a). Permit number	Operation	Done annually as required	1	V3:3		
12(b). Dates of sampling and analysis or appropriate code as required by Rule 62.160,F.A.C.;	Operation	Done annually as required		V3: 123		V3: H
12 (c). A statement describing the methods used in collection, handling, storage and analysis of the samples;	Operation	Done annually as required		V3:123		V3: H

Specific Condition	Applicable Phase	Action & Frequency	Reported in 2012 SFER (Note: " V1"= Volume 1, "V2"=Volume 2, "V3" = Volume 3, Appendix 3-2)			
			Table Number	Narrative (Page Number)	Figure Number	Attachment
12 (d). A map indicating the sampling locations;	Operation	Done annually as required		V3: 7	1	
12(e). A statement by the individual responsible for implementation of the sampling program concerning the authenticity, precision, limits of detection and accuracy of the data and MDL;	Operation	Done annually as required		V3: 122		V3: G
12 (f). Documentation that the laboratory performing the sampling and analyses has an approved Comprehensive Quality Assurance Plan on file with the DEP;	Operation	Done annually as required		V3: 27, SFWMD. 2010b. Chemistry Laboratory Quality Manual; SFWMD. 2011b.Field Sampling Quality Manual.		V3: G
12(g). Sampling collection data for each sample that is taken: i, time of day samples taken; ii average stage or depth of waterbody; iii depth of sample; iv weather conditions at the time of sampling;	Operation	Done annually as required		V3: 123		V3: H
12(g). v flow period proceeding sampling; and	Operation	Done annually as required		V3: 124		V3: I
12(g). vi Monthly flow volumes	Operation	Done annually as required	B-1,B-2	V3: 33-34		V3: B
12 (h). An evaluation of water quality data, including a comparison of samples with applicable water quality standards, as appropriate;	Operation	Done annually as required	3-10	V3:1- 27, 31-94	1—3	V3: D and E
12(i). Recommendations for improving water quality monitoring, as appropriate	Operation	No recommendations for this reporting period.				
12(j). Recommendations and evaluations regarding implementation of the strategies and schedules contained in this permit, as appropriate.	Operation	Done annually as required		V1: Chapter 4, 55-61, Appendix 4-3.		
13. Sampling of Flow Events	Operation	Done annually as required	6	V3:19		

Specific Condition	Applicable Phase	Action & Frequency	Reported in 2012 SFER (Note: " V1"= Volume 1, "V2"=Volume 2, "V3" = Volume 3, Appendix 3-2)			
			Table Number	Narrative (Page Number)	Figure Number	Attachment
14. Reporting of Flow and Non-Flow Samples	Operation	Done annually as required	6	V3:19		
15. Accessibility of Monitoring Sites	Operation	There have been no accessibility issues during this reporting period.				
16. Monitoring Location Report	Operation	Not needed this year				
17. Removal of Parameters	Operation	There was no removal of parameters this year				
18. Additional of Parameters	Operation	There was no addition of parameters this year				
19. Additional Schedule and Strategies.	Operation	There was no additional schedule and strategies this year				
20. Emergency Suspension of Sampling	Operation	There was no emergency suspension of sampling this year				

Attachment B: Non-Everglades Construction Project Water Quality Sampling Sites, Monitoring Schedule and Flow Volumes

Shi Kui Xue

Table B-1. Water quality monitoring schedule for non-Everglades Construction

AREA	Non-ECP PERMIT STRUCTURE	WATER QUALITY SAMPLING SITE	WATER QUALITY MONITORING SCHEDULE					WATER QUALITY COMMENTS
			Physical	Nutrients	Major Ions	Pesticides Water	Pesticides Sediment	
	G-123	G123	BWF/M	BWF/M	QTR	QTR	SA	
	S-9	S9	BWF/M	Weekly Flowing (auto-sampler)	QTR	QTR	SA	TP collected by autosampler.
	S-9A	S9A	BWF/M	BWF/M except TP-WF/M Grab (auto-sampler)	QTR			Sampling started in WY2003
INTO	S-332D	S332DX	WF/M	WF/M	QTR	QTR	SA	
	S-18C	S18C	WF/M	WF/M	QTR	QTR	SA	
	S-140	S140	BWF/M	BWF/M	QTR	QTR	SA	TP collected by autosampler, nitrogen species collected by grab
	S-190	S190	BWF/M	BWF/M	QTR	QTR	SA	TP collected by autosampler, nitrogen species collected by grab
	G-64	G64	BWF	BWF	QTRF			Monitoring Fe, Mg, Ca phased out *
	S-346, S-347	S333	WF/M	WF/M	QTR			Monitoring Fe, Mg, Ca phased out *
	S-141	S34	BWF/M	BWF/M	QTR			Monitoring Fe, Mg, Ca phased out *
	S-142	S142	BWF/M	BWF/M	QTR	QTR	SA	Monitoring Fe, Mg, Ca phased out *
	S-143	S11A	BWF/M	BWF/M	QTR			Monitoring Fe, Mg, Ca phased out *
	S-144	S145						Discontinued sampling in favor of surrogate location at S-145 *
WITHIN	S-145	S145	BWF/M	BWF/M	QTR			Monitoring Fe, Mg, Ca phased out *
	S-146	S145						Discontinued sampling in favor of surrogate location at S-145 *
	S-151	S151	BWF/M	BWF/M	QTR			Monitoring Fe, Mg, Ca phased out *
	S-333	S333	WF/M	WF/M	QTR			
	S-339, S-340	C123SR84	BWF/M	BWF/M	QTR			Monitoring Fe, Mg, Ca phased out *
	S-175	S175	BWF	BWF	QTRF			
	S-332	S332	BWF	BWF	QTRF			
	Berm B3	BermB3	BWF/M	BWF/M	QTR			
	G-94A, G-94B, G-94C	G94B	BWF/M	BWF/M	QTR			Monitoring Fe, Mg, Ca phased out *
	G-94D	G94D	BWF	BWF	BWF			
	S-31	S31	BWF/M	BWF/M	QTR	QTR	SA	Monitoring Fe, Mg, Ca phased out *
	S-34	S34	BWF/M	BWF/M	QTR			Monitoring Fe, Mg, Ca phased out *
FROM	S-38	S38	BWF/M	BWF/M	QTR			Monitoring Fe, Mg, Ca phased out *
	S-39	S39	BWF/M	BWF/M	QTR			Monitoring Fe, Mg, Ca phased out *
	S-197	S197	BWF/QTR	BWF/QTR	QTRF			Monitoring Fe, Mg, Ca phased out *
	S-334	S356-334	WF/M	WF/M	QTR			Monitoring Fe, Mg, Ca phased out *
	S-337	S31	BWF/M	BWF/M	QTR			Monitoring Fe, Mg, Ca phased out *
	S-343A, S-343B	US41-25	BWF/M	BWF/M	QTR			Monitoring Fe, Mg, Ca phased out *
	S-344	S344	QTR	QTR	QTR			Monitoring Fe, Mg, Ca phased out *
	S-176 +	S332DX						
	S-177 +	S177	WF/M	WF/M	QTR	QTR	SA	
	S-178 +	S178	WF/M	WF/M	QTR	QTR	SA	
	S-331 +, S-173 +	S331-173	WF/M	WF/M	QTR	QTR	SA	
C-111 BASIN		S331						S173 is not listed in Permit, but is adjacent to and flows in same direction as S331
	S-332B	S332B	WF	WF				S-332B, and S332C are not listed in Non-ECP permit, but they are in Emergency Order # 9.
	S-332C	S332C	WF	WF				

Notes:
1) Water quality sample site is located on upstream side of permitted structure, unless otherwise noted with different representative sampling location.
2) Structure names with a "+" are upstream of Non-ECP INTO structures and are additional monitoring locations.
3) * indicates monitoring requirement eliminated in the November 1999 Non-ECP Permit Modification.
4) Table Legend:

BWF/M =Biweekly if Flowing/Otherwise Monthly
BWF =Biweekly if Flowing
QTR =Quarterly
SA Semiannually
WF/M=Weekly if flow or monthly if not flowing
WF=Weekly if flow

Table B-2. Flow volume, total phosphorus (TP) loads, and annual flow-weighted mean TP concentrations for non-ECP structures during WY2011.

AREA	NON-ECP PERMIT STRUCTURE	WATER QUALITY SAMPLING SITE	FLOW		Monthly Flow Volumes (acre-ft) (May 1, 2010 - April 30, 2011)												Total Flow Volume (acre-ft)	Total TP Load (kg)	Annual Flow-Weighted Mean TP (ppb)
			STATION	DBKEY	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr			
INTO	G-123	G123	G123_P	K5481	0	0	0	0	0	0	0	0	0	0	0	0	0	0	N/F
	S-9	S9	S9_P	K5483	609	5,458	4,042	11,456	27,959	3,144	2,064	0	457	1,843	821	320	58,172	967	13
	S-9A	S9A	S-9A_P	TA415	5,346	9,268	11,572	12,492	8,484	10,593	9,651	7,962	7,250	3,766	2,176	1,486	90,047	1,364	12
	S-332D	S332DX	S-332D_P	TA413	9,564	8,952	13,320	26,279	22,397	16,367	8,184	3	4	15	0	0	105,084	1,847	14
	S-18C	S18C	S18C_S	15760	13,303	22,937	22,266	29,147	19,501	10,780	6,438	0	3,116	0	984	1,656	130,130	1,207	8
	S-140	S140	S140_TOT	06754	9,148	12,457	9,127	18,628	18,209	4,531	2,137	954	1,445	588	259	204	77,688	3,774	39
	S-190	S190	S190_S	K5501	3,518	4,265	6,963	8,530	13,745	3,200	0	0	1	1	0	5	40,228	2,241	45
WITHIN	G-64	G64	G64_C	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a		n/a
	S-346, S-347	S12D	S12D_S	FE774	21,741	19,317	25,131	33,888	36,940	33,955	11,496	385	0	0	0	0	182,852	2,039	9
	S-141	S34	S141_W	K5493/MC700	0	0	0	0	0	1,108	0	0	0	0	0	0	1,108	12	9
	S-142	S142	S142_C	K5494/F9554	12,132	0	0	0	0	0	0	0	0	0	0	0	12,132	236	16
	S-143	S11A	S143_C	K5495/JM599	0	0	0	0	0	0	0	0	0	0	0	0	0	0	N/F
	S-144	S145	S144_C	K5497/VM880	658	3,591	2,278	51	4,020	5,789	2	0	0	0	0	0	16,389	155	8
	S-145	S145	S145_C	K5498/VM881	1,547	4,593	3,803	119	4,443	6,167	4	0	4,097	2,339	0	0	27,112	254	8
	S-146	S145	S146_C	K5499/VM882	1,284	2,851	1,213	40	3,524	5,240	3	0	0	0	0	0	14,153	137	8
	S-151	S151	S151_C	K5500/JM155	25,045	23,246	23,098	11,221	20,819	15,494	0	0	0	0	0	0	118,922	1,761	12
	S-333	S333	S333_S	15042	56,360	28,588	43,192	5,824	2	7,907	13,129	6,399	5,674	6,377	18,101	13,501	205,054	3,839	15
	S-339	C123SR84	S339_S	K5506/15563	0	0	0	0	0	0	0	0	0	0	0	0	0	0	N/F
	S-340	C123SR84	S340_S	K5507/15666	0	0	0	0	0	0	0	0	0	0	0	0	0	1	N/F
	S-175	S175	S175_C	15752	0	0	0	0	0	0	0	0	0	0	0	0	1	0	6
	S-332	S332	S332_P	15753	0	0	0	0	0	0	0	0	0	0	0	0	0	0	N/F
	BERMB3	BERMB3	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a		n/a

Notes: 1) Water quality sample site is located on upstream side of permitted structure, unless otherwise noted with different sampling location.
2) n/a indicates that flow and/or stage data are not available, or that structure is not appropriately instrumented to capture information.
3) Structure names with a "+" are upstream of Non-ECP INTO structures and are additional monitoring locations or are listed in Emergency Order Number 9.
4) N/F indicates no positive flow
5) S-331 and S-173 flow records were combined to determine the annual flow-weighted mean TP concentration.
6) nd indicates no data or no positive flow was recorded on sampling date, therefore a flow-weighted mean could not be calculated.
7) Recently completed project to improve flow estimates at S-9, data were not available when this went to print

Table B-2. Continued.

AREA	NON-ECP PERMIT STRUCTURE	WATER QUALITY SAMPLING SITE	FLOW		Monthly Flow Volumes (acre-ft) (May 1, 2010 - April 30, 2011)												Total Flow Volume (acre-ft)	Total TP Load (kg)	Annual Flow-Weighted Mean TP (ppb)
			STATION	DBKEY	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr			
FROM	G-94A	G94B	G94A_C	TA422/VB272	5,796	111	627	1,680	0	0	0	2,373	2,766	6,795	5,500	998	26,646	1,096	33
	G-94B	G94B	G94B_C	TA423/V7591	0	0	0	0	0	0	0	0	0	0	0	0	0	0	32
	G-94C	G94B	G94C_C	TA424/OR446	1,481	3	268	312	0	375	623	2,649	1,025	0	0	0	6,736	192	23
	G-94D	G94D	ACME2	OH648/15023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	N/F
	S-31	S31	S31_C	K5486/S1494	15,718	13,767	11,913	10,344	16,384	3,010	0	0	0	0	0	0	71,135	972	11
	S-34	S34	S34_C	K5487/15954	16,232	0	0	0	0	1,124	2	0	0	2	0	0	17,360	354	17
	S-38	S38	S38_C	K5488/06760	19,921	13,081	19,249	6,506	16,922	5,840	809	3,474	6,312	7,449	5,069	1,928	106,560	1,896	14
	S-39	S39	S39_S	K5489/06733	2	9,097	9,658	0	8	104	727	3,050	6,488	4,460	4,830	2,672	41,096	834	16
	S-197	S197	S197_C	15763	0	0	0	0	13,073	11,894	0	0	0	0	0	0	24,967	140	5
	S-334	S356-334	S334_S	FB752	30,452	13,922	20,278	797	0	16	45	4,543	5,399	5,920	17,245	11,868	110,485	1,919	14
	S-337	S31	S337_C	K5505/SP560	0	0	0	0	0	0	0	0	0	0	0	0	0	0	N/F
	S-343A	US41-25	S343A_C	K5508/16193	0	0	0	3,975	5,616	2,742	0	0	0	0	0	0	12,333	137	9
	S-343B	US41-25	S343B_C	K5509/16196	0	0	0	5,767	10,003	3,909	0	0	0	0	0	0	19,679	218	9
	S-344	S344	S344_C	K5511/16199	0	0	0	6,162	8,526	3,636	0	0	0	0	0	0	18,324	226	10
C-111 BASIN	S-176 +	S332DX	S176_S	15762/12286	1,075	3,815	703	443	1,179	44	167	22	469	341	5,072	6,159	19,490	274	11
	S-177 +	S177	S177_S	15772/13156	9,365	19,029	14,989	24,866	26,966	17,472	4,791	0	1,383	0	3,303	5,172	127,334	841	5
	S-178 +	S178	S178_C	SO632/PT624	0	0	0	0	0	0	0	0	0	0	0	0	0	0	N/F
	S-331 +	S331-173	S331_P	P6935	42,704	32,440	33,540	32,626	34,149	23,097	11,838	0	0	2	73	1	210,470	2,435	9
	S-173 +	S331-173	S173_C	FB759/P7712	0	0	0	0	0	0	0	0	810	4,213	2,151	3,901	11,074	191	14
	S-332B+	S332B	S-332B	TB064	23,272	26,731	26,993	25,827	20,034	14,139	6,521	2	1	5	6	11	143,543	1,414	8
	S-332C+	S332C	S-332B	UT724	19,454	18,093	17,480	6,870	16,095	3,928	143	0	0	0	0	9	82,072	815	8

Notes: 1) Water quality sample site is located on upstream side of permitted structure, unless otherwise noted with different sampling location.
2) n/a indicates that flow and/or stage data are not available, or that structure is not appropriately instrumented to capture information.
3) Structure names with a "+" are upstream of Non-ECP INTO structures and are additional monitoring locations or are listed in Emergency Order Number 9.
4) N/F indicates no positive flow
5) S-331 and S-173 flow records were combined to determine the annual flow-weighted mean TP concentration.
6) nd indicates no data or no positive flow was recorded on sampling date, therefore a flow-weighted mean could not be calculated.

Attachment C: Summary Statistics of Non-Everglades Construction Project Water Quality Monitoring Data for Water Year 2011

Shi Kui Xue and Steven Hill

NOTES:

Summary statistics are tabulated in **Table C-3** of this attachment for all parameters collected during Water Year 2011 (WY2011) (May 1, 2010–April 30, 2011) at the non-Everglades Construction Project (non-ECP) water quality monitoring sites. **Table C-1** of this attachment presents the water quality parameters associated with the summary statistics and their associated Florida Class III Fresh Surface Water Criteria [Section 62-302.530, Florida Administrative Code (F.A.C.)]. Additionally, the parameter summary statistics shown in **Table C-3** are sequenced according to the order shown in **Table C-1**. The monitoring sites are sequenced based on the order shown in **Table C-2**. The non-ECP structure locations are depicted in Figure 1 of this appendix.

Table C-1. Class III criteria reference table for water quality parameters presented in summary statistics on **Table C-3**.

Parameter Name	Abbreviated Parameter Name	Units	SFWMD Test Number	Class III Criteria Predominantly Fresh Surface Waters Section 62-302.530, F.A.C.
PHYSICAL				
% Saturation, Dissolved Oxygen	% SAT. DO	percent	76	None
Dissolved Oxygen	DO	mg/L	8	Not be less than 5.0 mg/L
Specific Conductance (Field)	FLDCOND	µmhos/cm	9	Not greater than 50% above background or 1,275 µmhos/cm, whichever is greater
pH (Field)	PH	units	10	Not less than 6.0 or greater than 8.5
Turbidity	TURBIDITY	ntu	12	Less than or equal to 29 NTU above natural background
Total Suspended Solids	TSS	mg/L	16	None
Color	COLOR	units	13	None
Hardness	HARDNESS	mg/L as $CaCO_3$	35	None
Temperature	TEMP	centigrade	7	None
Alkalinity	ALKALINITY	mg/L	67	Not less than 20 mg/L
NUTRIENTS				
Total Nitrogen	TN	mg N/L	80	narrative criteria
Nitrite + Nitrate	NOX	mg N/L	18;180	narrative criteria
Nitrite	NO2	mg N/L	19	narrative criteria
Nitrate	NO3	mg N/L	78	narrative criteria
Ammonium	NH4	mg N/L	182	narrative criteria
Un-Ionized Ammonia	UN-IONIZED AMMONIA	mg/L as NH_3	NONE	Less than or equal to 0.02 mg/L
Inorganic Nitrogen	NNH4	mg N/L	92	narrative criteria
Organic Nitrogen	ORGN	mg N/L	79	narrative criteria
Total Kjeldahl Nitrogen	TKN	mg N/L	21	narrative criteria
Ortho-Phosphorus	OPO4	mg P/L	23	narrative criteria
Total Phosphorus	TP	mg P/L	25	narrative criteria
MAJOR IONS				
Dissolved Calcium	DIS. CA	mg/L	30	None
Dissolved Potassium	DIS. K	mg/L	29	None
Dissolved Magnesium	DIS. MG	mg/L	31	None
Dissolved Sodium	DIS. NA	mg/L	28	None
Dissolved Silica	DIS. SILICA	mg/L	27	None
Total Sulfate	TOT. SO4	mg/L	33	None
Total Chlorides	TOT. CL	mg/L	32	None
TRACE ELEMENTS				
Total Arsenic	TOT. AS	µg/L	106	Less than or equal to 50 µg/L
Total Cadmium	TOT. CD	µg/L	103	Less than or equal to calculated value using: $e^{(0.7852[\ln(Hardness)-3.49])}$ µg/L
Total Copper	TOT. CU	µg/L	104	Less than or equal to calculated value using: $e^{(0.8545[\ln(Hardness)-1.702])}$ µg/L
Total Mercury	TOT. HG	µg/L	102	Less than or equal to .012 µg/L
Total Lead	TOT. PB	µg/L	107	Less than or equal to calculated value using: $e^{(1.273[\ln(Hardness)-4.705])}$ µg/L
Total Zinc	TOT. ZN	µg/L	105	Less than or equal to calculated value using: $e^{(0.8473[\ln(Hardness)+0.884])}$ µg/L
Total Iron	TOT. FE	mg/L	177	Less than or equal to 1.0 mg/L
BIOLOGICAL				
Carotenoid	CAROTENOID or CAROT	mg/m^3	63	None
Chlorophyll-A	CHLA	mg/m^3	61	None
Chlorophyll-A2	CHLA2	mg/m^3	112	None
Chlorophyll-B	CHLB	mg/m^3	62	None
Chlorophyll-C	CHLC	mg/m^3	113	None
Pheophytin-A	PHEOPHYTIN A	mg/m^3	64	None

Table C-2. Reference table for cross-referencing water quality monitoring sites with non-ECP discharge structures and the monitoring data summary statistics shown in **Table C-3**.

STRUCTURE CATEGORY	Non-ECP PERMIT STRUCTURE	WATER QUALITY SAMPLING SITE	Comments
INTO	G-123	G123	Auto-sampler installed upstream of pump station during WY2001
	S-9	S9	Auto-sampler installed upstream of pump station during WY2000
	S-9A	S9A	Water quality data available in WY2003
	S-332D	S-332DX	The site is a new non-ECP structure
	S-18C	S18C	Auto-sampler installed upstream of pump station during WY2003
	S-140	S140	Auto-sampler installed upstream of pump station during WY2001
	S-190	S190	Auto-sampler installed upstream of pump station during WY2001
	NSID1	NSIDSP01	Auto-sampler installed upstream of pump station during WY2002
WITHIN	G-64	G64	
	S-346, S-347	S12D	
	S-141	S34	
	S-142	S142	
	S-143	S11A	
	S-144	S145	
	S-145	S145	
	S-146	S145	
	S-151	S151	
	S-333	S333	
	S-339, S-340	C123SR84	
	S-175	S175	
	S-332	S332	
	Burm-B3	BurmB3	The site is a new non-ECP structure
FROM	G-94A, G-94B, G-94C	G94B	
	G-94D	G94D	
	S-31, S-337	S31	
	S-34	S34	
	S-38	S38	
	S-39	S39	
	S-197	S197	
	S-334	S356-334	
	S-343A, S-343B	US41-25	
	S-344	S344	
C111 BASIN	S-176 +	S332DX	The site is not a non-ECP structure; data are presented for information only
	S-177 +	S177	
	S-178 +	S178	
	S-331 +, S-173 +	S331-173	
	S-332B+	S-332B	The site is not a non-ECP structure; data are presented for information only
	S-332C+	S-332C	The site is not a non-ECP structure; data are presented for information only, the flow data were processed from 3/27/07.

Notes:
1) Water quality sample site is located on upstream side of permitted structure; unless otherwise noted with different representative sampling location.
2) Structure names with a "+" are upstream of non-ECP INTO structures and are additional monitoring locations.

Table C-3. Summary statistics and excursions of non-ECP water quality monitoring data (physical parameters, nutrients, major ions, and trace metals) collected during WY2011.

STATION	TEST NAME	UNITS	TEST NUMBER	PERIOD OF RECORD	# OF SAMPLES	MEAN	STD	MIN	Q25	MEDIAN	Q75	MAX	# BELOW DETECTION LIMIT	# OF EXCURSIONS	% EXCURSIONS
G123	CA_I	mg/L	188	07DEC2010 - 27APR2011	2	5.25	1.343503	4.3	4.3	5.25	6.2	6.2	0	0	0.00%
G123	DIS. CA	mg/L	30	13JUL2010 - 11JAN2011	3	71.63333	18.17535	50.7	50.7	80.8	83.4	83.4	0	0	0.00%
G123	DIS. K	mg/L	29	13JUL2010 - 11JAN2011	3	3.933333	0.723418	3.1	3.1	4.3	4.4	4.4	0	0	0.00%
G123	DIS. MG	mg/L	31	13JUL2010 - 11JAN2011	3	17	3.132092	13.4	13.4	18.5	19.1	19.1	0	0	0.00%
G123	DIS. NA	mg/L	28	13JUL2010 - 11JAN2011	3	57.86667	12.1944	43.9	43.9	63.3	66.4	66.4	0	0	0.00%
G123	DO	mg/L	8	04MAY2010 - 19APR2011	12	2.53	1.296155	0.5	1.53	2.47	3.49	5.02	0	0	0.00%
G123	FLDCOND.	UMHOS/CM	9	04MAY2010 - 19APR2011	12	806.0833	61.79211	717	770	790	851.5	945	0	0	0.00%
G123	HARDNESS	mg/L CACO3	35	13JUL2010 - 11JAN2011	3	249.0667	58.34572	181.9	181.9	278.1	287.2	287.2	0	0	0.00%
G123	NOX	mg N/L	18;180	04MAY2010 - 19APR2011	11	0.037182	0.035213	<0.005	<0.005	0.043	0.062	0.112	4	0	0.00%
G123	OPO4	mg P/L	23	04MAY2010 - 19APR2011	12	0.002083	0.000289	<0.002	<0.002	<0.002	<0.002	0.003	11	0	0.00%
G123	PH	UNITS	10	04MAY2010 - 19APR2011	12	7.383333	0.212489	7.1	7.2	7.35	7.55	7.7	0	0	0.00%
G123	TEMP	CENT	7	04MAY2010 - 19APR2011	12	24.825	2.797767	19.3	22.8	25.2	27.35	28.7	0	0	0.00%
G123	TKN	mg N/L	21	04MAY2010 - 19APR2011	12	1.535833	0.181482	1.38	1.395	1.43	1.7	1.87	0	0	0.00%
G123	TN	mg N/L	80	04MAY2010 - 19APR2011	12	1.56825	0.174145	1.38	1.4355	1.4995	1.723	1.87	0	0	0.00%
G123	TOT. CL	mg/L	32	13JUL2010 - 27APR2011	5	56.52	47.72941	3.9	5.6	80.2	95.7	97.2	0	0	0.00%
G123	TOT. SO4	mg/L	33	13JUL2010 - 11JAN2011	3	1.166667	0.450925	0.7	0.7	1.2	1.6	1.6	0	0	0.00%
G123	TP	mg P/L	25	04MAY2010 - 19APR2011	12	0.014333	0.005532	0.008	0.011	0.0135	0.015	0.027	0	0	0.00%
G123	TURBIDITY	NTU	12	04MAY2010 - 27APR2011	14	2.778571	3.266421	0.4	0.8	1.95	2.5	12	0	0	0.00%
S9	CA_I	mg/L	188	07DEC2010 - 26APR2011	2	1.94	1.92333	0.58	0.58	1.94	3.3	3.3	0	0	0.00%
S9	DIS. CA	mg/L	30	13JUL2010 - 05APR2011	4	81.85	6.148442	74	77.3	82.45	86.4	88.5	0	0	0.00%
S9	DIS. K	mg/L	29	13JUL2010 - 05APR2011	4	3.625	0.442531	3.2	3.25	3.6	4	4.1	0	0	0.00%
S9	DIS. MG	mg/L	31	13JUL2010 - 05APR2011	4	14.8	1.762574	12.7	13.4	14.9	16.2	16.7	0	0	0.00%
S9	DIS. NA	mg/L	28	13JUL2010 - 05APR2011	4	54.6	6.134058	47.4	49.5	55.6	59.7	59.8	0	0	0.00%
S9	DO	mg/L	8	04MAY2010 - 26APR2011	52	2.5175	1.650644	0.1	1.24	2.58	3.36	7.61	0	0	0.00%
S9	FLDCOND.	UMHOS/CM	9	04MAY2010 - 26APR2011	52	760.1731	58.25762	626	715	788.5	805.5	823	0	0	0.00%
S9	HARDNESS	mg/L CACO3	35	13JUL2010 - 05APR2011	4	265.3	20.49406	242.8	248.1	266.35	282.5	285.7	0	0	0.00%
S9	NOX	mg N/L	18;180	04MAY2010 - 05APR2011	14	0.030286	0.024693	<0.005	0.012	0.0195	0.052	0.086	1	0	0.00%
S9	OPO4	mg P/L	23	04MAY2010 - 05APR2011	14	0.002071	0.000267	<0.002	<0.002	<0.002	<0.002	0.003	12	0	0.00%
S9	PH	UNITS	10	04MAY2010 - 26APR2011	52	7.375	0.163149	7.1	7.3	7.3	7.5	7.8	0	0	0.00%
S9	TEMP	CENT	7	04MAY2010 - 26APR2011	52	25.63462	2.912777	19.7	23.15	26.05	28.2	29.8	0	0	0.00%
S9	TKN	mg N/L	21	04MAY2010 - 05APR2011	14	1.509286	0.19329	1.2	1.37	1.525	1.69	1.77	0	0	0.00%
S9	TN	mg N/L	80	04MAY2010 - 05APR2011	14	1.539214	0.174112	1.257	1.396	1.554	1.705	1.782	0	0	0.00%
S9	TOT. CL	mg/L	32	13JUL2010 - 26APR2011	6	55.96667	41.69257	1.9	3.9	74.95	89.3	90.8	0	0	0.00%
S9	TOT. SO4	mg/L	33	13JUL2010 - 05APR2011	4	1.7	0.547723	1.3	1.35	1.5	2.05	2.5	0	0	0.00%
S9	TP	mg P/L	25	04MAY2010 - 26APR2011	52	0.011519	0.002914	0.008	0.01	0.011	0.012	0.023	0	0	0.00%
S9	TURBIDITY	NTU	12	04MAY2010 - 26APR2011	16	3.2875	1.365223	1.2	2.4	3.15	3.8	7.2	0	0	0.00%
S9Auto	NOX	mg N/L	18;180	04MAY2010 - 05APR2011	23	0.038217	0.027835	<0.005	0.02	0.032	0.052	0.106	3	0	0.00%
S9Auto	TKN	mg N/L	21	04MAY2010 - 12APR2011	28	1.465714	0.190951	1.15	1.295	1.43	1.665	1.75	0	0	0.00%
S9Auto	TN	mg N/L	80	04MAY2010 - 12APR2011	28	1.496571	0.171766	1.214	1.361	1.489	1.676	1.75	0	0	0.00%
S9Auto	TP	mg P/L	25	04MAY2010 - 12APR2011	28	0.012786	0.002299	0.008	0.011	0.0125	0.0145	0.019	0	0	0.00%
S9A	DIS. CA	mg/L	30	13JUL2010 - 05APR2011	4	80.775	6.452067	73.5	75.65	80.7	85.9	88.2	0	0	0.00%
S9A	DIS. K	mg/L	29	13JUL2010 - 05APR2011	4	3.625	0.464579	3.2	3.25	3.55	4	4.2	0	0	0.00%

Table C-3. Continued.

STATION	TEST NAME	UNITS	TEST NUMBER	PERIOD OF RECORD	# OF SAMPLES	MEAN	STD	MIN	Q25	MEDIAN	Q75	MAX	# BELOW DETECTION LIMIT	# OF EXCURSIONS	% EXCURSIONS
S9A	DIS. MG	mg/L	31	13JUL2010 - 05APR2011	4	14.85	1.627882	12.9	13.6	14.9	16.1	16.7	0	0	0.00%
S9A	DIS. NA	mg/L	28	13JUL2010 - 05APR2011	4	54.425	5.973483	47	49.6	55.5	59.25	59.7	0	0	0.00%
S9A	DO	mg/L	8	04MAY2010 - 26APR2011	52	2.448269	1.495812	0.1	1.14	2.845	3.3	7.91	0	0	0.00%
S9A	FLDCOND.	UMHOS/CM	9	04MAY2010 - 26APR2011	52	760.9808	58.55733	618	722.5	790.5	801.5	820	0	0	0.00%
S9A	HARDNESS	mg/L CACO3	35	13JUL2010 - 05APR2011	4	262.875	21.08228	242.4	244.85	262.45	280.9	284.2	0	0	0.00%
S9A	NH4	mg N/L	20	27JUL2010 - 27JUL2010	1	0.177		0.177	0.177	0.177	0.177	0.177	0	0	0.00%
S9A	NNH4	mg N/L	92	27JUL2010 - 27JUL2010	1	0.209		0.209	0.209	0.209	0.209	0.209	0	0	0.00%
S9A	NO2	mg N/L	19	27JUL2010 - 27JUL2010	1	0.003		0.003	0.003	0.003	0.003	0.003	0	0	0.00%
S9A	NO3	mg N/L	78	27JUL2010 - 27JUL2010	1	0.029		0.029	0.029	0.029	0.029	0.029	0	0	0.00%
S9A	NOX	mg N/L	18;180	04MAY2010 - 05APR2011	22	0.0395	0.029786	<0.005	0.02	0.0315	0.054	0.1	3	0	0.00%
S9A	OPO4	mg P/L	23	04MAY2010 - 05APR2011	22	0.002	0	<0.002	<0.002	<0.002	<0.002	0.002	17	0	0.00%
S9A	ORGN	mg N/L	79	27JUL2010 - 27JUL2010	1	1.043		1.043	1.043	1.043	1.043	1.043	0	0	0.00%
S9A	PH	UNITS	10	04MAY2010 - 26APR2011	52	7.321154	0.114338	7.2	7.2	7.3	7.4	7.6	0	0	0.00%
S9A	TEMP	CENT	7	04MAY2010 - 26APR2011	52	25.63077	2.753646	20.4	23.35	26.3	28.1	29.8	0	0	0.00%
S9A	TKN	mg N/L	21	04MAY2010 - 05APR2011	22	1.523636	0.175623	1.22	1.39	1.51	1.71	1.77	0	0	0.00%
S9A	TN	mg N/L	80	04MAY2010 - 05APR2011	22	1.562455	0.161244	1.252	1.458	1.5375	1.71	1.83	0	0	0.00%
S9A	TOT. CL	mg/L	32	13JUL2010 - 05APR2011	4	83.2	8.716651	74	75.8	83.55	90.6	91.7	0	0	0.00%
S9A	TOT. SO4	mg/L	33	13JUL2010 - 05APR2011	4	1.55	0.525991	1.1	1.2	1.4	1.9	2.3	0	0	0.00%
S9A	TP	mg P/L	25	04MAY2010 - 26APR2011	52	0.011	0.002657	0.007	0.009	0.01	0.012	0.021	0	0	0.00%
S9A	TURBIDITY	NTU	12	04MAY2010 - 05APR2011	22	2.786364	0.702577	1.1	2.3	2.85	3.2	4.3	0	0	0.00%
S9A	UN-IONIZED A	mg/L	NONE	04MAY2010 - 26APR2011	1	0.004067		0.004067	0.00407	0.0040671	0.00407	0.0040671	0	0	0.00%
S9AAuto	TP	mg P/L	25	04MAY2010 - 26APR2011	52	0.013462	0.005939	0.007	0.01	0.011	0.015	0.039	0	0	0.00%
S18C	CA_I	mg/L	188	06DEC2010 - 25APR2011	2	2.95	0.212132	2.8	2.8	2.95	3.1	3.1	0	0	0.00%
S18C	DIS. CA	mg/L	30	03MAY2010 - 25APR2011	41	74.67805	3.673181	68.5	72.8	74.2	75.5	87.8	0	0	0.00%
S18C	DIS. K	mg/L	29	03MAY2010 - 25APR2011	41	4.55122	0.752038	3.2	3.8	4.5	5.1	6.2	0	0	0.00%
S18C	DIS. MG	mg/L	31	03MAY2010 - 25APR2011	41	7.031707	1.874492	5.2	6	6.5	7	14	0	0	0.00%
S18C	DIS. NA	mg/L	28	03MAY2010 - 25APR2011	41	31.74634	6.152849	22.4	28.2	30.1	33.4	52.1	0	0	0.00%
S18C	DO	mg/L	8	03MAY2010 - 25APR2011	52	6.020385	2.277487	1.76	4.25	5.9	8.195	9.82	0	0	0.00%
S18C	FLDCOND.	UMHOS/CM	9	03MAY2010 - 25APR2011	52	561.1538	38.81398	498	538	558	580.5	717	0	0	0.00%
S18C	HARDNESS	mg/L CACO3	35	03MAY2010 - 25APR2011	41	215.522	13.22262	196.5	210.2	212	216	276.8	0	0	0.00%
S18C	NOX	mg N/L	18;180	03MAY2010 - 25APR2011	36	0.108111	0.045756	0.031	0.074	0.096	0.1355	0.215	0	0	0.00%
S18C	OPO4	mg P/L	23	03MAY2010 - 25APR2011	41	0.002	0	<0.002	<0.002	<0.002	<0.002	0.002	40	0	0.00%
S18C	PH	UNITS	10	03MAY2010 - 25APR2011	51	7.486275	0.363329	6.9	7.2	7.4	7.8	8.2	0	0	0.00%
S18C	TEMP	CENT	7	03MAY2010 - 25APR2011	52	25.08269	3.39958	17.3	22.35	26.7	27.4	30	0	0	0.00%
S18C	TKN	mg N/L	21	03MAY2010 - 25APR2011	40	0.62	0.168675	0.43	0.515	0.57	0.675	1.07	0	0	0.00%
S18C	TN	mg N/L	80	03MAY2010 - 25APR2011	42	0.702929	0.172007	<0.5	0.62	0.6675	0.718	1.239	2	0	0.00%
S18C	TOT. CL	mg/L	32	03MAY2010 - 25APR2011	43	47.85581	12.06895	10	43.4	46.6	53.2	78.5	0	0	0.00%
S18C	TOT. SO4	mg/L	33	07JUL2010 - 04APR2011	4	7.3	2.680796	4.6	5	7.4	9.6	9.8	0	0	0.00%
S18C	TP	mg P/L	25	03MAY2010 - 25APR2011	52	0.005615	0.004078	0.003	0.004	0.005	0.006	0.033	0	0	0.00%
S18C	TSS	mg/L	16	03MAY2010 - 25APR2011	41	3	0	<3	<3	<3	<3	<3	41	0	0.00%

Table C-3. Continued.

STATION	TEST NAME	UNITS	TEST NUMBER	PERIOD OF RECORD	# OF SAMPLES	MEAN	STD	MIN	Q25	MEDIAN	Q75	MAX	# BELOW DETECTION LIMIT	# OF EXCURSIONS	% EXCURSIONS
S18C	TURBIDITY	NTU	12	07JUL2010 - 25APR2011	6	5.116667	6.50551	0.6	0.8	1.15	13	14	0	0	0.00%
S18CAuto	NOX	mg N/L	18;180	03MAY2010 - 25APR2011	32	0.092031	0.044712	0.03	0.0615	0.0875	0.1165	0.202	0	0	0.00%
S18CAuto	TKN	mg N/L	21	03MAY2010 - 25APR2011	34	0.633824	0.128063	0.49	0.58	0.605	0.66	1.14	0	0	0.00%
S18CAuto	TN	mg N/L	80	03MAY2010 - 25APR2011	34	0.720441	0.136273	0.57	0.652	0.6755	0.77	1.284	0	0	0.00%
S18CAuto	TP	mg P/L	25	03MAY2010 - 14MAR2011	29	0.007345	0.003177	0.005	0.006	0.007	0.007	0.018	0	0	0.00%
S140	CA_I	mg/L	188	08DEC2010 - 27APR2011	2	0.39	0.028284	0.37	0.37	0.39	0.41	0.41	0	0	0.00%
S140	DIS. CA	mg/L	30	13JUL2010 - 05APR2011	4	75.425	8.384659	69.8	70.75	72	80.1	87.9	0	0	0.00%
S140	DIS. K	mg/L	29	13JUL2010 - 05APR2011	4	4.375	1.730848	2.1	3.25	4.55	5.5	6.3	0	0	0.00%
S140	DIS. MG	mg/L	31	13JUL2010 - 05APR2011	4	6.85	2.053452	5.5	5.65	6	8.05	9.9	0	0	0.00%
S140	DIS. NA	mg/L	28	13JUL2010 - 05APR2011	4	50.475	43.69816	20.5	24.65	33.1	76.3	115.2	0	0	0.00%
S140	DO	mg/L	8	04MAY2010 - 26APR2011	52	4.456923	2.193417	1.63	2.465	3.69	6.715	8.44	0	0	0.00%
S140	FLDCOND.	UMHOS/CM	9	04MAY2010 - 26APR2011	52	727.9231	206.2403	382	540	678	909	1090	0	0	0.00%
S140	HARDNESS	mg/L CACO3	35	13JUL2010 - 05APR2011	4	216.6	29.12273	200	200.9	203.1	232.3	260.2	0	0	0.00%
S140	NOX	mg N/L	18;180	04MAY2010 - 05APR2011	18	0.043556	0.026833	<0.005	0.032	0.04	0.054	0.121	2	0	0.00%
S140	OPO4	mg P/L	23	04MAY2010 - 05APR2011	19	0.013474	0.009918	<0.002	0.007	0.012	0.015	0.042	1	0	0.00%
S140	PH	UNITS	10	04MAY2010 - 26APR2011	52	7.623077	0.234826	7.3	7.4	7.6	7.8	8.1	0	0	0.00%
S140	TEMP	CENT	7	04MAY2010 - 26APR2011	52	24.85962	4.599073	15	21.25	26.2	28.5	30.6	0	0	0.00%
S140	TKN	mg N/L	21	04MAY2010 - 05APR2011	19	1.182105	0.098803	1.05	1.11	1.15	1.27	1.4	0	0	0.00%
S140	TN	mg N/L	80	04MAY2010 - 05APR2011	19	1.222842	0.1024	1.06	1.133	1.232	1.309	1.427	0	0	0.00%
S140	TOT. CL	mg/L	32	13JUL2010 - 27APR2011	6	56.92167	57.99098	0.93	1.4	45.1	101	148	0	0	0.00%
S140	TOT. SO4	mg/L	33	13JUL2010 - 05APR2011	4	17.125	9.49118	9.6	10.05	14.4	24.2	30.1	0	0	0.00%
S140	TP	mg P/L	25	04MAY2010 - 26APR2011	52	0.033	0.0106	0.016	0.0255	0.031	0.0385	0.063	0	0	0.00%
S140	TURBIDITY	NTU	12	04MAY2010 - 27APR2011	21	2.071429	0.954014	0.6	1.5	1.8	2.6	4.7	0	0	0.00%
S140Auto	TP	mg P/L	25	04MAY2010 - 12APR2011	34	0.038824	0.012571	0.015	0.031	0.036	0.047	0.067	0	0	0.00%
S190	CA_I	mg/L	188	08DEC2010 - 27APR2011	2	0.595	0.487904	0.25	0.25	0.595	0.94	0.94	0	0	0.00%
S190	DIS. CA	mg/L	30	21SEP2010 - 01FEB2011	3	71.6	8.166395	64.1	64.1	70.4	80.3	80.3	0	0	0.00%
S190	DIS. K	mg/L	29	21SEP2010 - 01FEB2011	3	2.633333	1.137248	1.7	1.7	2.3	3.9	3.9	0	0	0.00%
S190	DIS. MG	mg/L	31	21SEP2010 - 01FEB2011	3	6.966667	2.084067	4.7	4.7	7.4	8.8	8.8	0	0	0.00%
S190	DIS. NA	mg/L	28	21SEP2010 - 01FEB2011	3	30.53333	19.59498	14.3	14.3	25	52.3	52.3	0	0	0.00%
S190	DO	mg/L	8	04MAY2010 - 26APR2011	50	5.7502	2.375192	1.16	4.11	5.37	7.96	9.98	0	0	0.00%
S190	FLDCOND.	UMHOS/CM	9	04MAY2010 - 26APR2011	52	541.6442	99.40038	329.2	472.5	519.5	628	751	0	0	0.00%
S190	HARDNESS	mg/L CACO3	35	21SEP2010 - 01FEB2011	3	207.6	25.90811	179.7	179.7	212.2	230.9	230.9	0	0	0.00%
S190	NOX	mg N/L	18;180	11MAY2010 - 12APR2011	21	0.008714	0.007107	<0.005	<0.005	<0.005	0.01	0.035	11	0	0.00%
S190	OPO4	mg P/L	23	11MAY2010 - 12APR2011	21	0.004286	0.003757	<0.002	<0.002	0.002	0.005	0.016	8	0	0.00%
S190	PH	UNITS	10	04MAY2010 - 26APR2011	52	7.623077	0.318462	7.1	7.3	7.6	7.9	8.3	0	0	0.00%
S190	TEMP	CENT	7	04MAY2010 - 26APR2011	52	25.49231	4.904893	15.1	21.95	26.55	29.35	32.7	0	0	0.00%
S190	TKN	mg N/L	21	11MAY2010 - 12APR2011	20	1.1015	0.195832	0.81	0.97	1.045	1.225	1.58	0	0	0.00%
S190	TN	mg N/L	80	11MAY2010 - 12APR2011	21	1.078952	0.232444	<0.5	0.97	1.047	1.217	1.58	1	0	0.00%
S190	TOT. CL	mg/L	32	21SEP2010 - 27APR2011	5	28.18	27.24935	4.3	8	20.5	36.8	71.3	0	0	0.00%
S190	TOT. DIS. P	mg P/L	26	11MAY2010 - 12APR2011	21	0.011143	0.005003	0.005	0.007	0.01	0.014	0.025	0	0	0.00%
S190	TOT. SO4	mg/L	33	21SEP2010 - 01FEB2011	3	7.333333	5.940819	2.6	2.6	5.4	14	14	0	0	0.00%

Table C-3. Continued.

STATION	TEST NAME	UNITS	TEST NUMBER	PERIOD OF RECORD	# OF SAMPLES	MEAN	STD	MIN	Q25	MEDIAN	Q75	MAX	# BELOW DETECTION LIMIT	# OF EXCURSIONS	% EXCURSIONS
S190	TP	mg P/L	25	04MAY2010 - 26APR2011	52	0.027962	0.015752	0.011	0.0175	0.024	0.034	0.092	0	0	0.00%
S190	TURBIDITY	NTU	12	11MAY2010 - 27APR2011	23	2.126087	1.787639	0.5	0.9	1.6	2.7	8.3	0	0	0.00%
S190Auto	TP	mg P/L	25	04MAY2010 - 19OCT2010	25	0.04476	0.011443	0.026	0.039	0.043	0.056	0.068	0	0	0.00%
S12D	DO	mg/L	8	04MAY2010 - 07DEC2010	32	3.364688	0.917032	2.01	2.675	3.25	4.02	5.51	0	0	0.00%
S12D	FLDCOND.	UMHOS/CM	9	04MAY2010 - 07DEC2010	32	556.5313	95.82342	358	532	570	623	690	0	0	0.00%
S12D	PH	UNITS	10	04MAY2010 - 07DEC2010	32	7.228125	0.161114	7	7.1	7.2	7.3	7.7	0	0	0.00%
S12D	TEMP	CENT	7	04MAY2010 - 07DEC2010	32	27.41875	3.478824	17.6	25.75	28.55	30.1	31.2	0	0	0.00%
S12D	TP	mg P/L	25	04MAY2010 - 07DEC2010	32	0.008938	0.001501	0.006	0.008	0.009	0.0095	0.013	0	0	0.00%
S34	DIS. CA	mg/L	30	13JUL2010 - 05APR2011	4	69.775	10.03241	61.9	63.25	66.45	76.3	84.3	0	0	0.00%
S34	DIS. K	mg/L	29	13JUL2010 - 05APR2011	4	4.825	0.680074	4.1	4.25	4.85	5.4	5.5	0	0	0.00%
S34	DIS. MG	mg/L	31	13JUL2010 - 05APR2011	4	15.725	5.319383	8.5	12.35	16.55	19.1	21.3	0	0	0.00%
S34	DIS. NA	mg/L	28	13JUL2010 - 05APR2011	4	66.075	13.94952	53.2	54.05	65.8	78.1	79.5	0	0	0.00%
S34	DO	mg/L	8	04MAY2010 - 05APR2011	18	4.486111	1.916492	1.29	2.75	4.415	6.64	7.71	0	0	0.00%
S34	FLDCOND.	UMHOS/CM	9	04MAY2010 - 05APR2011	18	693.3889	173.1596	428	539	693.5	873	959	0	0	0.00%
S34	HARDNESS	mg/L CACO3	35	13JUL2010 - 05APR2011	4	239	15.77276	224.4	226.2	236.65	251.8	258.3	0	0	0.00%
S34	NOX	mg N/L	18;180	04MAY2010 - 05APR2011	17	0.046176	0.024567	<0.005	0.029	0.042	0.067	0.092	1	0	0.00%
S34	OPO4	mg P/L	23	04MAY2010 - 05APR2011	18	0.002	0	<0.002	<0.002	<0.002	<0.002	0.002	17	0	0.00%
S34	PH	UNITS	10	04MAY2010 - 05APR2011	18	7.638889	0.217307	7.1	7.5	7.65	7.8	8.1	0	0	0.00%
S34	TEMP	CENT	7	04MAY2010 - 05APR2011	18	25.4	4.219144	14.7	22.7	26.55	29	30.5	0	0	0.00%
S34	TKN	mg N/L	21	04MAY2010 - 05APR2011	18	1.3	0.354733	0.89	0.95	1.25	1.62	1.89	0	0	0.00%
S34	TN	mg N/L	80	04MAY2010 - 05APR2011	18	1.343333	0.355577	0.9	1.031	1.288	1.663	1.89	0	0	0.00%
S34	TOT. CL	mg/L	32	13JUL2010 - 05APR2011	4	85.7	20.78878	64.6	71.6	82.1	99.8	114	0	0	0.00%
S34	TOT. SO4	mg/L	33	13JUL2010 - 05APR2011	4	9.55	8.252878	2.3	3.3	7.65	15.8	20.6	0	0	0.00%
S34	TP	mg P/L	25	04MAY2010 - 05APR2011	18	0.012833	0.002995	0.007	0.011	0.0125	0.015	0.018	0	0	0.00%
S34	TURBIDITY	NTU	12	04MAY2010 - 05APR2011	18	1.222222	0.572462	0.5	0.8	1.05	1.6	2.4	0	0	0.00%
S142	DIS. CA	mg/L	30	12JUL2010 - 04APR2011	4	70.65	7.773674	60.6	64.6	72.05	76.7	77.9	0	0	0.00%
S142	DIS. K	mg/L	29	12JUL2010 - 04APR2011	4	5.9	2.760435	3.8	3.95	5	7.85	9.8	0	0	0.00%
S142	DIS. MG	mg/L	31	12JUL2010 - 04APR2011	4	22.95	4.299225	17.9	19.95	22.8	25.95	28.3	0	0	0.00%
S142	DIS. NA	mg/L	28	12JUL2010 - 04APR2011	4	75.125	22.44035	52.5	60.55	71	89.7	106	0	0	0.00%
S142	DO	mg/L	8	03MAY2010 - 04APR2011	13	3.825385	1.453178	1.58	3	4	4.53	6.87	0	0	0.00%
S142	FLDCOND.	UMHOS/CM	9	03MAY2010 - 04APR2011	13	821.7692	205.0098	475	644	859	953	1109	0	0	0.00%
S142	HARDNESS	mg/L CACO3	35	12JUL2010 - 04APR2011	4	270.85	35.52881	224.9	246.75	273.8	294.95	310.9	0	0	0.00%
S142	NOX	mg N/L	18;180	03MAY2010 - 04APR2011	13	0.054077	0.024336	0.025	0.036	0.047	0.073	0.102	0	0	0.00%
S142	PH	UNITS	10	03MAY2010 - 04APR2011	13	7.569231	0.160128	7.3	7.5	7.6	7.6	7.9	0	0	0.00%
S142	TEMP	CENT	7	03MAY2010 - 04APR2011	13	25.33077	4.42406	15.9	22.6	26.7	28	31.3	0	0	0.00%
S142	TKN	mg N/L	21	03MAY2010 - 04APR2011	13	1.723846	0.425491	1.15	1.38	1.75	1.89	2.47	0	0	0.00%
S142	TN	mg N/L	80	03MAY2010 - 04APR2011	13	1.777923	0.430059	1.179	1.457	1.806	1.915	2.546	0	0	0.00%
S142	TOT. SO4	mg/L	33	12JUL2010 - 04APR2011	4	31.8	16.29744	11.7	18.95	33.45	44.65	48.6	0	0	0.00%
S142	TP	mg P/L	25	03MAY2010 - 04APR2011	13	0.020077	0.008098	0.013	0.014	0.017	0.024	0.039	0	0	0.00%
S142	TURBIDITY	NTU	12	03MAY2010 - 04APR2011	13	2	0.969536	1	1.2	1.7	2.8	3.7	0	0	0.00%

Table C-3. Continued.

STATION	TEST NAME	UNITS	TEST NUMBER	PERIOD OF RECORD	# OF SAMPLES	MEAN	STD	MIN	Q25	MEDIAN	Q75	MAX	# BELOW DETECTION LIMIT	# OF EXCURSIONS	% EXCURSIONS
S11A	ALKALINITY	mg/L	67	03MAY2010 - 04OCT2010	11	190.2727	23.90854	134	177	194	202	228	0	0	0.00%
S11A	DIS. CA	mg/L	30	03MAY2010 - 04OCT2010	11	57.91818	10.49227	38.1	50.5	59	68.5	71.8	0	0	0.00%
S11A	DIS. K	mg/L	29	03MAY2010 - 04OCT2010	11	5.827273	1.037392	3.8	4.7	6.2	6.5	7	0	0	0.00%
S11A	DIS. KJEL N	mg N/L	22	03MAY2010 - 04OCT2010	11	1.691818	0.206969	1.3	1.65	1.71	1.78	2.07	0	0	0.00%
S11A	DIS. MG	mg/L	31	03MAY2010 - 04OCT2010	11	22.56364	4.877555	11.3	19.8	23.5	24.5	29.8	0	0	0.00%
S11A	DIS. NA	mg/L	28	03MAY2010 - 04OCT2010	11	74.1	12.02564	48.6	66.2	78.3	83	87.8	0	0	0.00%
S11A	DIS. ORGAN. C	mg/L	89;181	03MAY2010 - 04OCT2010	11	28.05455	3.276389	21.8	26.3	28.6	30.7	33	0	0	0.00%
S11A	DIS. SILICA	mg/L	27	03MAY2010 - 04OCT2010	11	15.90455	4.043185	8.99	12.1	17.5	19.2	20.7	0	0	0.00%
S11A	DO	mg/L	8	03MAY2010 - 04APR2011	12	4.8325	1.454273	2.92	3.74	4.28	6.14	7.19	0	0	0.00%
S11A	FLDCOND.	UMHOS/CM	9	03MAY2010 - 04APR2011	13	849.5385	143.9685	536	827	866	893	1143	0	0	0.00%
S11A	HARDNESS	mg/L CACO3	35	03MAY2010 - 04OCT2010	11	237.5909	44.61035	141.7	207.8	245.6	270.6	302.3	0	0	0.00%
S11A	NH4	mg N/L	20	03MAY2010 - 04OCT2010	10	0.0284	0.009698	0.016	0.024	0.025	0.03	0.051	0	0	0.00%
S11A	NNH4	mg N/L	92	03MAY2010 - 04OCT2010	9	0.054889	0.02035	0.024	0.042	0.053	0.063	0.095	0	0	0.00%
S11A	NOX	mg N/L	18;180	03MAY2010 - 04OCT2010	10	0.0288	0.021364	0.005	0.012	0.023	0.048	0.071	0	0	0.00%
S11A	OPO4	mg P/L	23	03MAY2010 - 04OCT2010	11	0.002	0	<0.002	<0.002	<0.002	0.002	0.002	8	0	0.00%
S11A	ORGN	mg N/L	79	03MAY2010 - 04OCT2010	10	1.7216	0.219511	1.345	1.696	1.7455	1.79	2.154	0	0	0.00%
S11A	PH	UNITS	10	03MAY2010 - 04APR2011	13	7.692308	0.184669	7.4	7.6	7.6	7.8	8	0	0	0.00%
S11A	TEMP	CENT	7	03MAY2010 - 04APR2011	13	28.03846	3.434273	17.8	27.4	28.5	30.3	31.1	0	0	0.00%
S11A	TKN	mg N/L	21	03MAY2010 - 04OCT2010	11	1.768182	0.212171	1.37	1.72	1.8	1.84	2.17	0	0	0.00%
S11A	TN	mg N/L	80	03MAY2010 - 04OCT2010	11	1.794364	0.210151	1.404	1.756	1.805	1.868	2.178	0	0	0.00%
S11A	TOT. CL	mg/L	32	03MAY2010 - 04OCT2010	11	110.2636	19.63997	71.1	102	116	120	135	0	0	0.00%
S11A	TOT. DIS. P	mg P/L	26	03MAY2010 - 04OCT2010	11	0.005909	0.001973	0.004	0.004	0.005	0.008	0.01	0	0	0.00%
S11A	TOT. FE	mg/L	177	12JUL2010 - 04APR2011	4	0.024	0.025073	0.006	0.009	0.0145	0.039	0.061	0	0	0.00%
S11A	TOT. ORGAN. (	mg/L	100	03MAY2010 - 04OCT2010	11	28.30909	3.103371	22.1	26.8	28.8	30.5	32.9	0	0	0.00%
S11A	TOT. SO4	mg/L	33	03MAY2010 - 04OCT2010	11	39.54545	18.9868	9.6	20.4	37.2	62.5	64.9	0	0	0.00%
S11A	TP	mg P/L	25	03MAY2010 - 04OCT2010	11	0.013364	0.003295	0.007	0.01	0.014	0.016	0.018	0	0	0.00%
S11A	TSS	mg/L	16	03MAY2010 - 04OCT2010	11	3.363636	1.206045	<3	<3	<3	<3	7	10	0	0.00%
S11A	TURBIDITY	NTU	12	03MAY2010 - 04OCT2010	11	1.9	0.987927	0.7	1.4	1.5	2.1	4.2	0	0	0.00%
S11A	UN-IONIZED A	mg/L	NONE	03MAY2010 - 04APR2011	10	0.001294	0.00063	0.000664	0.00092	0.0011333	0.00128	0.0028345	0	0	0.00%
S145	ALKALINITY	mg/L	67	03MAY2010 - 07MAR2011	17	171.5294	29.38775	127	150	171	188	222	0	0	0.00%
S145	DIS. CA	mg/L	30	03MAY2010 - 07MAR2011	17	46.75882	5.172047	37.3	43	47.6	50	58.4	0	0	0.00%
S145	DIS. K	mg/L	29	03MAY2010 - 07MAR2011	17	4.994118	1.388106	2.7	4.2	4.7	5.7	7.5	0	0	0.00%
S145	DIS. KJEL N	mg N/L	22	03MAY2010 - 07MAR2011	17	1.558824	0.208413	1.24	1.39	1.54	1.69	1.95	0	0	0.00%
S145	DIS. MG	mg/L	31	03MAY2010 - 07MAR2011	17	17.65294	4.92	10.2	13.4	18.3	21	26.2	0	0	0.00%
S145	DIS. NA	mg/L	28	03MAY2010 - 07MAR2011	17	68.43529	15.72156	38.4	57.5	66.4	77.4	93.6	0	0	0.00%
S145	DIS. ORGAN. C	mg/L	89;181	03MAY2010 - 07MAR2011	17	25.7	3.591309	20.5	23.5	25.2	27.9	31.6	0	0	0.00%
S145	DIS. SILICA	mg/L	27	03MAY2010 - 07MAR2011	17	13.52765	4.642761	4.33	10	13.5	17.2	21.3	0	0	0.00%
S145	DO	mg/L	8	03MAY2010 - 04APR2011	17	4.574118	1.515635	2.11	3.36	4.16	5.58	7.19	0	0	0.00%
S145	FLDCOND.	UMHOS/CM	9	03MAY2010 - 04APR2011	18	716.3333	134.8014	467	632	696.5	788	917	0	0	0.00%
S145	HARDNESS	mg/L CACO3	35	03MAY2010 - 07MAR2011	17	189.4353	32.19037	135.1	162.3	193.5	208.5	253.8	0	0	0.00%

Table C-3. Continued.

STATION	TEST NAME	UNITS	TEST NUMBER	PERIOD OF RECORD	# OF SAMPLES	MEAN	STD	MIN	Q25	MEDIAN	Q75	MAX	# BELOW DETECTION LIMIT	# OF EXCURSIONS	% EXCURSIONS
S145	NH4	mg N/L	20	03MAY2010 - 07MAR2011	16	0.021313	0.014131	<0.005	0.011	0.019	0.03	0.054	3	0	0.00%
S145	NNH4	mg N/L	92	03MAY2010 - 07MAR2011	14	0.036429	0.017421	0.014	0.024	0.034	0.044	0.078	0	0	0.00%
S145	NOX	mg N/L	18;180	03MAY2010 - 07MAR2011	15	0.0156	0.014302	<0.005	0.005	0.008	0.018	0.047	3	0	0.00%
S145	OPO4	mg P/L	23	03MAY2010 - 07MAR2011	17	0.002	0	<0.002	<0.002	<0.002	<0.002	0.002	16	0	0.00%
S145	ORGN	mg N/L	79	03MAY2010 - 07MAR2011	16	1.585875	0.205195	1.31	1.4205	1.565	1.715	2.031	0	0	0.00%
S145	PH	UNITS	10	03MAY2010 - 04APR2011	18	7.622222	0.173394	7.4	7.5	7.6	7.7	8	0	0	0.00%
S145	TEMP	CENT	7	03MAY2010 - 04APR2011	18	26.19444	4.472067	17	23.3	27.6	29.5	31.7	0	0	0.00%
S145	TKN	mg N/L	21	03MAY2010 - 07MAR2011	17	1.622353	0.209956	1.33	1.46	1.58	1.76	2.06	0	0	0.00%
S145	TN	mg N/L	80	03MAY2010 - 07MAR2011	17	1.635235	0.206203	1.33	1.498	1.588	1.76	2.068	0	0	0.00%
S145	TOT. CL	mg/L	32	03MAY2010 - 07MAR2011	17	99.72353	25.15317	51.4	83.4	94	116	143	0	0	0.00%
S145	TOT. DIS. P	mg P/L	26	03MAY2010 - 07MAR2011	17	0.003471	0.0008	0.002	0.003	0.004	0.004	0.005	0	0	0.00%
S145	TOT. FE	mg/L	177	12JUL2010 - 04APR2011	4	0.00925	0.003403	0.006	0.007	0.0085	0.0115	0.014	0	0	0.00%
S145	TOT. ORGAN. (	mg/L	100	03MAY2010 - 07MAR2011	17	25.8	3.753998	20.5	23.7	24.8	28.2	32.3	0	0	0.00%
S145	TOT. SO4	mg/L	33	03MAY2010 - 07MAR2011	17	17.42353	6.681647	7.5	12.1	17.5	22.4	30.1	0	0	0.00%
S145	TP	mg P/L	25	03MAY2010 - 07MAR2011	17	0.008647	0.002262	0.005	0.007	0.008	0.01	0.013	0	0	0.00%
S145	TSS	mg/L	16	03MAY2010 - 07MAR2011	17	3.058824	0.242536	<3	<3	<3	<3	4	16	0	0.00%
S145	TURBIDITY	NTU	12	03MAY2010 - 07MAR2011	17	1.058824	0.483553	0.5	0.6	1	1.2	2.1	0	0	0.00%
S145	UN-IONIZED A	mg/L	NONE	03MAY2010 - 04APR2011	16	0.000711	0.000473	7.6E-05	0.0004	0.0006532	0.00101	0.0018202	0	0	0.00%
S151	DIS. CA	mg/L	30	12JUL2010 - 04APR2011	4	72.575	12.22276	60.3	62.45	71.75	82.7	86.5	0	0	0.00%
S151	DIS. K	mg/L	29	12JUL2010 - 04APR2011	4	5.6	3.152777	3.5	3.55	4.35	7.65	10.2	0	0	0.00%
S151	DIS. MG	mg/L	31	12JUL2010 - 04APR2011	4	19.725	5.713945	14.4	15.4	18.6	24.05	27.3	0	0	0.00%
S151	DIS. NA	mg/L	28	12JUL2010 - 04APR2011	4	68.3	23.60904	46.1	51.3	63.3	85.3	100.5	0	0	0.00%
S151	DO	mg/L	8	03MAY2010 - 04APR2011	19	3.360526	1.548883	1.46	2.11	2.91	4.14	7.74	0	0	0.00%
S151	FLDCOND.	UMHOS/CM	9	03MAY2010 - 04APR2011	19	756.1579	130.6736	588	637	762	796	1120	0	0	0.00%
S151	HARDNESS	mg/L CACO3	35	12JUL2010 - 04APR2011	4	262.4	49.5382	209.7	228.35	255.8	296.45	328.3	0	0	0.00%
S151	NOX	mg N/L	18;180	03MAY2010 - 04APR2011	18	0.074833	0.038178	0.024	0.05	0.0615	0.092	0.191	0	0	0.00%
S151	OPO4	mg P/L	23	03MAY2010 - 04APR2011	19	0.002526	0.002065	<0.002	<0.002	<0.002	<0.002	0.011	15	0	0.00%
S151	PH	UNITS	10	03MAY2010 - 04APR2011	19	7.510526	0.132894	7.3	7.4	7.5	7.6	7.7	0	0	0.00%
S151	TEMP	CENT	7	03MAY2010 - 04APR2011	19	26.48947	3.966092	16.9	24.3	27.3	29.5	30.9	0	0	0.00%
S151	TKN	mg N/L	21	03MAY2010 - 04APR2011	19	1.557368	0.26847	1.11	1.35	1.58	1.72	2.23	0	0	0.00%
S151	TN	mg N/L	80	03MAY2010 - 04APR2011	19	1.628263	0.290391	1.16	1.448	1.626	1.753	2.421	0	0	0.00%
S151	TOT. CL	mg/L	32	12JUL2010 - 04APR2011	4	106.775	39.6947	72	80.05	96.05	133.5	163	0	0	0.00%
S151	TOT. SO4	mg/L	33	12JUL2010 - 04APR2011	4	20.45	11.41943	5.2	12.05	22.5	28.85	31.6	0	0	0.00%
S151	TP	mg P/L	25	03MAY2010 - 04APR2011	19	0.012737	0.004886	0.009	0.01	0.011	0.014	0.029	0	0	0.00%
S151	TURBIDITY	NTU	12	03MAY2010 - 04APR2011	19	1.326316	0.425365	0.8	1	1.2	1.5	2.7	0	0	0.00%
S333	DIS. CA	mg/L	30	04MAY2010 - 26APR2011	48	61.71667	11.58472	49.5	54.9	57.1	64.05	96.5	0	0	0.00%
S333	DIS. K	mg/L	29	04MAY2010 - 26APR2011	48	3.739583	1.393868	1.3	3	3.75	4.65	7	0	0	0.00%
S333	DIS. MG	mg/L	31	04MAY2010 - 26APR2011	48	13.25208	4.622194	4.5	11.4	13.8	16.45	20.7	0	0	0.00%

Table C-3. Continued.

STATION	TEST NAME	UNITS	TEST NUMBER	PERIOD OF RECORD	# OF SAMPLES	MEAN	STD	MIN	Q25	MEDIAN	Q75	MAX	# BELOW DETECTION LIMIT	# OF EXCURSIONS	% EXCURSIONS
S333	DIS. NA	mg/L	28	04MAY2010 - 26APR2011	48	47.86875	15.02495	22.1	38.75	45.85	59.5	75.6	0	0	0.00%
S333	DO	mg/L	8	04MAY2010 - 26APR2011	52	3.864423	1.406265	1.89	2.655	3.51	4.865	7.2	0	0	0.00%
S333	FLDCOND.	UMHOS/CM	9	04MAY2010 - 26APR2011	52	617.5	140.5635	381	532	625	692.5	905	0	0	0.00%
S333	HARDNESS	mg/L CACO3	35	04MAY2010 - 26APR2011	48	208.6708	42.51394	156.2	183.05	200.7	220.5	326	0	0	0.00%
S333	NOX	mg N/L	18;180	02JUN2010 - 26APR2011	33	0.072606	0.060358	<0.005	0.022	0.056	0.093	0.194	2	0	0.00%
S333	OPO4	mg P/L	23	04MAY2010 - 26APR2011	48	0.002313	0.001613	<0.002	<0.002	<0.002	<0.002	0.013	39	0	0.00%
S333	PH	UNITS	10	04MAY2010 - 26APR2011	52	7.298077	0.207213	7	7.15	7.3	7.5	7.7	0	0	0.00%
S333	TEMP	CENT	7	04MAY2010 - 26APR2011	52	25.04231	4.769813	14.6	21.55	26.3	29.15	31.1	0	0	0.00%
S333	TKN	mg N/L	21	04MAY2010 - 26APR2011	48	1.358333	0.315469	0.79	1.1	1.345	1.645	1.91	0	0	0.00%
S333	TN	mg N/L	80	04MAY2010 - 26APR2011	48	1.408042	0.347764	0.797	1.1385	1.3685	1.685	2.1	0	0	0.00%
S333	TOT. CL	mg/L	32	04MAY2010 - 26APR2011	48	73.45417	23.04259	34.1	58.8	70.55	89.8	121	0	0	0.00%
S333	TOT. SO4	mg/L	33	08JUL2010 - 06APR2011	4	8.675	6.165157	0.3	4.25	9.9	13.1	14.6	0	0	0.00%
S333	TP	mg P/L	25	04MAY2010 - 26APR2011	51	0.014431	0.009027	0.006	0.008	0.011	0.017	0.039	0	0	0.00%
S333	TSS	mg/L	16	04MAY2010 - 26APR2011	48	3.666667	2.04558	<3	<3	<3	<3	14	39	0	0.00%
S333	TURBIDITY	NTU	12	08JUL2010 - 06APR2011	4	2.375	2.126617	0.5	0.75	1.9	4	5.2	0	0	0.00%
S333Auto	NOX	mg N/L	18;180	04MAY2010 - 26APR2011	364	0.057239	0.048795	<0.005	0.0295	0.048	0.0645	0.277	15	0	0.00%
S333Auto	TKN	mg N/L	21	04MAY2010 - 26APR2011	364	1.296264	0.297902	0.79	1.1	1.24	1.54	2.12	0	0	0.00%
S333Auto	TN	mg N/L	80	04MAY2010 - 26APR2011	364	1.353297	0.333163	0.79	1.144	1.294	1.604	2.335	0	0	0.00%
S333Auto	TP	mg P/L	25	04MAY2010 - 26APR2011	364	0.012684	0.006869	0.004	0.008	0.01	0.015	0.034	0	0	0.00%
C123SR84	DIS. CA	mg/L	30	13JUL2010 - 05APR2011	4	73.15	11.86999	61.3	63.4	72.15	82.9	87	0	0	0.00%
C123SR84	DIS. K	mg/L	29	13JUL2010 - 05APR2011	4	3.925	0.25	3.6	3.75	3.95	4.1	4.2	0	0	0.00%
C123SR84	DIS. MG	mg/L	31	13JUL2010 - 05APR2011	4	11.3	1.485485	9.4	10.2	11.45	12.4	12.9	0	0	0.00%
C123SR84	DIS. NA	mg/L	28	13JUL2010 - 05APR2011	4	47.925	6.78104	42	42.6	46.5	53.25	56.7	0	0	0.00%
C123SR84	DO	mg/L	8	04MAY2010 - 05APR2011	12	4.24	2.41956	1.42	2.235	3.215	6.045	8.47	0	0	0.00%
C123SR84	FLDCOND.	UMHOS/CM	9	04MAY2010 - 05APR2011	12	642.9167	91.02892	501	573.5	629	717	773	0	0	0.00%
C123SR84	HARDNESS	mg/L CACO3	35	13JUL2010 - 05APR2011	4	229.125	29.03118	198.2	207.4	226.05	250.85	266.2	0	0	0.00%
C123SR84	NOX	mg N/L	18;180	04MAY2010 - 05APR2011	11	0.044636	0.045496	<0.005	0.005	0.027	0.099	0.129	1	0	0.00%
C123SR84	OPO4	mg P/L	23	04MAY2010 - 05APR2011	12	0.007833	0.009193	<0.002	<0.002	0	0.013	0.026	6	0	0.00%
C123SR84	PH	UNITS	10	04MAY2010 - 05APR2011	12	7.525	0.252713	7.2	7.3	7.5	7.8	7.9	0	0	0.00%
C123SR84	TEMP	CENT	7	04MAY2010 - 05APR2011	12	24.55	4.508679	14	22.25	25.8	27.65	29.9	0	0	0.00%
C123SR84	TKN	mg N/L	21	04MAY2010 - 05APR2011	12	1.32	0.144096	1.16	1.21	1.295	1.365	1.64	0	0	0.00%
C123SR84	TN	mg N/L	80	04MAY2010 - 05APR2011	12	1.3605	0.127024	1.187	1.2805	1.329	1.3985	1.654	0	0	0.00%
C123SR84	TOT. CL	mg/L	32	13JUL2010 - 05APR2011	4	72.925	7.879668	66.5	67.15	70.7	78.7	83.8	0	0	0.00%
C123SR84	TOT. SO4	mg/L	33	13JUL2010 - 05APR2011	4	13.5	7.746397	6.6	7.75	11.7	19.25	24	0	0	0.00%
C123SR84	TP	mg P/L	25	04MAY2010 - 05APR2011	12	0.026333	0.027684	0.007	0.0105	0.012	0.035	0.094	0	0	0.00%
C123SR84	TURBIDITY	NTU	12	04MAY2010 - 05APR2011	12	1.583333	1.331324	0.6	0.9	1.2	1.55	5.3	0	0	0.00%
G94B	DIS. CA	mg/L	30	09SEP2010 - 07APR2011	5	41.58	10.92849	28.4	35.7	39.6	47.4	56.8	0	0	0.00%
G94B	DIS. K	mg/L	29	09SEP2010 - 07APR2011	5	5.56	2.931382	2.7	4	4.4	6.5	10.2	0	0	0.00%
G94B	DIS. MG	mg/L	31	09SEP2010 - 07APR2011	5	12.3	4.915282	7	9.4	11.3	14	19.8	0	0	0.00%
G94B	DIS. NA	mg/L	28	09SEP2010 - 07APR2011	5	75.32	29.39332	43.2	58.2	69.5	85.8	119.9	0	0	0.00%

Table C-3. Continued.

STATION	TEST NAME	UNITS	TEST NUMBER	PERIOD OF RECORD	# OF SAMPLES	MEAN	STD	MIN	Q25	MEDIAN	Q75	MAX	# BELOW DETECTION LIMIT	# OF EXCURSIONS	% EXCURSIONS
G94B	DO	mg/L	8	06MAY2010 - 07APR2011	13	4.577692	1.671532	2.02	3.49	4.63	5.5	7.21	0	0	0.00%
G94B	FLDCOND.	UMHOS/CM	9	06MAY2010 - 07APR2011	13	594.2615	212.7809	231	411	641	695	976	0	0	0.00%
G94B	HARDNESS	mg/L CACO3	35	09SEP2010 - 07APR2011	5	154.52	47.29315	99.9	127.9	145.5	176.2	223.1	0	0	0.00%
G94B	NOX	mg N/L	18;180	06MAY2010 - 07APR2011	13	0.018	0.021052	<0.005	<0.005	<0.005	0.032	0.057	7	0	0.00%
G94B	PH	UNITS	10	06MAY2010 - 07APR2011	13	7.307692	0.266025	6.7	7.2	7.4	7.5	7.6	0	0	0.00%
G94B	TEMP	CENT	7	06MAY2010 - 07APR2011	13	24.53846	5.220878	14	22.4	24.7	28.1	32.9	0	0	0.00%
G94B	TKN	mg N/L	21	06MAY2010 - 07APR2011	13	1.504615	0.28713	1.15	1.35	1.39	1.63	2.23	0	0	0.00%
G94B	TN	mg N/L	80	06MAY2010 - 07APR2011	13	1.519923	0.298708	1.15	1.38	1.39	1.66	2.284	0	0	0.00%
G94B	TOT. SO4	mg/L	33	09SEP2010 - 07APR2011	5	19.66	16.717	5	9.6	14.8	21.4	47.5	0	0	0.00%
G94B	TP	mg P/L	25	06MAY2010 - 07APR2011	13	0.029769	0.011476	0.012	0.021	0.029	0.037	0.056	0	0	0.00%
G94B	TURBIDITY	NTU	12	06MAY2010 - 07APR2011	13	1.746154	0.605001	1	1.3	1.5	2.1	2.9	0	0	0.00%
S31	CA_I	mg/L	188	07DEC2010 - 26APR2011	2	6.35	5.16188	2.7	2.7	6.35	10	10	0	0	0.00%
S31	DIS. CA	mg/L	30	12JUL2010 - 04APR2011	4	71.225	10.44075	60.7	62.25	71.95	80.2	80.3	0	0	0.00%
S31	DIS. K	mg/L	29	12JUL2010 - 04APR2011	4	4.15	0.506623	3.8	3.85	3.95	4.45	4.9	0	0	0.00%
S31	DIS. MG	mg/L	31	12JUL2010 - 04APR2011	4	15.175	2.368368	13.6	13.85	14.2	16.5	18.7	0	0	0.00%
S31	DIS. NA	mg/L	28	12JUL2010 - 04APR2011	4	52.775	7.919754	45.9	48.15	50.5	57.4	64.2	0	0	0.00%
S31	DO	mg/L	8	03MAY2010 - 04APR2011	17	2.834118	1.380068	1.12	1.79	2.59	3.25	6.25	0	0	0.00%
S31	FLDCOND.	UMHOS/CM	9	03MAY2010 - 04APR2011	17	717.2353	56.66958	620	702	728	751	833	0	0	0.00%
S31	HARDNESS	mg/L CACO3	35	12JUL2010 - 04APR2011	4	240.375	22.11008	215	221.85	243.75	258.9	259	0	0	0.00%
S31	NOX	mg N/L	18;180	03MAY2010 - 04APR2011	16	0.048	0.022325	0.015	0.036	0.044	0.0605	0.104	0	0	0.00%
S31	OPO4	mg P/L	23	03MAY2010 - 04APR2011	17	0.002	0	<0.002	<0.002	<0.002	<0.002	0.002	15	0	0.00%
S31	PH	UNITS	10	03MAY2010 - 04APR2011	17	7.517647	0.155062	7.3	7.4	7.5	7.6	7.8	0	0	0.00%
S31	TEMP	CENT	7	03MAY2010 - 04APR2011	17	26.36471	3.698976	18.5	25.8	27.4	28.7	30.6	0	0	0.00%
S31	TKN	mg N/L	21	03MAY2010 - 04APR2011	17	1.337647	0.193149	1.12	1.15	1.29	1.51	1.68	0	0	0.00%
S31	TN	mg N/L	80	03MAY2010 - 04APR2011	17	1.382824	0.201132	1.168	1.185	1.33	1.549	1.724	0	0	0.00%
S31	TOT. CL	mg/L	32	12JUL2010 - 26APR2011	6	55.18333	39.44218	5.1	5.7	73.85	77	95.6	0	0	0.00%
S31	TOT. SO4	mg/L	33	12JUL2010 - 04APR2011	4	11.175	9.615049	3	3.65	9	18.7	23.7	0	0	0.00%
S31	TP	mg P/L	25	03MAY2010 - 04APR2011	17	0.01	0.002062	0.007	0.008	0.01	0.011	0.014	0	0	0.00%
S31	TURBIDITY	NTU	12	03MAY2010 - 26APR2011	19	2.584211	3.61421	0.6	1	1.3	2.3	16	0	0	0.00%
S38	ALKALINITY	mg/L	67	03MAY2010 - 18APR2011	25	153.76	41.58153	108	117	147	180	234	0	0	0.00%
S38	DIS. CA	mg/L	30	03MAY2010 - 18APR2011	25	42.228	8.783674	31.1	34.3	40.4	47.6	62.2	0	0	0.00%
S38	DIS. K	mg/L	29	03MAY2010 - 18APR2011	25	4.376	1.89589	2.3	3	3.8	5.2	9.6	0	0	0.00%
S38	DIS. KJEL N	mg N/L	22	03MAY2010 - 18APR2011	25	1.4608	0.326878	1.06	1.23	1.37	1.65	2.2	0	0	0.00%
S38	DIS. MG	mg/L	31	03MAY2010 - 18APR2011	25	15.324	6.365485	8.7	9.9	13.4	18.3	29.2	0	0	0.00%
S38	DIS. NA	mg/L	28	03MAY2010 - 18APR2011	25	61.388	21.66686	38.7	44.4	54.2	69.4	116.4	0	0	0.00%
S38	DIS. ORGAN. C	mg/L	89;181	03MAY2010 - 18APR2011	25	24.992	5.445711	18.7	21	23.9	27.3	38.3	0	0	0.00%
S38	DIS. SILICA	mg/L	27	03MAY2010 - 18APR2011	25	11.2572	3.65031	2.78	8.21	11	14.3	17	0	0	0.00%
S38	DO	mg/L	8	03MAY2010 - 18APR2011	22	3.494545	1.610403	1.38	2.15	2.975	5.04	6.71	0	0	0.00%
S38	FLDCOND.	UMHOS/CM	9	03MAY2010 - 18APR2011	24	640.2917	196.0473	426	473	594	765.5	1099	0	0	0.00%
S38	HARDNESS	mg/L CACO3	35	03MAY2010 - 18APR2011	25	168.532	47.77864	113.4	126.6	155.9	193.2	275.5	0	0	0.00%

Table C-3. Continued.

STATION	TEST NAME	UNITS	TEST NUMBER	PERIOD OF RECORD	# OF SAMPLES	MEAN	STD	MIN	Q25	MEDIAN	Q75	MAX	# BELOW DETECTION LIMIT	# OF EXCURSIONS	% EXCURSIONS
S38	NH4	mg N/L	20	03MAY2010 - 18APR2011	24	0.026625	0.028048	<0.005	0.0105	0.0185	0.0285	0.117	4	0	0.00%
S38	NNH4	mg N/L	92	03MAY2010 - 04APR2011	21	0.043333	0.039204	<0.005	0.02	0.032	0.05	0.156	1	0	0.00%
S38	NOX	mg N/L	18;180	03MAY2010 - 04APR2011	22	0.019545	0.020919	<0.005	0.005	0.0105	0.021	0.091	4	0	0.00%
S38	OPO4	mg P/L	23	03MAY2010 - 18APR2011	25	0.00224	0.000879	<0.002	<0.002	<0.002	<0.002	0.006	21	0	0.00%
S38	ORGN	mg N/L	79	03MAY2010 - 18APR2011	24	1.481292	0.325527	1.06	1.246	1.414	1.6465	2.224	0	0	0.00%
S38	PH	UNITS	10	03MAY2010 - 18APR2011	24	7.445833	0.171893	7.1	7.35	7.4	7.5	7.8	0	0	0.00%
S38	TEMP	CENT	7	03MAY2010 - 18APR2011	24	25.01667	5.193111	14.2	22.45	26.2	29.6	31.5	0	0	0.00%
S38	TKN	mg N/L	21	03MAY2010 - 18APR2011	25	1.516	0.343584	1.06	1.27	1.44	1.67	2.32	0	0	0.00%
S38	TN	mg N/L	80	03MAY2010 - 18APR2011	25	1.5324	0.350398	1.06	1.29	1.455	1.691	2.32	0	0	0.00%
S38	TOT. CL	mg/L	32	03MAY2010 - 18APR2011	25	91.16	33.8333	54.8	66.6	81.9	99.9	176	0	0	0.00%
S38	TOT. DIS. P	mg P/L	26	03MAY2010 - 18APR2011	25	0.0044	0.002533	0.002	0.003	0.004	0.005	0.012	0	0	0.00%
S38	TOT. FE	mg/L	177	12JUL2010 - 04APR2011	4	0.00975	0.003862	0.004	0.0075	0.0115	0.012	0.012	0	0	0.00%
S38	TOT. ORGAN. (	mg/L	100	03MAY2010 - 18APR2011	25	25.1	5.533911	18.3	21.2	24.4	27.3	38.7	0	0	0.00%
S38	TOT. SO4	mg/L	33	03MAY2010 - 18APR2011	25	15.432	10.27504	5.3	8	11.6	20.1	43.2	0	0	0.00%
S38	TP	mg P/L	25	03MAY2010 - 18APR2011	25	0.0112	0.007561	0.004	0.007	0.009	0.012	0.034	0	0	0.00%
S38	TSS	mg/L	16	03MAY2010 - 18APR2011	25	3	0	<3	<3	<3	<3	<3	25	0	0.00%
S38	TURBIDITY	NTU	12	03MAY2010 - 18APR2011	25	1.08	0.687992	0.3	0.6	0.9	1.4	3	0	0	0.00%
S38	UN-IONIZED A	mg/L	NONE	03MAY2010 - 18APR2011	23	0.000601	0.000715	3.27E-05	0.00017	0.0003717	0.00072	0.0026728	0	0	0.00%
S39	ALKALINITY	mg/L	67	06MAY2010 - 19APR2011	23	103.7826	35.27419	42	75	104	120	203	0	0	0.00%
S39	DIS. CA	mg/L	30	06MAY2010 - 19APR2011	23	33.15652	10.95121	14.5	24.7	31.8	38.9	63.6	0	0	0.00%
S39	DIS. K	mg/L	29	06MAY2010 - 19APR2011	23	3.921739	1.904052	1.2	2.2	3.6	5.3	8.1	0	0	0.00%
S39	DIS. KJEL N	mg N/L	22	06MAY2010 - 19APR2011	23	1.305217	0.242109	0.88	1.15	1.29	1.47	1.91	0	0	0.00%
S39	DIS. MG	mg/L	31	06MAY2010 - 19APR2011	23	12.26957	5.703941	3.2	7.2	12.4	16.6	26.2	0	0	0.00%
S39	DIS. NA	mg/L	28	06MAY2010 - 19APR2011	23	51.16957	20.66194	16.4	35.4	51.5	69	90.9	0	0	0.00%
S39	DIS. ORGAN. C	mg/L	89;181	06MAY2010 - 19APR2011	23	22.70435	4.435239	13.7	20.1	22.6	25.4	32.5	0	0	0.00%
S39	DIS. SILICA	mg/L	27	06MAY2010 - 19APR2011	23	8.249565	6.1421	1.11	3.46	5.76	11.4	23.6	0	0	0.00%
S39	DO	mg/L	8	06MAY2010 - 07APR2011	22	6.173182	2.055766	1.88	4.57	6	7.65	9.38	0	0	0.00%
S39	FLDCOND.	UMHOS/CM	9	06MAY2010 - 19APR2011	23	513.2478	198.2865	191	352	502.1	668	959	0	0	0.00%
S39	HARDNESS	mg/L CACO3	35	06MAY2010 - 19APR2011	23	133.287	50.4079	49.6	91.5	129.9	166.4	266.4	0	0	0.00%
S39	NH4	mg N/L	20	06MAY2010 - 19APR2011	21	0.019048	0.006599	0.008	0.016	0.018	0.021	0.036	0	0	0.00%
S39	NNH4	mg N/L	92	06MAY2010 - 19APR2011	21	0.027762	0.014	0.008	0.017	0.026	0.036	0.056	0	0	0.00%
S39	NOX	mg N/L	18;180	06MAY2010 - 19APR2011	23	0.01087	0.006703	<0.005	<0.005	0.009	0.015	0.032	9	0	0.00%
S39	OPO4	mg P/L	23	06MAY2010 - 19APR2011	23	0.002087	0.000288	<0.002	<0.002	<0.002	<0.002	0.003	18	0	0.00%
S39	ORGN	mg N/L	79	06MAY2010 - 19APR2011	21	1.396667	0.225455	0.926	1.307	1.38	1.506	1.93	0	0	0.00%
S39	PH	UNITS	10	06MAY2010 - 19APR2011	23	7.791304	0.341005	6.8	7.6	7.8	8.1	8.4	0	0	0.00%
S39	TEMP	CENT	7	06MAY2010 - 19APR2011	23	25.16087	5.685927	12.2	22	26	29.8	31.4	0	0	0.00%
S39	TKN	mg N/L	21	06MAY2010 - 19APR2011	23	1.392609	0.23032	0.94	1.25	1.39	1.53	1.95	0	0	0.00%
S39	TN	mg N/L	80	06MAY2010 - 19APR2011	23	1.401522	0.233067	0.94	1.261	1.4	1.562	1.966	0	0	0.00%
S39	TOT. CL	mg/L	32	06MAY2010 - 19APR2011	23	75.35217	29.68314	25.4	52.1	77.6	103	130	0	0	0.00%

Table C-3. Continued.

STATION	TEST NAME	UNITS	TEST NUMBER	PERIOD OF RECORD	# OF SAMPLES	MEAN	STD	MIN	Q25	MEDIAN	Q75	MAX	# BELOW DETECTION LIMIT	# OF EXCURSIONS	% EXCURSIONS
S39	TOT. DIS. P	mg P/L	26	06MAY2010 - 19APR2011	23	0.006391	0.001994	0.003	0.005	0.006	0.007	0.013	0	0	0.00%
S39	TOT. FE	mg/L	177	02DEC2010 - 07APR2011	4	0.01475	0.010626	0.007	0.0075	0.011	0.022	0.03	0	0	0.00%
S39	TOT. ORGAN. (	mg/L	100	06MAY2010 - 19APR2011	23	22.83913	4.654982	13.9	20.1	22.3	25.7	33.9	0	0	0.00%
S39	TOT. SO4	mg/L	33	06MAY2010 - 19APR2011	23	28.64348	18.01262	3.6	14.5	26.1	41.3	66.9	0	0	0.00%
S39	TP	mg P/L	25	06MAY2010 - 19APR2011	23	0.015957	0.006498	0.01	0.011	0.015	0.017	0.04	0	0	0.00%
S39	TSS	mg/L	16	06MAY2010 - 19APR2011	23	3	0	<3	<3	<3	<3	3	22	0	0.00%
S39	TURBIDITY	NTU	12	06MAY2010 - 19APR2011	23	1.130435	0.543084	0.4	0.8	1	1.5	2.7	0	0	0.00%
S39	UN-IONIZED A	mg/L	NONE	06MAY2010 - 19APR2011	21	0.00093	0.000614	0.000135	0.00047	0.0009048	0.00113	0.0028359	0	0	0.00%
S197	DIS. CA	mg/L	30	07JUL2010 - 04APR2011	6	68.61667	2.392001	66	66.6	68.5	69.6	72.5	0	0	0.00%
S197	DIS. K	mg/L	29	07JUL2010 - 04APR2011	6	4.483333	0.263944	4	4.4	4.55	4.7	4.7	0	0	0.00%
S197	DIS. MG	mg/L	31	07JUL2010 - 04APR2011	6	6.5	1.734359	5.3	5.5	5.8	6.7	9.9	0	0	0.00%
S197	DIS. NA	mg/L	28	07JUL2010 - 04APR2011	6	32.3	13.74001	24.3	24.5	26.25	32.9	59.6	0	0	0.00%
S197	DO	mg/L	8	07JUL2010 - 04APR2011	6	6.081667	2.663077	3.55	3.6	5.85	8.19	9.45	0	0	0.00%
S197	FLDCOND.	UMHOS/CM	9	07JUL2010 - 04APR2011	6	548.8333	73.08192	491	509	519.5	565	689	0	0	0.00%
S197	HARDNESS	mg/L CACO3	35	07JUL2010 - 04APR2011	6	198.0333	7.364962	186.6	195.8	196.8	205.1	207.1	0	0	0.00%
S197	NOX	mg N/L	18;180	07JUL2010 - 04APR2011	5	0.0748	0.061763	<0.005	0.017	0.098	0.104	0.15	1	0	0.00%
S197	OPO4	mg P/L	23	07JUL2010 - 04APR2011	6	0.002	0	<0.002	<0.002	<0.002	<0.002	<0.002	6	0	0.00%
S197	PH	UNITS	10	07JUL2010 - 04APR2011	6	7.583333	0.402078	7.1	7.2	7.6	8	8	0	0	0.00%
S197	TEMP	CENT	7	07JUL2010 - 04APR2011	6	26.13333	3.645637	19.2	25.7	27.2	27.7	29.8	0	0	0.00%
S197	TKN	mg N/L	21	07JUL2010 - 04APR2011	6	0.595	0.046368	0.53	0.57	0.59	0.64	0.65	0	0	0.00%
S197	TN	mg N/L	80	07JUL2010 - 04APR2011	6	0.6565	0.107977	0.53	0.57	0.6475	0.754	0.79	0	0	0.00%
S197	TOT. CL	mg/L	32	07JUL2010 - 04APR2011	6	52.7	24.70174	38.5	39.1	41.9	52.8	102	0	0	0.00%
S197	TOT. SO4	mg/L	33	07JUL2010 - 04APR2011	4	7.775	2.386595	5.8	6.2	7.05	9.35	11.2	0	0	0.00%
S197	TP	mg P/L	25	07JUL2010 - 04APR2011	6	0.005	0.001414	0.003	0.004	0.005	0.006	0.007	0	0	0.00%
S197	TSS	mg/L	16	07JUL2010 - 04APR2011	6	3	0	<3	<3	<3	<3	3	5	0	0.00%
S197	TURBIDITY	NTU	12	07JUL2010 - 04APR2011	4	1.325	0.694622	0.6	0.75	1.3	1.9	2.1	0	0	0.00%
US41-25	CA_I	mg/L	188	07DEC2010 - 26APR2011	2	1.2	1.555635	<0.1	<0.1	1.1	2.3	2.3	1	0	0.00%
US41-25	DIS. CA	mg/L	30	05MAY2010 - 07APR2011	15	64.62	15.90131	43.5	44.6	64.9	78.6	90.1	0	0	0.00%
US41-25	DIS. K	mg/L	29	05MAY2010 - 07APR2011	15	0.806667	0.260403	0.4	0.6	0.8	1	1.4	0	0	0.00%
US41-25	DIS. MG	mg/L	31	05MAY2010 - 07APR2011	15	3.633333	0.524631	2.7	3.1	3.7	4.1	4.4	0	0	0.00%
US41-25	DIS. NA	mg/L	28	05MAY2010 - 07APR2011	15	14.54	2.268039	9.4	13	15.2	16.2	17.2	0	0	0.00%
US41-25	DO	mg/L	8	05MAY2010 - 07APR2011	15	2.636	0.913234	0.83	1.95	2.52	3.14	4.26	0	0	0.00%
US41-25	FLDCOND.	UMHOS/CM	9	05MAY2010 - 07APR2011	15	409.7333	73.1793	318	331	418	472	560	0	0	0.00%
US41-25	HARDNESS	mg/L CACO3	35	05MAY2010 - 07APR2011	15	176.3333	40.20563	123.9	127.9	174.5	211.8	241.8	0	0	0.00%
US41-25	NOX	mg N/L	18;180	03JUN2010 - 07APR2011	10	0.0317	0.016242	0.015	0.021	0.027	0.04	0.061	0	0	0.00%
US41-25	OPO4	mg P/L	23	05MAY2010 - 07APR2011	15	0.002533	0.001807	<0.002	<0.002	<0.002	0.002	0.009	11	0	0.00%
US41-25	PH	UNITS	10	03JUN2010 - 07APR2011	14	7.057143	0.165084	6.8	6.9	7.05	7.1	7.4	0	0	0.00%
US41-25	TEMP	CENT	7	05MAY2010 - 07APR2011	15	25.78667	3.019666	19.9	23.9	26	29	29.3	0	0	0.00%
US41-25	TKN	mg N/L	21	05MAY2010 - 07APR2011	15	0.808	0.095259	0.67	0.75	0.8	0.88	0.97	0	0	0.00%

Table C-3. Continued.

STATION	TEST NAME	UNITS	TEST NUMBER	PERIOD OF RECORD	# OF SAMPLES	MEAN	STD	MIN	Q25	MEDIAN	Q75	MAX	# BELOW DETECTION LIMIT	# OF EXCURSIONS	% EXCURSIONS
US41-25	TN	mg N/L	80	05MAY2010 - 07APR2011	15	0.829133	0.086789	0.699	0.76	0.858	0.88	0.991	0	0	0.00%
US41-25	TOT. CL	mg/L	32	05MAY2010 - 26APR2011	17	19.47647	6.746437	1.6	18	21.6	23.9	25.8	0	0	0.00%
US41-25	TOT. SO4	mg/L	33	14JUL2010 - 07APR2011	4	0.375	0.55	<0.1	<0.1	0	0.65	1.2	2	0	0.00%
US41-25	TP	mg P/L	25	05MAY2010 - 09MAR2011	14	0.015214	0.00693	0.01	0.011	0.0125	0.017	0.036	0	0	0.00%
US41-25	TSS	mg/L	16	05MAY2010 - 07APR2011	15	3.466667	1.552264	<3	<3	<3	<3	9	13	0	0.00%
US41-25	TURBIDITY	NTU	12	14JUL2010 - 26APR2011	6	3.083333	2.829429	0.7	1.6	2	3.7	8.5	0	0	0.00%
S344	DIS. CA	mg/L	30	08JUN2010 - 16MAR2011	4	54.55	11.87504	43.4	45.75	52.15	63.35	70.5	0	0	0.00%
S344	DIS. K	mg/L	29	08JUN2010 - 16MAR2011	4	0.55	0.506623	0.2	0.25	0.35	0.85	1.3	0	0	0.00%
S344	DIS. MG	mg/L	31	08JUN2010 - 16MAR2011	4	2.9	0.83666	2.2	2.25	2.7	3.55	4	0	0	0.00%
S344	DIS. NA	mg/L	28	08JUN2010 - 16MAR2011	4	11.15	3.866523	8.1	8.8	9.85	13.5	16.8	0	0	0.00%
S344	DO	mg/L	8	08JUN2010 - 16MAR2011	4	3.51	2.024319	1.91	2.22	2.84	4.8	6.45	0	0	0.00%
S344	FLDCOND.	UMHOS/CM	9	08JUN2010 - 16MAR2011	4	331.75	74.69215	264	280	313.5	383.5	436	0	0	0.00%
S344	HARDNESS	mg/L CACO3	35	08JUN2010 - 16MAR2011	4	148.275	33.04011	117.6	123.65	141.45	172.9	192.6	0	0	0.00%
S344	NOX	mg N/L	18;180	08JUN2010 - 16MAR2011	4	0.0105	0.006807	<0.005	<0.005	0.004	0.016	0.019	2	0	0.00%
S344	PH	UNITS	10	08JUN2010 - 16MAR2011	4	7.325	0.386221	7.1	7.1	7.15	7.55	7.9	0	0	0.00%
S344	TEMP	CENT	7	08JUN2010 - 16MAR2011	4	25.175	4.769609	21	21.1	24.75	29.25	30.2	0	0	0.00%
S344	TKN	mg N/L	21	08JUN2010 - 16MAR2011	4	1.1175	0.325103	0.85	0.92	1.015	1.315	1.59	0	0	0.00%
S344	TN	mg N/L	80	08JUN2010 - 16MAR2011	4	1.1255	0.32013	0.863	0.9265	1.0245	1.3245	1.59	0	0	0.00%
S344	TOT. SO4	mg/L	33	08JUN2010 - 16MAR2011	4	0.1	0	<0.1	<0.1	<0.1	<0.1	<0.1	4	0	0.00%
S344	TP	mg P/L	25	08JUN2010 - 16MAR2011	4	0.03175	0.027741	0.009	0.0145	0.023	0.049	0.072	0	0	0.00%
S344	TURBIDITY	NTU	12	08JUN2010 - 16MAR2011	4	1.9	1.324135	0.9	1	1.45	2.8	3.8	0	0	0.00%
S177	CA_I	mg/L	188	06DEC2010 - 25APR2011	2	3.5	0.424264	3.2	3.2	3.5	3.8	3.8	0	0	0.00%
S177	DIS. CA	mg/L	30	03MAY2010 - 25APR2011	39	72.74103	4.22852	66.9	70.2	71.7	74.2	85.2	0	0	0.00%
S177	DIS. K	mg/L	29	03MAY2010 - 25APR2011	39	3.430769	0.567151	2	3.2	3.4	3.7	5.4	0	0	0.00%
S177	DIS. MG	mg/L	31	03MAY2010 - 25APR2011	39	8.233333	2.308375	6.6	6.9	7.3	7.9	15.2	0	0	0.00%
S177	DIS. NA	mg/L	28	03MAY2010 - 25APR2011	39	36.33077	6.544469	29.1	32.2	34	36.6	57.6	0	0	0.00%
S177	DO	mg/L	8	03MAY2010 - 25APR2011	39	4.024872	2.07322	1.32	2.03	3.76	6.13	7.94	0	0	0.00%
S177	FLDCOND.	UMHOS/CM	9	03MAY2010 - 25APR2011	39	588.359	52.12813	514	561	576	589	767	0	0	0.00%
S177	HARDNESS	mg/L CACO3	35	03MAY2010 - 25APR2011	39	215.5667	19.05636	199.1	204.2	209.6	214.3	271.6	0	0	0.00%
S177	NH4	mg N/L	20	07JUN2010 - 25APR2011	29	0.072828	0.020838	0.026	0.061	0.078	0.086	0.107	0	0	0.00%
S177	NNH4	mg N/L	92	14JUN2010 - 25APR2011	23	0.148087	0.065107	0.04	0.1	0.139	0.191	0.259	0	0	0.00%
S177	NOX	mg N/L	18;180	14JUN2010 - 25APR2011	25	0.07104	0.054884	0.008	0.024	0.048	0.121	0.17	0	0	0.00%
S177	OPO4	mg P/L	23	03MAY2010 - 25APR2011	39	0.002051	0.00032	<0.002	<0.002	<0.002	<0.002	0.004	36	0	0.00%
S177	ORGN	mg N/L	79	07JUN2010 - 25APR2011	28	0.69475	0.218372	0.439	0.5575	0.602	0.8515	1.151	0	0	0.00%
S177	PH	UNITS	10	03MAY2010 - 25APR2011	38	7.234211	0.306926	6.7	7	7.2	7.4	8	0	0	0.00%
S177	TEMP	CENT	7	03MAY2010 - 25APR2011	39	26.08718	1.912587	18.9	25.7	26.4	27.3	29	0	0	0.00%
S177	TKN	mg N/L	21	03MAY2010 - 25APR2011	38	0.732632	0.197917	0.52	0.62	0.65	0.75	1.2	0	0	0.00%
S177	TN	mg N/L	80	03MAY2010 - 25APR2011	39	0.771564	0.242739	<0.5	0.63	0.68	0.795	1.36	1	0	0.00%
S177	TOT. CL	mg/L	32	03MAY2010 - 25APR2011	41	54.26585	14.32429	10	50.2	51.9	56.3	91.5	0	0	0.00%

Table C-3. Continued.

STATION	TEST NAME	UNITS	TEST NUMBER	PERIOD OF RECORD	# OF SAMPLES	MEAN	STD	MIN	Q25	MEDIAN	Q75	MAX	# BELOW DETECTION LIMIT	# OF EXCURSIONS	% EXCURSIONS
S177	TOT. SO4	mg/L	33	07JUL2010 - 04APR2011	4	3.4	1.807392	1.3	1.9	3.6	4.9	5.1	0	0	0.00%
S177	TP	mg P/L	25	03MAY2010 - 25APR2011	39	0.005897	0.001698	0.004	0.005	0.006	0.006	0.011	0	0	0.00%
S177	TSS	mg/L	16	03MAY2010 - 25APR2011	39	3	0	<3	<3	<3	<3	<3	39	0	0.00%
S177	TURBIDITY	NTU	12	07JUL2010 - 25APR2011	6	5.15	6.482823	0.4	1.1	1.2	13	14	0	0	0.00%
S177	UN-IONIZED A	mg/L	NONE	03MAY2010 - 25APR2011	28	0.001073	0.000792	0.000216	0.00058	0.0007662	0.00119	0.002882	0	0	0.00%
S178	CA_I	mg/L	188	06DEC2010 - 25APR2011	2	9.1	1.272792	8.2	8.2	9.1	10	10	0	0	0.00%
S178	DIS. CA	mg/L	30	03MAY2010 - 04APR2011	25	66.508	16.223	25.6	54.6	72.7	77.5	86.7	0	0	0.00%
S178	DIS. K	mg/L	29	03MAY2010 - 04APR2011	25	13.656	1.459475	10.7	12.8	13.4	13.9	17.3	0	0	0.00%
S178	DIS. MG	mg/L	31	03MAY2010 - 04APR2011	25	5.548	0.395938	4.3	5.4	5.6	5.8	6.1	0	0	0.00%
S178	DIS. NA	mg/L	28	03MAY2010 - 04APR2011	25	23.78	3.465184	18.5	21.3	23	25.1	32.7	0	0	0.00%
S178	DO	mg/L	8	03MAY2010 - 04APR2011	25	4.0972	1.552558	1.7	3.03	4.17	5.34	7.02	0	0	0.00%
S178	FLDCOND.	UMHOS/CM	9	03MAY2010 - 04APR2011	25	524.84	63.33948	327	493	542	566	599	0	0	0.00%
S178	HARDNESS	mg/L CACO3	35	03MAY2010 - 04APR2011	25	188.92	41.03987	81.7	158.7	203	215.9	239.7	0	0	0.00%
S178	NH4	mg N/L	20	02AUG2010 - 07FEB2011	14	0.028143	0.011217	0.011	0.019	0.0255	0.038	0.048	0	0	0.00%
S178	NNH4	mg N/L	92	07SEP2010 - 07FEB2011	12	0.339	0.377122	0.027	0.0885	0.107	0.5835	1.117	0	0	0.00%
S178	NOX	mg N/L	18;180	07JUL2010 - 04APR2011	18	0.230222	0.332895	0.008	0.028	0.072	0.251	1.106	0	0	0.00%
S178	OPO4	mg P/L	23	03MAY2010 - 04APR2011	25	0.00432	0.003275	<0.002	<0.002	0.002	0.008	0.01	10	0	0.00%
S178	ORGN	mg N/L	79	02AUG2010 - 07FEB2011	12	0.432167	0.117423	0.289	0.3755	0.398	0.47	0.672	0	0	0.00%
S178	PH	UNITS	10	03MAY2010 - 04APR2011	24	7.295833	0.294115	7	7	7.3	7.45	8.1	0	0	0.00%
S178	TEMP	CENT	7	03MAY2010 - 04APR2011	25	25.256	3.922593	18.6	21.6	25.8	28.1	32.2	0	0	0.00%
S178	TKN	mg N/L	21	03MAY2010 - 04APR2011	22	0.55	0.207135	0.3	0.41	0.455	0.69	1.14	0	0	0.00%
S178	TN	mg N/L	80	03MAY2010 - 04APR2011	23	0.724957	0.277307	<0.5	0.495	0.661	0.828	1.406	1	0	0.00%
S178	TOT. CL	mg/L	32	03MAY2010 - 25APR2011	27	39.41481	10.75417	7.9	36.7	40.1	44	56.5	0	0	0.00%
S178	TOT. SO4	mg/L	33	07JUL2010 - 04APR2011	4	27.75	6.586096	19.7	22.6	28.25	32.9	34.8	0	0	0.00%
S178	TP	mg P/L	25	03MAY2010 - 04APR2011	24	0.021833	0.011158	0.006	0.0155	0.0205	0.0245	0.058	0	0	0.00%
S178	TSS	mg/L	16	03MAY2010 - 04APR2011	25	4.16	2.794041	<3	<3	<3	<3	14	19	0	0.00%
S178	TURBIDITY	NTU	12	07JUL2010 - 25APR2011	6	8.133333	7.569324	1.2	1.6	6	16	18	0	0	0.00%
S178	UN-IONIZED A	mg/L	NONE	03MAY2010 - 04APR2011	13	0.000331	0.000291	0.000102	0.00018	0.0001991	0.0004	0.001193	0	0	0.00%
S331-173	DIS. CA	mg/L	30	03MAY2010 - 25APR2011	41	73.89024	6.773655	63.6	70.1	73	76.1	96.9	0	0	0.00%
S331-173	DIS. K	mg/L	29	03MAY2010 - 25APR2011	41	2.987805	0.930912	1.7	2.4	2.7	3.5	6.7	0	0	0.00%
S331-173	DIS. MG	mg/L	31	03MAY2010 - 25APR2011	41	10.27561	3.105461	7.2	8	9	11.6	20.6	0	0	0.00%
S331-173	DIS. NA	mg/L	28	03MAY2010 - 25APR2011	41	39.17561	10.99254	28.1	30.9	34	45.2	76.8	0	0	0.00%
S331-173	DIS. ORGAN. C	mg/L	89;181	06JUL2010 - 05APR2011	4	15.9	4.568734	11.8	12.75	14.75	19.05	22.3	0	0	0.00%
S331-173	DO	mg/L	8	03MAY2010 - 25APR2011	52	2.883269	1.596737	0.7	1.625	2.54	3.895	8.09	0	0	0.00%
S331-173	FLDCOND.	UMHOS/CM	9	03MAY2010 - 25APR2011	52	615.7692	98.24831	484	558	579	658	937	0	0	0.00%
S331-173	HARDNESS	mg/L CACO3	35	03MAY2010 - 25APR2011	41	226.8732	24.96767	188.6	215.7	221.2	226	317.6	0	0	0.00%
S331-173	NOX	mg N/L	18;180	17MAY2010 - 25APR2011	27	0.043556	0.052061	<0.005	0.017	0.026	0.036	0.218	2	0	0.00%
S331-173	OPO4	mg P/L	23	03MAY2010 - 25APR2011	41	0.002	0	<0.002	<0.002	<0.002	<0.002	0.002	37	0	0.00%
S331-173	PH	UNITS	10	03MAY2010 - 25APR2011	51	7.313725	0.234111	6.8	7.2	7.3	7.5	8	0	0	0.00%
S331-173	TEMP	CENT	7	03MAY2010 - 25APR2011	52	24.92692	3.06563	18.5	22.4	26.55	27.05	29.4	0	0	0.00%
S331-173	TKN	mg N/L	21	03MAY2010 - 25APR2011	41	1.232683	0.172671	0.95	1.11	1.21	1.31	1.66	0	0	0.00%

Table C-3. Continued.

STATION	TEST NAME	UNITS	TEST NUMBER	PERIOD OF RECORD	# OF SAMPLES	MEAN	STD	MIN	Q25	MEDIAN	Q75	MAX	# BELOW DETECTION LIMIT	# OF EXCURSIONS	% EXCURSIONS
S331-173	TN	mg N/L	80	03MAY2010 - 25APR2011	42	1.242476	0.234917	<0.5	1.119	1.221	1.31	1.878	1	0	0.00%
S331-173	TOT. CL	mg/L	32	03MAY2010 - 25APR2011	41	59.85366	17.38616	43.3	46.9	50.8	68	121	0	0	0.00%
S331-173	TOT. SO4	mg/L	33	06JUL2010 - 05APR2011	4	4.225	3.039051	1.1	1.9	3.85	6.55	8.1	0	0	0.00%
S331-173	TP	mg P/L	25	03MAY2010 - 25APR2011	52	0.008731	0.004362	0.005	0.006	0.007	0.009	0.032	0	0	0.00%
S331-173	TSS	mg/L	16	03MAY2010 - 25APR2011	41	3	0	<3	<3	<3	<3	<3	41	0	0.00%
S331-173	TURBIDITY	NTU	12	06JUL2010 - 05APR2011	4	1.4	0.787401	0.6	0.75	1.35	2.05	2.3	0	0	0.00%
S331-173Auto	NOX	mg N/L	18;180	03MAY2010 - 25APR2011	350	0.043151	0.047534	<0.005	0.017	0.027	0.041	0.261	24	0	0.00%
S331-173Auto	TKN	mg N/L	21	03MAY2010 - 25APR2011	350	1.314657	0.369358	0.93	1.13	1.22	1.41	3.66	0	0	0.00%
S331-173Auto	TN	mg N/L	80	03MAY2010 - 25APR2011	350	1.357466	0.383196	0.959	1.145	1.2385	1.464	3.689	0	0	0.00%
S331-173Auto	TP	mg P/L	25	03MAY2010 - 25APR2011	350	0.009494	0.004873	0.004	0.006	0.008	0.012	0.063	0	0	0.00%
S332B	DIS. CA	mg/L	30	03MAY2010 - 15NOV2010	29	72.47241	3.737063	63.4	70.2	72.4	75.4	79.6	0	0	0.00%
S332B	DIS. K	mg/L	29	03MAY2010 - 15NOV2010	29	3.041379	0.470195	2.4	2.7	3	3.5	4	0	0	0.00%
S332B	DIS. MG	mg/L	31	03MAY2010 - 15NOV2010	29	9.386207	1.676247	7.5	8	8.9	11.1	12.9	0	0	0.00%
S332B	DIS. NA	mg/L	28	03MAY2010 - 15NOV2010	29	37.24138	6.875501	29.4	31.2	37.1	43.3	51.6	0	0	0.00%
S332B	DO	mg/L	8	03MAY2010 - 25APR2011	52	2.579423	1.346233	0.65	1.395	2.44	3.51	6.89	0	0	0.00%
S332B	FLDCOND.	UMHOS/CM	9	03MAY2010 - 25APR2011	52	600.8269	72.974	485	556.5	575.5	641	792	0	0	0.00%
S332B	HARDNESS	mg/L CACO3	35	03MAY2010 - 15NOV2010	29	219.5966	6.408392	208.5	214.6	220.6	224.6	230	0	0	0.00%
S332B	NOX	mg N/L	18;180	17MAY2010 - 01NOV2010	15	0.0194	0.008122	0.008	0.013	0.021	0.024	0.04	0	0	0.00%
S332B	OPO4	mg P/L	23	03MAY2010 - 15NOV2010	29	0.002	0	<0.002	<0.002	<0.002	<0.002	0.002	28	0	0.00%
S332B	PH	UNITS	10	03MAY2010 - 25APR2011	51	7.231373	0.222252	6.8	7.1	7.2	7.4	7.7	0	0	0.00%
S332B	TEMP	CENT	7	03MAY2010 - 25APR2011	52	25.28846	2.352942	20.2	23.35	26.3	26.95	28.3	0	0	0.00%
S332B	TKN	mg N/L	21	03MAY2010 - 27DEC2010	29	1.113793	0.171369	0.89	1.01	1.11	1.18	1.6	0	0	0.00%
S332B	TN	mg N/L	80	03MAY2010 - 27DEC2010	30	1.1025	0.202958	<0.5	0.98	1.106	1.195	1.6	1	0	0.00%
S332B	TOT. CL	mg/L	32	03MAY2010 - 15NOV2010	29	56.45172	10.8746	43.7	47.2	54.4	63.9	80.6	0	0	0.00%
S332B	TP	mg P/L	25	03MAY2010 - 25APR2011	52	0.007846	0.002817	0.005	0.006	0.007	0.0085	0.018	0	0	0.00%
S332B	TSS	mg/L	16	03MAY2010 - 15NOV2010	29	3.137931	0.441114	<3	<3	<3	<3	5	26	0	0.00%
S332BAuto	NOX	mg N/L	18;180	03MAY2010 - 29NOV2010	27	0.018111	0.01162	<0.005	0.009	0.016	0.023	0.049	3	0	0.00%
S332BAuto	TKN	mg N/L	21	03MAY2010 - 29NOV2010	28	1.087143	0.12055	0.87	0.985	1.1	1.165	1.33	0	0	0.00%
S332BAuto	TN	mg N/L	80	03MAY2010 - 29NOV2010	28	1.104071	0.126214	0.892	0.998	1.1035	1.183	1.368	0	0	0.00%
S332BAuto	TP	mg P/L	25	03MAY2010 - 15NOV2010	23	0.008043	0.001581	0.006	0.007	0.007	0.009	0.013	0	0	0.00%
S332C	DIS. CA	mg/L	30	03MAY2010 - 25OCT2010	26	70.33846	1.857326	66.9	69.1	70.15	71.2	74.5	0	0	0.00%
S332C	DIS. K	mg/L	29	03MAY2010 - 25OCT2010	26	3.003846	0.208769	2.6	2.8	3	3.1	3.4	0	0	0.00%
S332C	DIS. MG	mg/L	31	03MAY2010 - 25OCT2010	26	8.865385	0.8616	7.8	8.1	8.7	9.5	10.9	0	0	0.00%
S332C	DIS. NA	mg/L	28	03MAY2010 - 25OCT2010	26	38.61538	5.103073	31	32.5	40.55	42	47.4	0	0	0.00%
S332C	DO	mg/L	8	03MAY2010 - 25APR2011	52	2.680192	1.471097	0.58	1.42	2.04	3.88	6.2	0	0	0.00%
S332C	FLDCOND.	UMHOS/CM	9	03MAY2010 - 25APR2011	52	592.5962	63.99365	488	551.5	574	622.5	778	0	0	0.00%
S332C	HARDNESS	mg/L CACO3	35	03MAY2010 - 25OCT2010	26	212.1769	4.500072	202.6	209.8	211.8	214.3	222.1	0	0	0.00%
S332C	NOX	mg N/L	18;180	17MAY2010 - 25OCT2010	14	0.012857	0.006503	0.005	0.007	0.0115	0.02	0.024	0	0	0.00%
S332C	OPO4	mg P/L	23	03MAY2010 - 25OCT2010	26	0.002	0	<0.002	<0.002	<0.002	<0.002	0.002	21	0	0.00%
S332C	PH	UNITS	10	03MAY2010 - 25APR2011	51	7.2	0.219089	6.7	7	7.2	7.4	7.7	0	0	0.00%
S332C	TEMP	CENT	7	03MAY2010 - 25APR2011	52	25.50962	2.508437	20.2	23.45	26.4	27.65	28.4	0	0	0.00%
S332C	TKN	mg N/L	21	03MAY2010 - 27DEC2010	26	0.981538	0.088575	0.81	0.91	1	1.05	1.13	0	0	0.00%
S332C	TN	mg N/L	80	03MAY2010 - 27DEC2010	27	0.970074	0.127867	<0.5	0.91	1	1.06	1.154	1	0	0.00%
S332C	TOT. CL	mg/L	32	03MAY2010 - 25OCT2010	26	58.62692	8.299328	47	49.2	61.25	64	72.9	0	0	0.00%

Table C-3. Continued.

STATION	TEST NAME	UNITS	TEST NUMBER	PERIOD OF RECORD	# OF SAMPLES	MEAN	STD	MIN	Q25	MEDIAN	Q75	MAX	# BELOW DETECTION LIMIT	# OF EXCURSIONS	% EXCURSIONS
S332C	TP	mg P/L	25	03MAY2010 - 25APR2011	51	0.007373	0.002821	0.004	0.006	0.007	0.007	0.019	0	0	0.00%
S332C	TSS	mg/L	16	03MAY2010 - 25OCT2010	26	4.576923	6.51873	<3	<3	<3	<3	36	22	0	0.00%
S332CAuto	NOX	mg N/L	18;180	03MAY2010 - 24JAN2011	22	0.014591	0.009931	0.006	0.007	0.012	0.018	0.049	0	0	0.00%
S332CAuto	TKN	mg N/L	21	03MAY2010 - 24JAN2011	24	1.01625	0.104458	0.85	0.945	1.015	1.07	1.31	0	0	0.00%
S332CAuto	TN	mg N/L	80	03MAY2010 - 24JAN2011	24	1.029625	0.104908	0.863	0.9485	1.02	1.0835	1.319	0	0	0.00%
S332CAuto	TP	mg P/L	25	03MAY2010 - 25OCT2010	21	0.008238	0.001814	0.006	0.007	0.008	0.009	0.012	0	0	0.00%
BERMB3	DIS. CA	mg/L	30	23AUG2010 - 18OCT2010	3	48.5	2.605763	46	46	48.3	51.2	51.2	0	0	0.00%
BERMB3	DIS. K	mg/L	29	23AUG2010 - 18OCT2010	4	2.825	0.464579	2.2	2.5	2.9	3.15	3.3	0	0	0.00%
BERMB3	DIS. MG	mg/L	31	23AUG2010 - 18OCT2010	4	5.4	1.764464	3.8	3.9	5.25	6.9	7.3	0	0	0.00%
BERMB3	DIS. NA	mg/L	28	23AUG2010 - 18OCT2010	4	24.6	11.9284	14.1	14.3	24.15	34.9	36	0	0	0.00%
BERMB3	DO	mg/L	8	23AUG2010 - 18OCT2010	4	3.6225	1.044458	2.88	2.955	3.23	4.29	5.15	0	0	0.00%
BERMB3	FLDCOND.	UMHOS/CM	9	23AUG2010 - 18OCT2010	4	410.5	72.58329	345	348	407.5	473	482	0	0	0.00%
BERMB3	HARDNESS	mg/L CACO3	35	23AUG2010 - 18OCT2010	4	143.825	3.656387	138.7	141.45	144.65	146.2	147.3	0	0	0.00%
BERMB3	NOX	mg N/L	18;180	23AUG2010 - 07SEP2010	2	0.0095	0.003536	0.007	0.007	0.0095	0.012	0.012	0	0	0.00%
BERMB3	OPO4	mg P/L	23	23AUG2010 - 18OCT2010	3	0.002	0	<0.002	<0.002	<0.002	0.002	0.002	2	0	0.00%
BERMB3	PH	UNITS	10	23AUG2010 - 18OCT2010	4	7.25	0.129099	7.1	7.15	7.25	7.35	7.4	0	0	0.00%
BERMB3	TEMP	CENT	7	23AUG2010 - 18OCT2010	4	26.95	2.275229	25	25	26.75	28.9	29.3	0	0	0.00%
BERMB3	TKN	mg N/L	21	23AUG2010 - 18OCT2010	3	1.383333	0.327465	1.12	1.12	1.28	1.75	1.75	0	0	0.00%
BERMB3	TN	mg N/L	80	23AUG2010 - 18OCT2010	3	1.389667	0.321537	1.132	1.132	1.287	1.75	1.75	0	0	0.00%
BERMB3	TOT. CL	mg/L	32	23AUG2010 - 18OCT2010	3	42.86667	18.70891	21.4	21.4	51.5	55.7	55.7	0	0	0.00%
BERMB3	TOT. SO4	mg/L	33	07SEP2010 - 18OCT2010	2	0.3	0.282843	<0.1	<0.1	0.2	0.5	0.5	1	0	0.00%
BERMB3	TP	mg P/L	25	23AUG2010 - 18OCT2010	3	0.052	0.026211	0.03	0.03	0.045	0.081	0.081	0	0	0.00%
BERMB3	TSS	mg/L	16	23AUG2010 - 18OCT2010	3	5.333333	4.041452	<3	<3	<3	10	10	2	0	0.00%
BERMB3	TURBIDITY	NTU	12	07SEP2010 - 18OCT2010	2	4.35	3.747666	1.7	1.7	4.35	7	7	0	0	0.00%
S332DX	CA_I	mg/L	188	06DEC2010 - 25APR2011	2	2.9	0.707107	2.4	2.4	2.9	3.4	3.4	0	0	0.00%
S332DX	DIS. CA	mg/L	30	03MAY2010 - 25APR2011	43	72.3814	5.260738	67.4	69.6	70.6	72.2	88.2	0	0	0.00%
S332DX	DIS. K	mg/L	29	03MAY2010 - 25APR2011	43	2.918605	0.572902	2	2.7	2.8	3.1	5.3	0	0	0.00%
S332DX	DIS. MG	mg/L	31	03MAY2010 - 25APR2011	43	9.188372	2.174003	6.6	8	8.5	9.1	14.6	0	0	0.00%
S332DX	DIS. NA	mg/L	28	03MAY2010 - 25APR2011	43	38.41628	7.101842	27.7	32.3	38.6	42.4	55.2	0	0	0.00%
S332DX	DIS. ORGAN. C	mg/L	89;181	06JUL2010 - 05APR2011	4	13.95	3.51141	11.3	11.8	12.7	16.1	19.1	0	0	0.00%
S332DX	DO	mg/L	8	03MAY2010 - 25APR2011	52	3.445192	1.826245	0.91	1.86	2.98	5.115	7.35	0	0	0.00%
S332DX	FLDCOND.	UMHOS/CM	9	03MAY2010 - 25APR2011	52	588.4808	62.03904	478	554	575.5	610.5	740	0	0	0.00%
S332DX	HARDNESS	mg/L CACO3	35	03MAY2010 - 25APR2011	43	218.6372	21.14949	202.1	207.6	210.8	217	279.7	0	0	0.00%
S332DX	NOX	mg N/L	18;180	17MAY2010 - 25APR2011	29	0.059483	0.063438	0.007	0.013	0.021	0.077	0.203	0	0	0.00%
S332DX	OPO4	mg P/L	23	03MAY2010 - 25APR2011	43	0.002093	0.000479	<0.002	<0.002	<0.002	<0.002	0.005	36	0	0.00%
S332DX	PH	UNITS	10	03MAY2010 - 25APR2011	51	7.258824	0.272893	6.8	7.1	7.2	7.4	7.8	0	0	0.00%
S332DX	TEMP	CENT	7	03MAY2010 - 25APR2011	52	25.425	2.782147	19.1	23.55	26.35	27.7	28.6	0	0	0.00%
S332DX	TKN	mg N/L	21	03MAY2010 - 25APR2011	43	0.958372	0.152455	0.59	0.87	0.93	1.02	1.31	0	0	0.00%
S332DX	TN	mg N/L	80	03MAY2010 - 25APR2011	44	0.986932	0.210353	<0.5	0.8885	0.935	1.0355	1.463	1	0	0.00%
S332DX	TOT. CL	mg/L	32	03MAY2010 - 25APR2011	45	56.58222	15.38514	9.8	48.3	55.6	63.7	87.5	0	0	0.00%
S332DX	TOT. MTHY HG	ug/L	203	15JUL2010 - 19APR2011	4	4.05E-05	2.16E-05	<0.000022	<0.000022	0.0000165	5.9E-05	0.000063	2	0	0.00%
S332DX	TOT. SO4	mg/L	33	06JUL2010 - 05APR2011	4	2.925	1.611159	1.4	1.55	2.85	4.3	4.6	0	0	0.00%
S332DX	TOT. ULTRA TR	ug/L	207	15JUL2010 - 19APR2011	4	0.000205	9.98E-05	<0.0001	0.00004	0.00019	0.00027	0.00034	1	0	0.00%
S332DX	TP	mg P/L	25	03MAY2010 - 25APR2011	52	0.007173	0.002861	0.004	0.006	0.006	0.0075	0.021	0	0	0.00%

Table C-3. Continued.

STATION	TEST NAME	UNITS	TEST NUMBER	PERIOD OF RECORD	# OF SAMPLES	MEAN	STD	MIN	Q25	MEDIAN	Q75	MAX	# BELOW DETECTION LIMIT	# OF EXCURSIONS	% EXCURSIONS
S332DX	TSS	mg/L	16	03MAY2010 - 25APR2011	43	3	0	<3	<3	<3	<3	<3	43	0	0.00%
S332DX	TURBIDITY	NTU	12	06JUL2010 - 25APR2011	6	5.783333	5.664774	1.2	1.8	2.85	13	13	0	0	0.00%
S332DXAuto	NOX	mg N/L	18;180	03MAY2010 - 25APR2011	364	0.048618	0.054271	<0.005	0.01	0.018	0.0745	0.243	12	0	0.00%
S332DXAuto	TKN	mg N/L	21	03MAY2010 - 25APR2011	364	0.943049	0.161722	0.56	0.85	0.92	0.99	1.48	0	0	0.00%
S332DXAuto	TN	mg N/L	80	03MAY2010 - 25APR2011	364	0.991503	0.19816	0.601	0.8885	0.94	1.028	1.583	0	0	0.00%
S332DXAuto	TP	mg P/L	25	03MAY2010 - 25APR2011	364	0.011591	0.053388	0.004	0.006	0.007	0.01	1.02	0	0	0.00%
S356-334	DIS. CA	mg/L	30	04MAY2010 - 26APR2011	32	67.63125	13.6996	49.5	56.9	63.5	77.85	106.2	0	0	0.00%
S356-334	DIS. K	mg/L	29	04MAY2010 - 26APR2011	32	3.840625	1.540394	1.5	2.05	4.4	4.8	7.6	0	0	0.00%
S356-334	DIS. MG	mg/L	31	04MAY2010 - 26APR2011	32	13.65938	4.838345	7	7.85	14.9	16.7	23.6	0	0	0.00%
S356-334	DIS. NA	mg/L	28	04MAY2010 - 26APR2011	32	50.46875	16.81578	26	30.8	53.95	61.25	85.4	0	0	0.00%
S356-334	DO	mg/L	8	04MAY2010 - 26APR2011	52	3.608462	1.89698	1.09	1.82	3.365	5.13	8.1	0	0	0.00%
S356-334	FLDCOND.	UMHOS/CM	9	04MAY2010 - 26APR2011	52	623.0192	116.3626	466	538.5	595	693.5	964	0	0	0.00%
S356-334	HARDNESS	mg/L CACO3	35	04MAY2010 - 26APR2011	32	225.125	44.29521	181.4	196.05	208.05	231.95	348.7	0	0	0.00%
S356-334	NOX	mg N/L	18;180	02JUN2010 - 26APR2011	21	0.080048	0.078493	<0.005	0.021	0.052	0.13	0.288	1	0	0.00%
S356-334	OPO4	mg P/L	23	04MAY2010 - 26APR2011	32	0.002031	0.000177	<0.002	<0.002	<0.002	<0.002	0.003	30	0	0.00%
S356-334	PH	UNITS	10	04MAY2010 - 26APR2011	52	7.267308	0.223801	6.9	7.05	7.25	7.4	7.8	0	0	0.00%
S356-334	TEMP	CENT	7	04MAY2010 - 26APR2011	52	26.05192	3.889125	15.6	23.5	27	29	31.1	0	0	0.00%
S356-334	TKN	mg N/L	21	04MAY2010 - 26APR2011	32	1.435313	0.243893	0.92	1.34	1.455	1.59	1.84	0	0	0.00%
S356-334	TN	mg N/L	80	04MAY2010 - 26APR2011	32	1.487688	0.290087	0.944	1.346	1.4755	1.66	2.128	0	0	0.00%
S356-334	TOT. CL	mg/L	32	04MAY2010 - 26APR2011	32	77.0375	26.13346	38.6	46.9	82.7	94.9	138	0	0	0.00%
S356-334	TOT. SO4	mg/L	33	08JUL2010 - 06APR2011	4	6.725	7.748279	0.6	1.1	4.4	12.35	17.5	0	0	0.00%
S356-334	TP	mg P/L	25	04MAY2010 - 26APR2011	50	0.01196	0.005221	0.006	0.008	0.01	0.013	0.028	0	0	0.00%
S356-334	TSS	mg/L	16	04MAY2010 - 26APR2011	32	3.25	0.803219	<3	<3	<3	<3	7	28	0	0.00%
S356-334	TURBIDITY	NTU	12	08JUL2010 - 06APR2011	4	1.4	0.828654	0.7	0.9	1.15	1.9	2.6	0	0	0.00%
S356-334Auto	NOX	mg N/L	18;180	04MAY2010 - 26APR2011	350	0.0463	0.05316	<0.005	0.008	0.0275	0.058	0.276	53	0	0.00%
S356-334Auto	TKN	mg N/L	21	04MAY2010 - 26APR2011	350	1.360571	0.222813	0.87	1.22	1.38	1.5	2.07	0	0	0.00%
S356-334Auto	TN	mg N/L	80	04MAY2010 - 26APR2011	350	1.406114	0.259887	0.892	1.228	1.4	1.536	2.261	0	0	0.00%
S356-334Auto	TP	mg P/L	25	04MAY2010 - 26APR2011	350	0.011811	0.005701	0.006	0.008	0.01	0.014	0.044	0	0	0.00%

Attachment D: Time-Series and Box Plots for Non-Everglades Construction Project Water Quality Monitoring Data Exhibiting Excursions from Class III Numeric Standards for Water Year 2011

Shi Kui Xue and Steven Hill

As shown in Table C-3, there were no excursions for any of the water quality parameters at any of the non-ECP structures, and therefore no excursion graphs are presented in Attachment D.

Attachment E: Time-Series and Box Plots of Total Phosphorus at Non-Everglades Construction Project Monitoring Sites for Water Year 2011 and Earlier Periods

Shi Kui Xue and Steven Hill

KEY TO ABBREVIATIONS:

WY1-13: May 1, 1997 through April 30, 2010

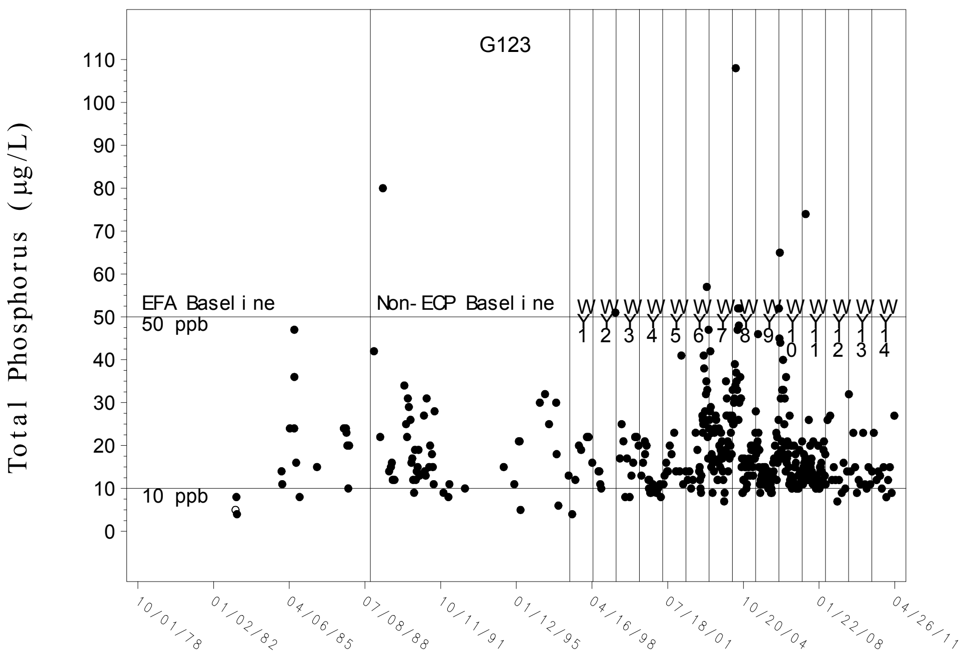
WY14: May 1, 2010 through April 30, 2011

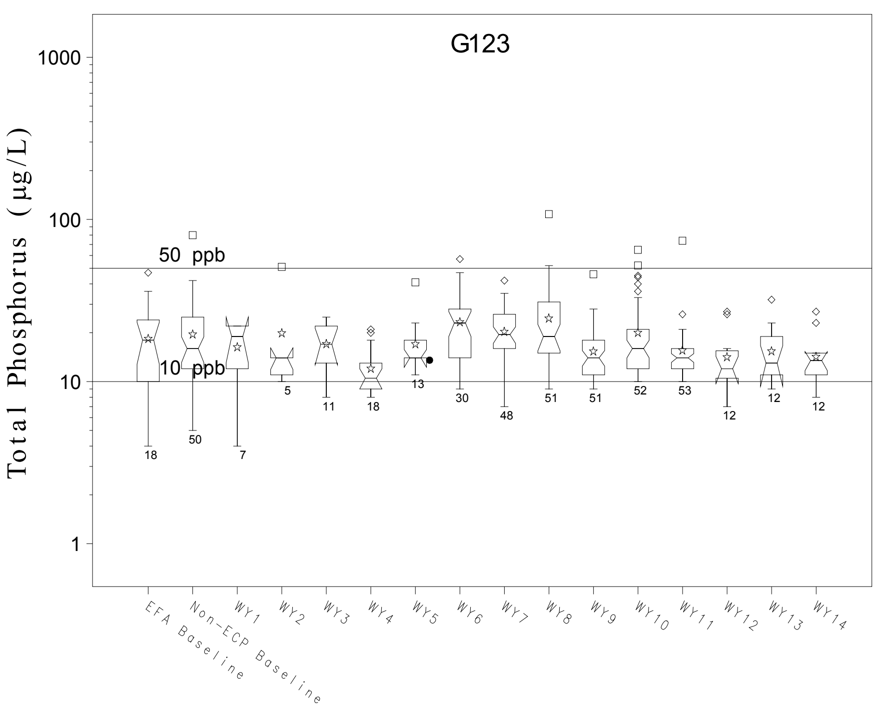
These abbreviations are for graphing convenience. The 2-digit number following "WY" is a sequential number starting from the water year beginning May 1, 1997.

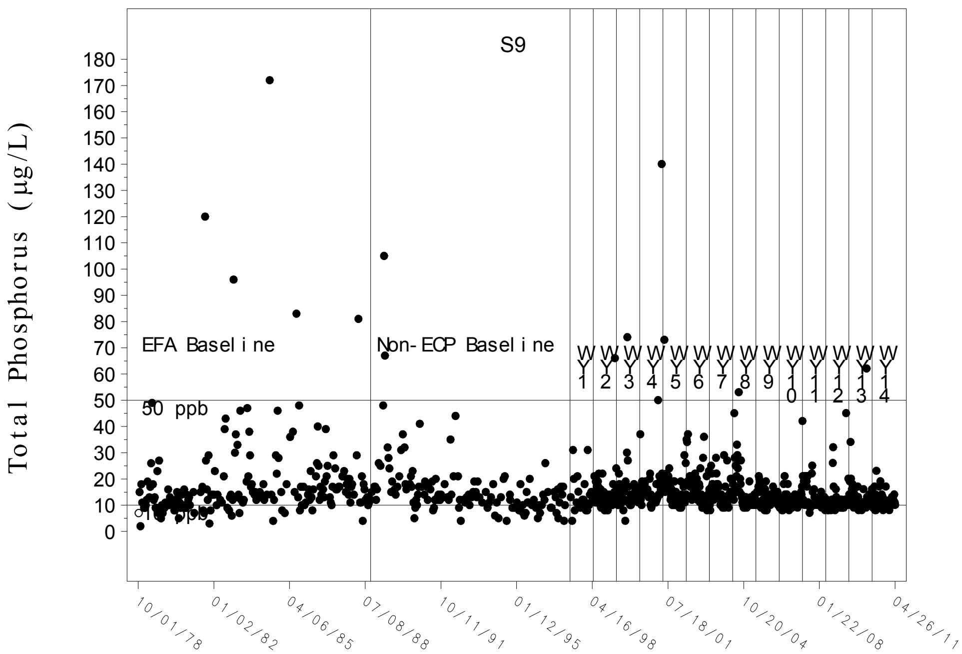
NOTES:

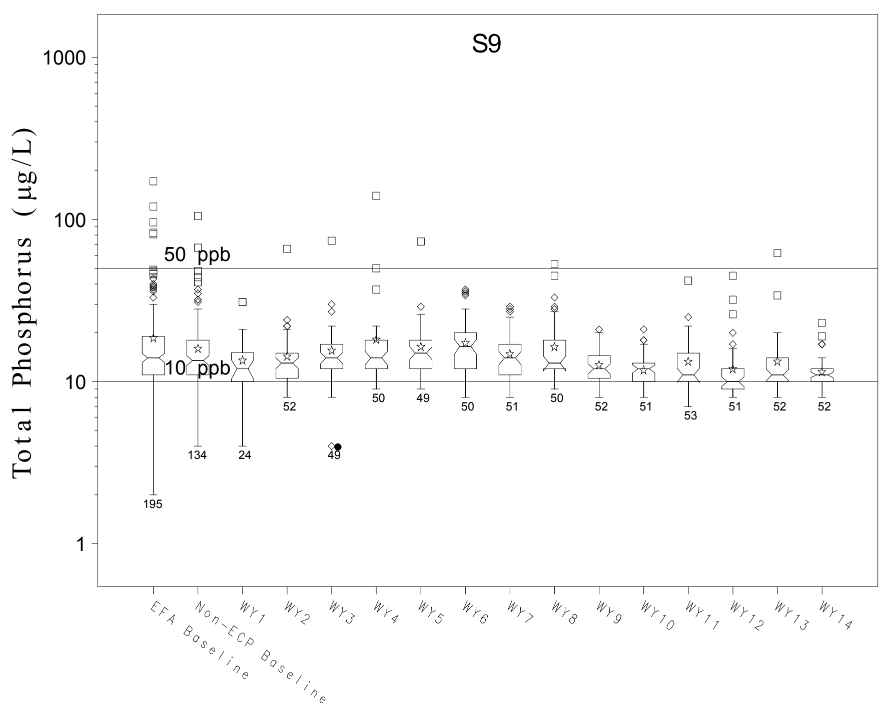
The graphs in this attachment depict total phosphorus (TP) concentration data collected from May 1, 1997 through April 30, 2011 for the non-Everglades Construction Project (non-ECP) water quality monitoring sites. The graph sequencing follows the station order shown in Attachment B, Table B-1. The non-ECP structure locations are depicted in Figure 1 of this appendix. Additionally, the graphs are identified by monitoring site name. In most cases, the monitoring site name corresponds to the structure. If the monitoring site is a surrogate location for a structure, the structure name(s) is/are shown in parentheses below the monitoring site name.

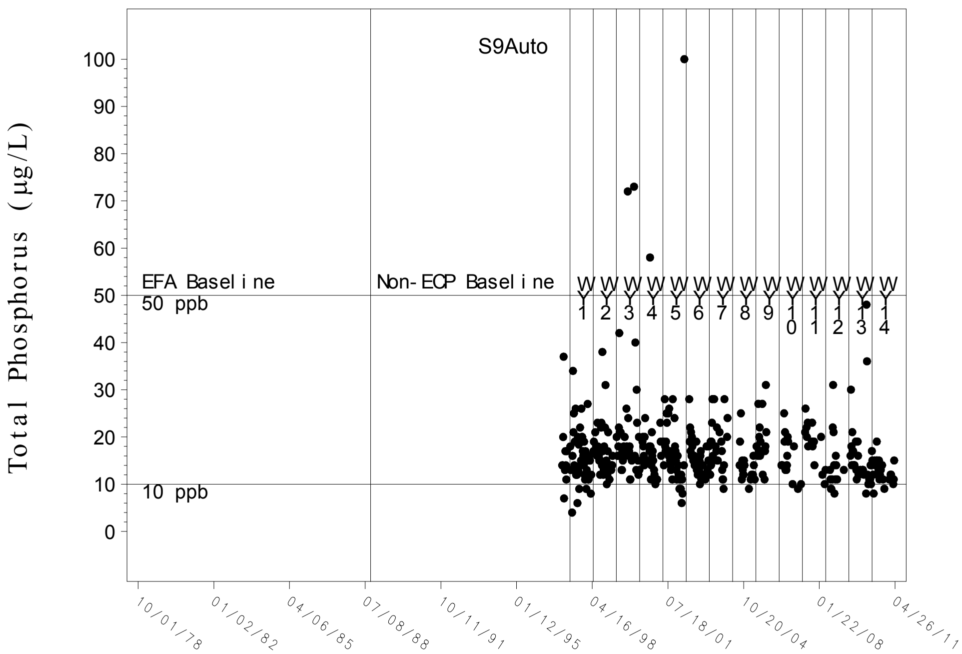
Most graphs depict TP data collected by grab sampling methods. The graphs for sites with auto-sampler data are annotated with "Auto." The TP data collected by both methods are not shown as combined data in the graphs.

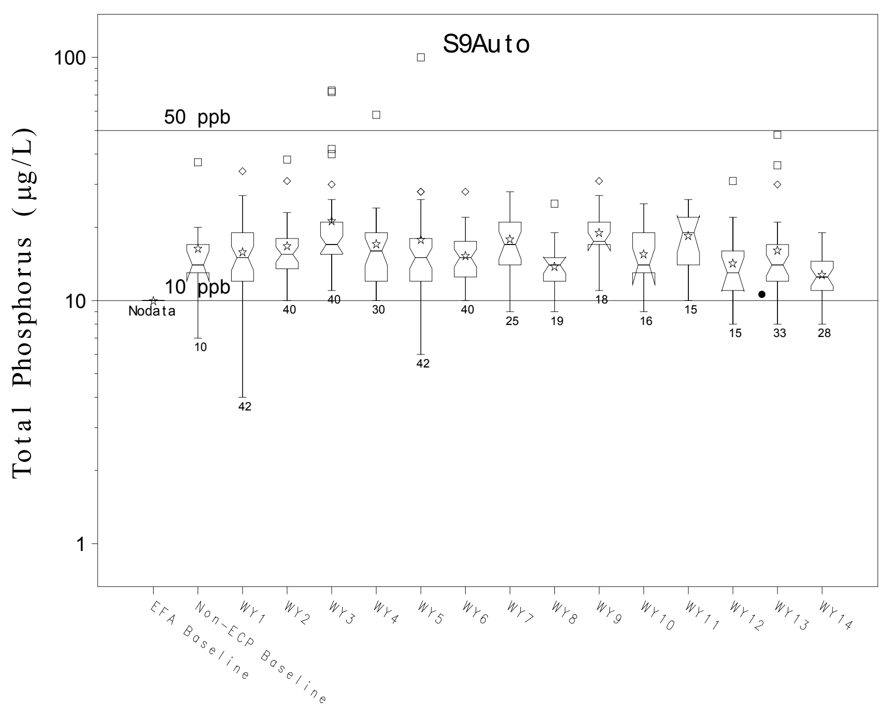

G123
Total Phosphorus (µg/L)
EFA Baseline
Non-ECP Baseline
50 ppb
10 ppb
WY 1
WY 2
WY 3
WY 4
WY 5
WY 6
WY 7
WY 8
WY 9
WY 10
WY 11
WY 12
WY 13
WY 14
10/01/78
01/02/82
04/06/85
07/08/88
10/11/91
01/12/95
04/16/98
07/18/01
10/20/04
01/22/08
04/26/11

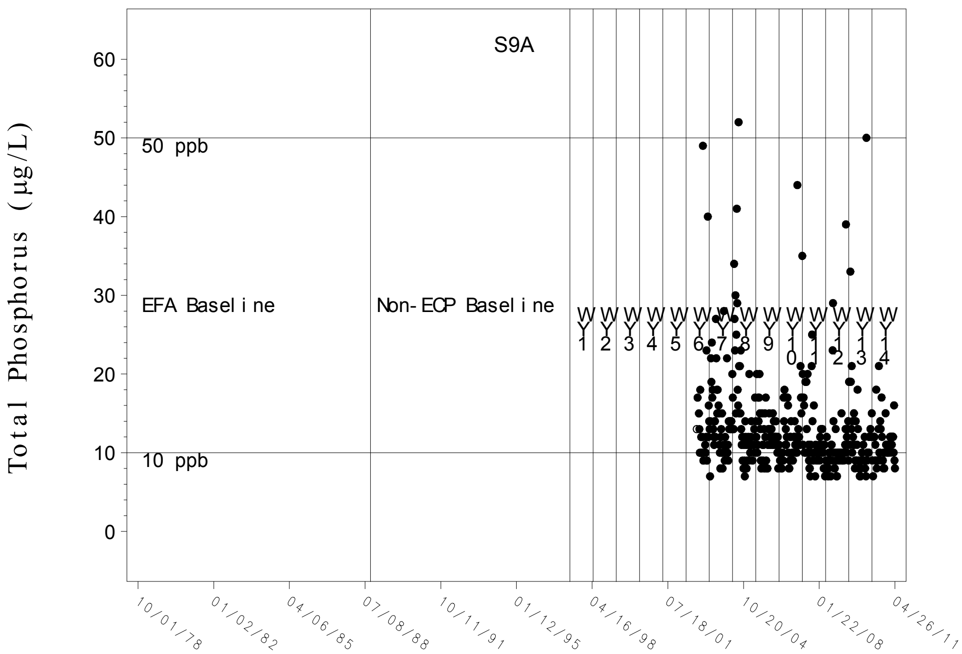

G123
Total Phosphorus (µg/L)
50 ppb
10 ppb
EFA Baseline
Non-ECP Baseline
WY1
WY2
WY3
WY4
WY5
WY6
WY7
WY8
WY9
WY10
WY11
WY12
WY13
WY14

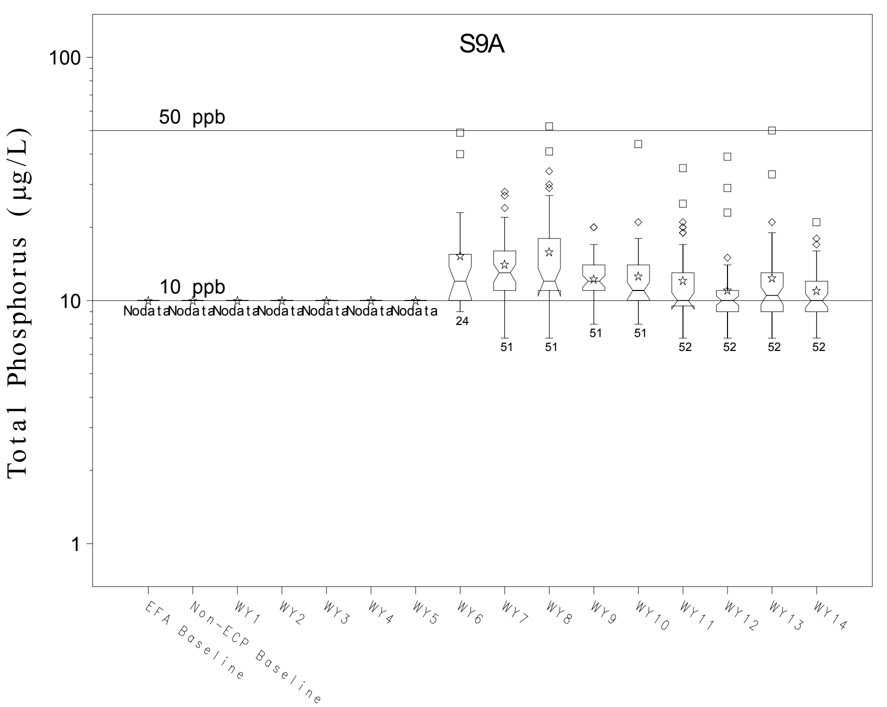

S9
Total Phosphorus (µg/L)
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
EFA Baseline
Non-ECP Baseline
50 ppb
10 ppb
WY1
WY2
WY3
WY4
WY5
WY6
WY7
WY8
WY9
WY10
WY11
WY12
WY13
WY14
10/01/78
01/02/82
04/06/85
07/08/88
10/11/91
01/12/95
04/16/98
07/18/01
10/20/04
01/22/08
04/26/11

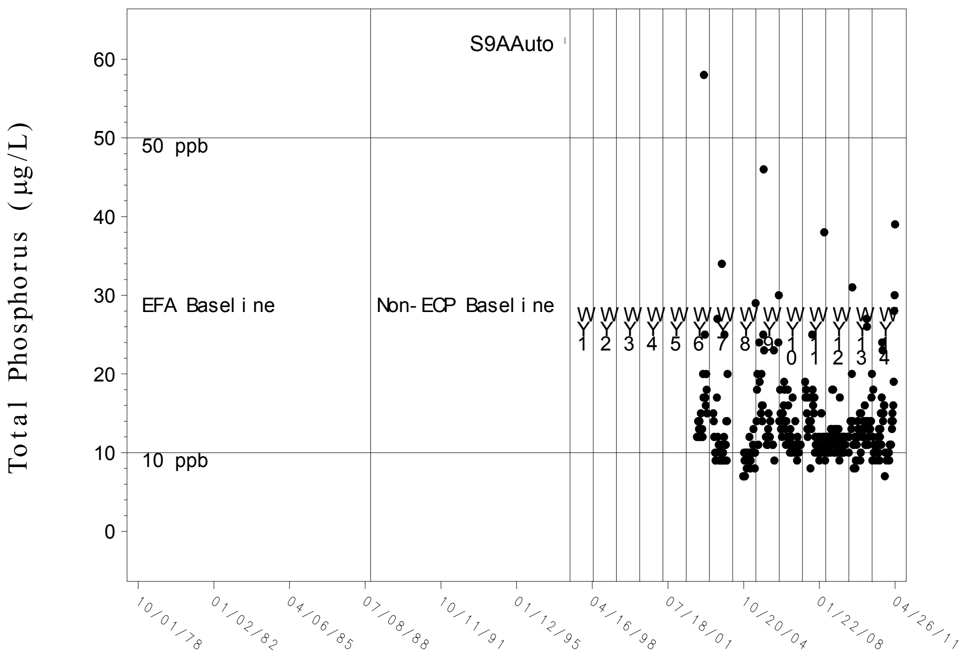

S9
Total Phosphorus (µg/L)
1000
100
10
1
50 ppb
10 ppb
195
134
24
52
49
50
49
50
51
50
52
51
53
51
52
52
EFA Baseline
Non-ECP Baseline
WY1
WY2
WY3
WY4
WY5
WY6
WY7
WY8
WY9
WY10
WY11
WY12
WY13
WY14


S9Auto
Total Phosphorus (µg/L)
EFA Baseline
50 ppb
Non-ECP Baseline
10 ppb
WY1 WY2 WY3 WY4 WY5 WY6 WY7 WY8 WY9 WY10 WY11 WY12 WY13 WY14
10/01/78 01/02/82 04/06/85 07/08/88 10/11/91 01/12/95 04/16/98 07/18/01 10/20/04 01/22/08 04/26/11


S9Auto
Total Phosphorus (µg/L)
50 ppb
10 ppb
Nodata
EFA Baseline
Non-ECP Baseline
WY1 WY2 WY3 WY4 WY5 WY6 WY7 WY8 WY9 WY10 WY11 WY12 WY13 WY14
10 42 40 40 30 42 40 25 19 18 16 15 15 33 28


S9A
Total Phosphorus (µg/L)
50 ppb
10 ppb
EFA Baseline
Non-ECP Baseline
WY1
WY2
WY3
WY4
WY5
WY6
WY7
WY8
WY9
WY10
WY11
WY12
WY13
WY14
10/01/78
01/02/82
04/06/85
07/08/88
10/11/91
01/12/95
04/16/98
07/18/01
10/20/04
01/22/08
04/26/11


S9A
Total Phosphorus (µg/L)
50 ppb
10 ppb
Nodata
24
51
51
51
51
52
52
52
52
EFA Baseline
Non-ECP Baseline
WY1
WY2
WY3
WY4
WY5
WY6
WY7
WY8
WY9
WY10
WY11
WY12
WY13
WY14


S9AAuto
Total Phosphorus (µg/L)
50 ppb
10 ppb
EFA Baseline
Non-ECP Baseline
WY1
WY2
WY3
WY4
WY5
WY6
WY7
WY8
WY9
WY10
WY11
WY12
WY13
WY14
10/01/78
01/02/82
04/06/85
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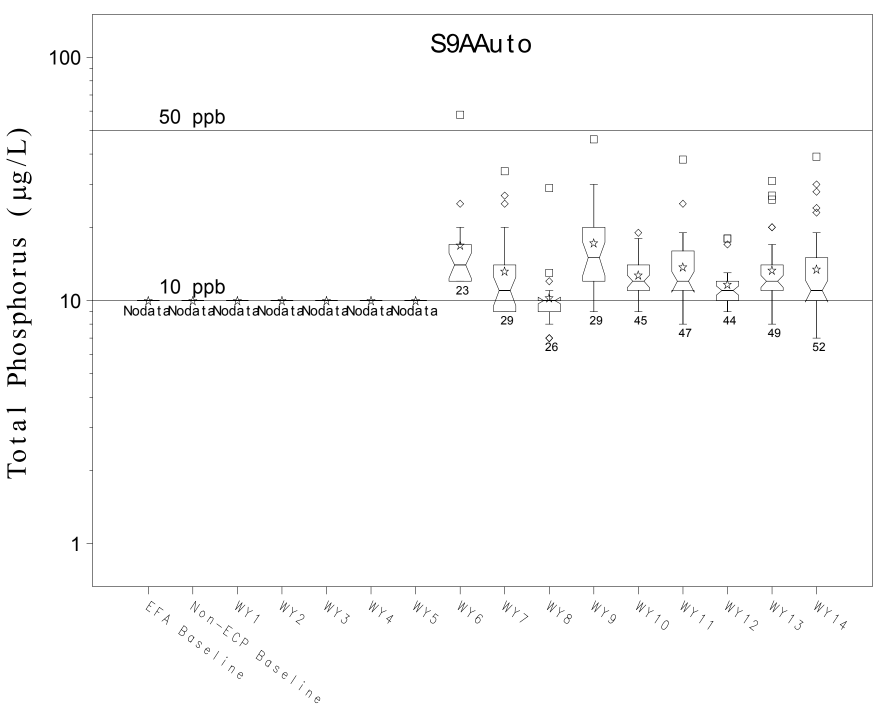
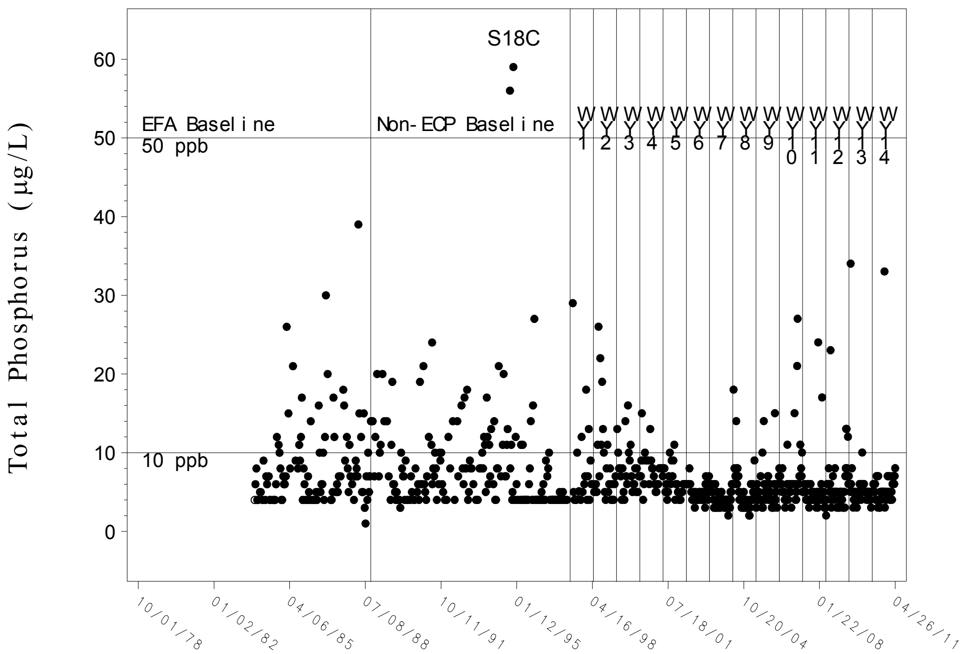
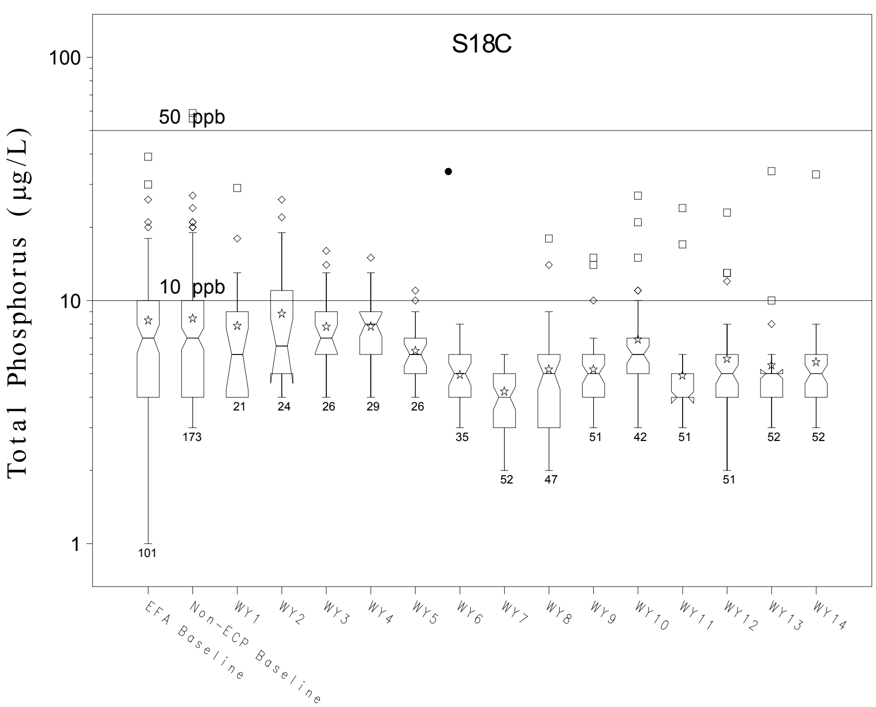
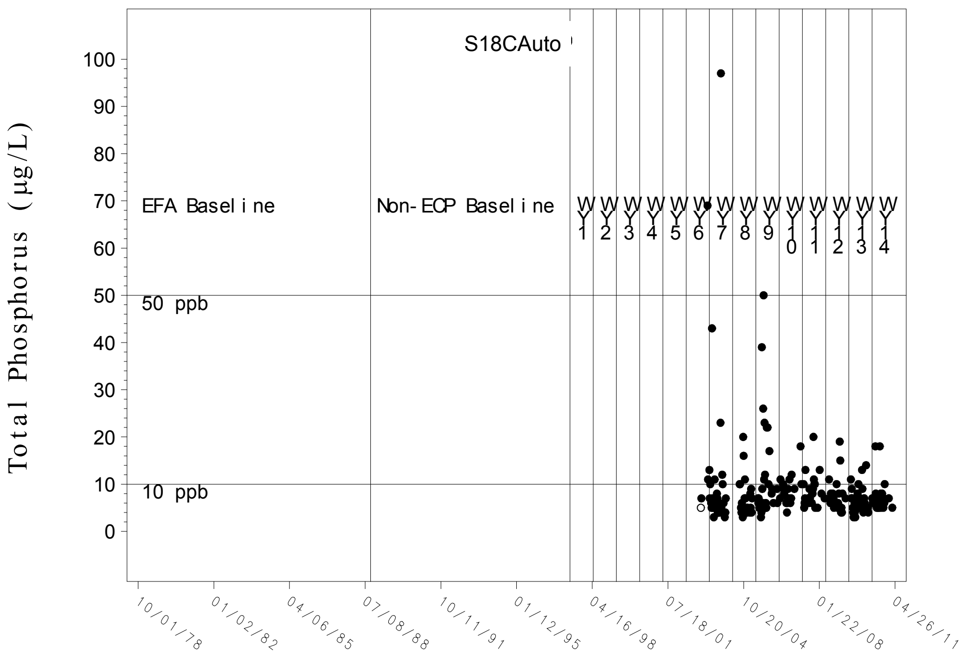
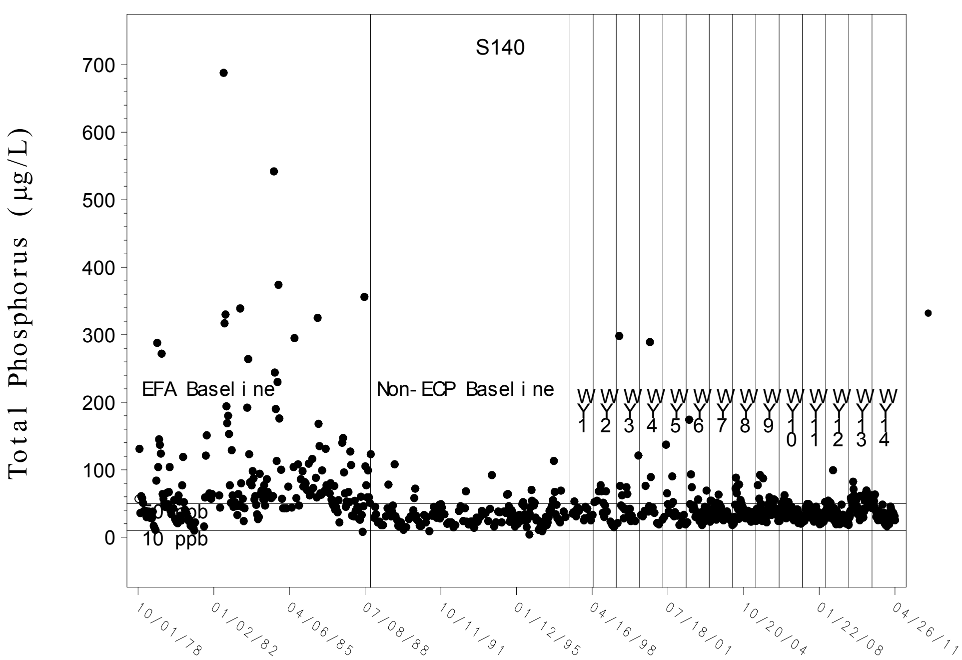
01/22/08
04/26/11

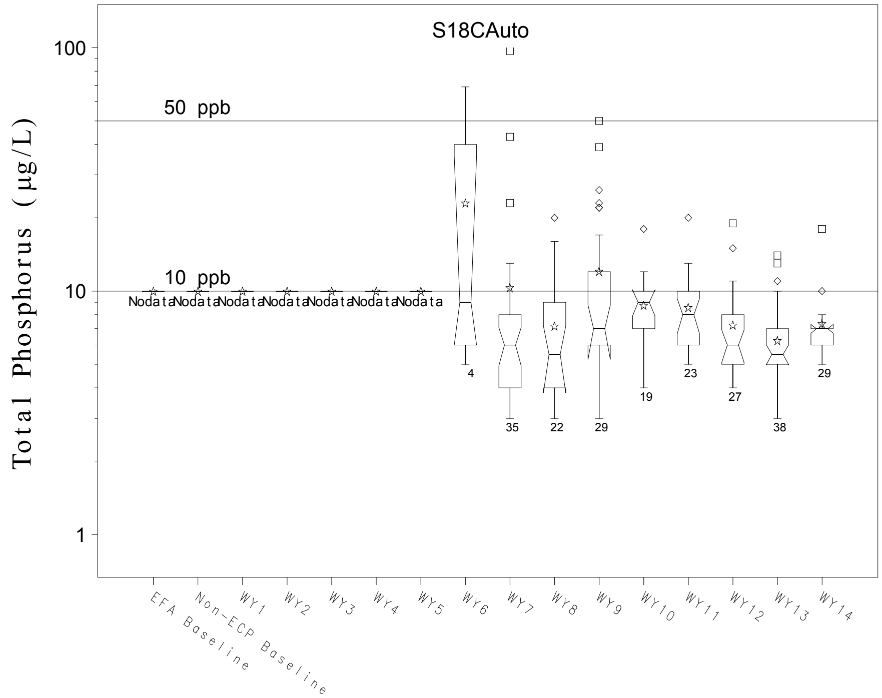

S9AAuto
Total Phosphorus (µg/L)
50 ppb
10 ppb
Nodata Nodata Nodata Nodata Nodata Nodata Nodata
23
29
26
29
45
47
44
49
52
EFA Baseline
Non-ECP Baseline
WY1
WY2
WY3
WY4
WY5
WY6
WY7
WY8
WY9
WY10
WY11
WY12
WY13
WY14

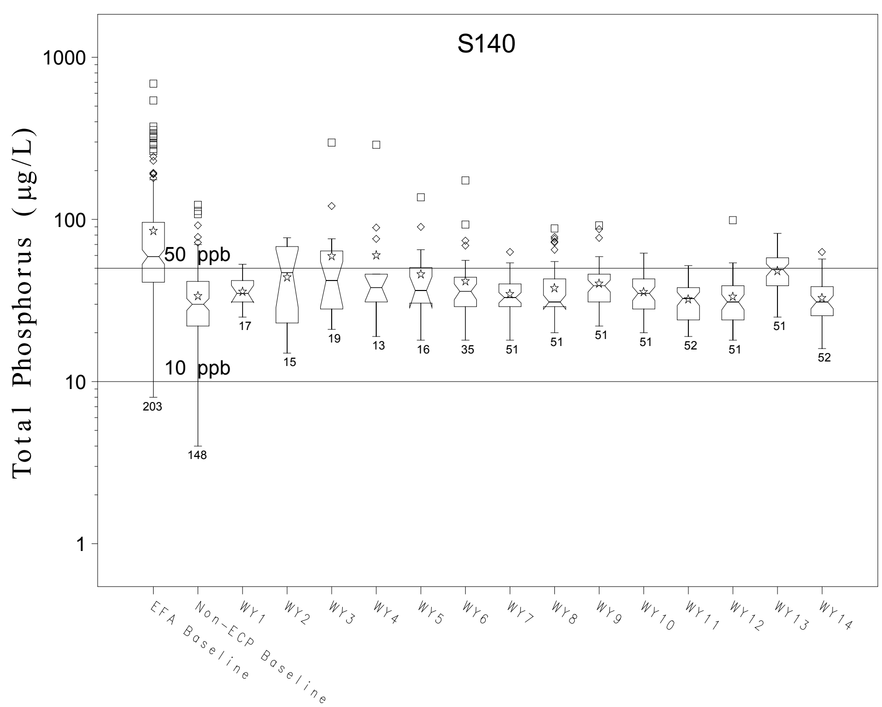

S18C
Total Phosphorus (µg/L)
EFA Baseline
50 ppb
Non-ECP Baseline
10 ppb
WY 1 WY 2 WY 3 WY 4 WY 5 WY 6 WY 7 WY 8 WY 9 WY 10 WY 11 WY 12 WY 13 WY 14
60
50
40
30
20
10
0
10/01/78
01/02/82
04/06/85
07/08/88
10/11/91
01/12/95
04/16/98
07/18/01
10/20/04
01/22/08
04/26/11


S18C
Total Phosphorus (µg/L)
100
10
1
50 ppb
10 ppb
101
173
21
24
26
29
26
35
52
47
51
42
51
51
52
52
EFA Baseline
Non-ECP Baseline
WY1
WY2
WY3
WY4
WY5
WY6
WY7
WY8
WY9
WY10
WY11
WY12
WY13
WY14


S18CAuto
Total Phosphorus (µg/L)
EFA Baseline
Non-ECP Baseline
WY1 WY2 WY3 WY4 WY5 WY6 WY7 WY8 WY9 WY10 WY11 WY12 WY13 WY14
50 ppb
10 ppb
10/01/78 01/02/82 04/06/85 07/08/88 10/11/91 01/12/95 04/16/98 07/18/01 10/20/04 01/22/08 04/26/11


S140
Total Phosphorus (µg/L)
EFA Baseline
Non-ECP Baseline
WY1 WY2 WY3 WY4 WY5 WY6 WY7 WY8 WY9 WY10 WY11 WY12 WY13 WY14
50 ppb
10 ppb
10/01/78 01/02/82 04/06/85 07/08/88 10/11/91 01/12/95 04/16/98 07/18/01 10/20/04 01/22/08 04/26/11


S18CAuto
Total Phosphorus (µg/L)
50 ppb
10 ppb
Nodata
EFA Baseline
Non-ECP Baseline
WY1
WY2
WY3
WY4
WY5
WY6
WY7
WY8
WY9
WY10
WY11
WY12
WY13
WY14


S140
Total Phosphorus (µg/L)
50 ppb
10 ppb
EFA Baseline
Non-ECP Baseline
WY1
WY2
WY3
WY4
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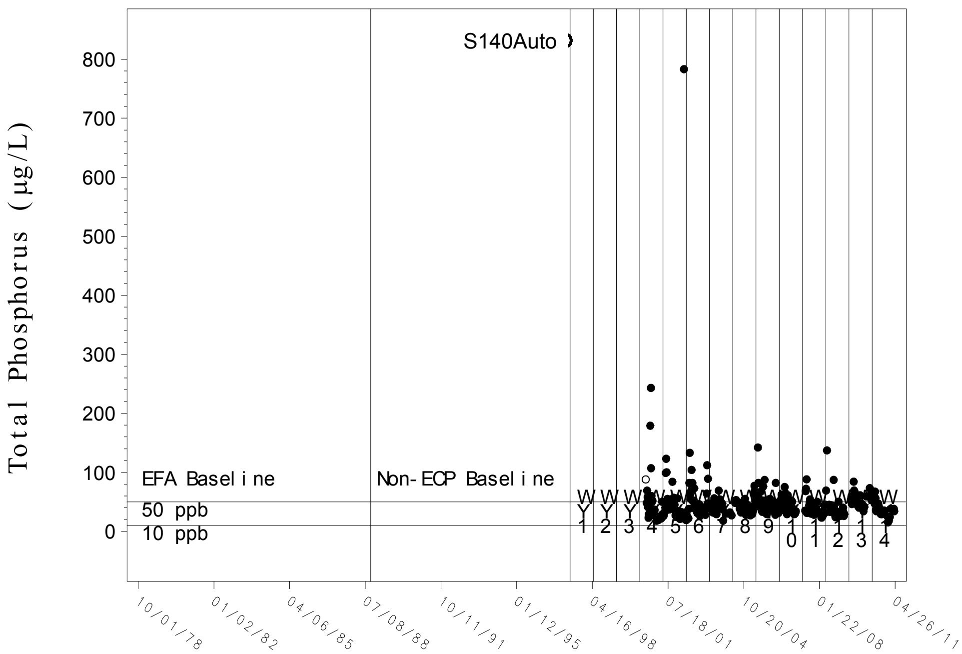
WY12
WY13
WY14


S140Auto
Total Phosphorus (µg/L)
EFA Baseline
Non-ECP Baseline
50 ppb
10 ppb
10/01/78
01/02/82
04/06/85
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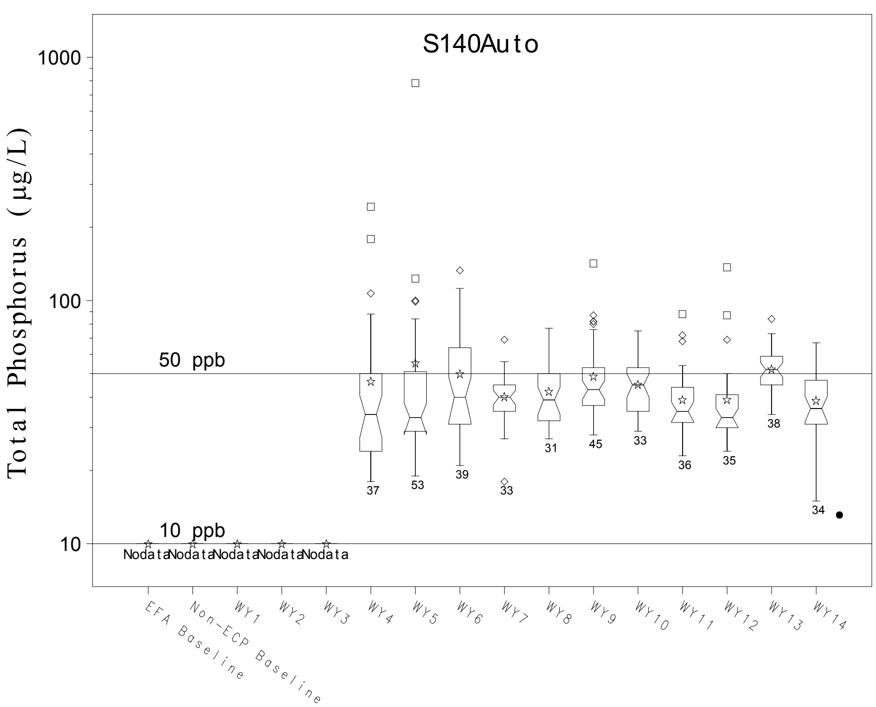
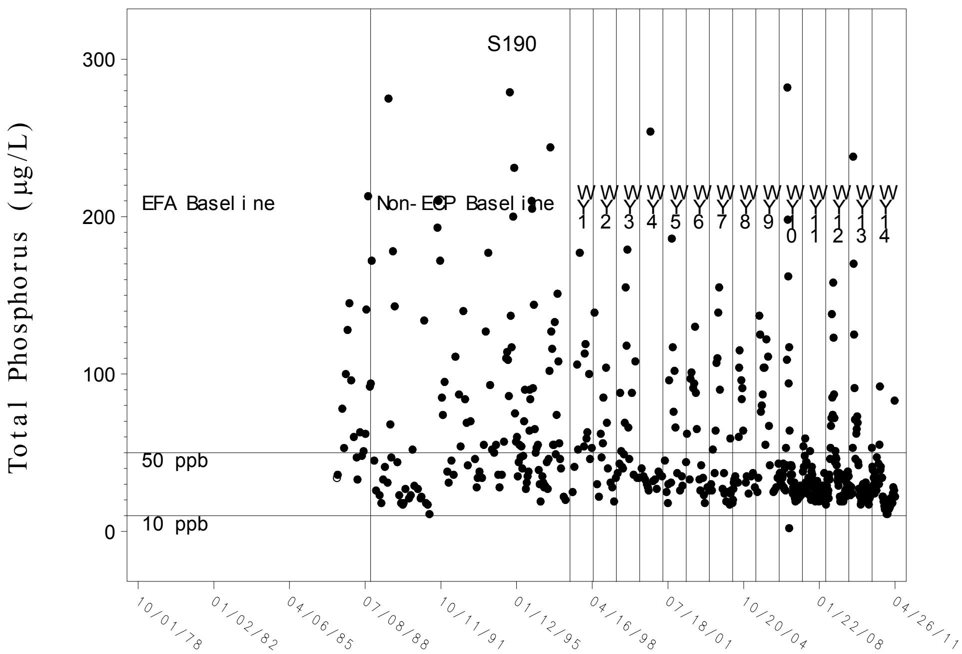
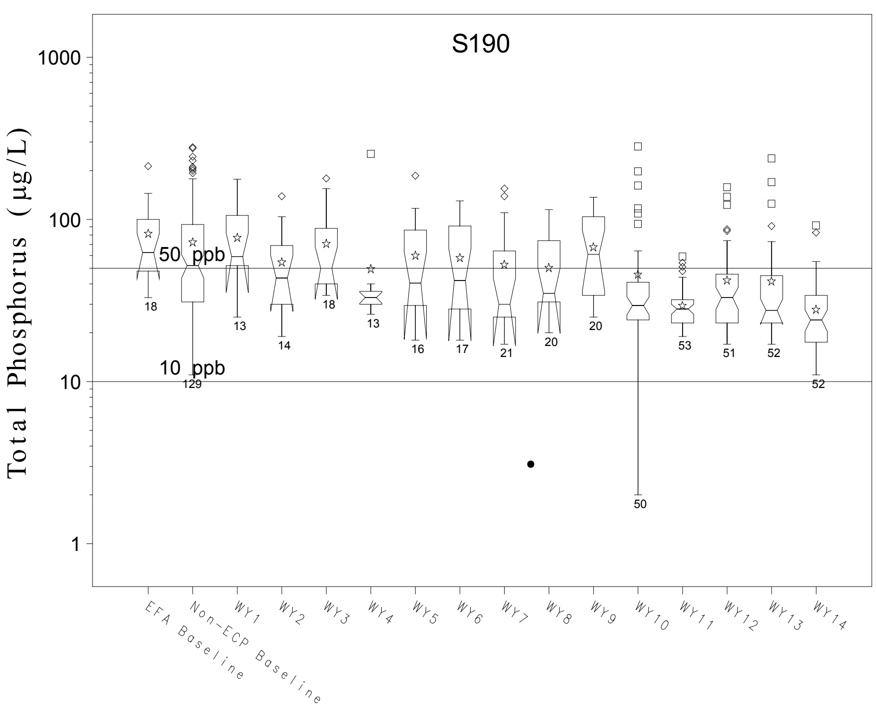
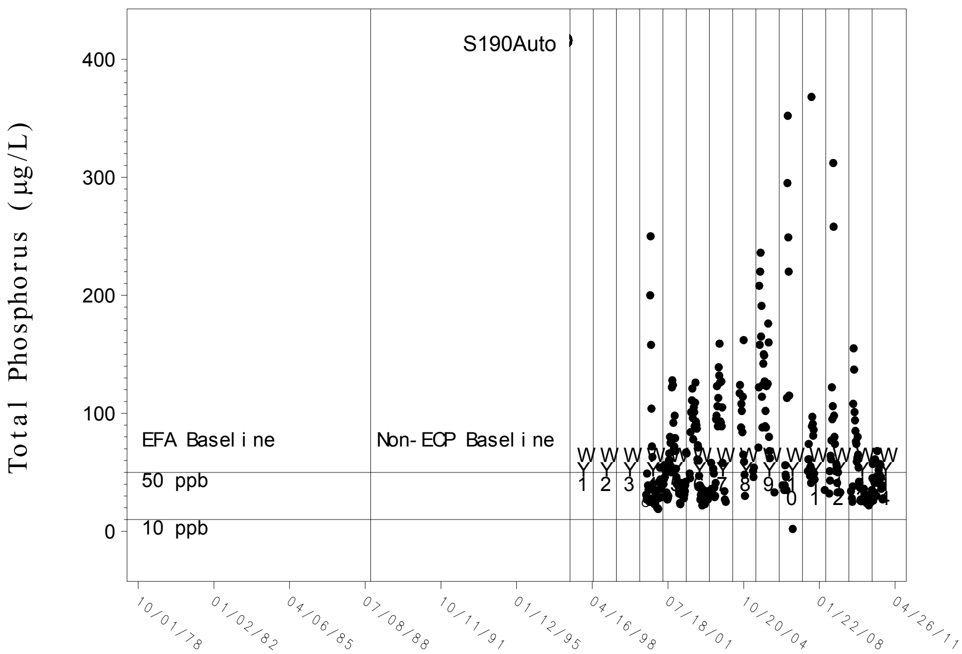
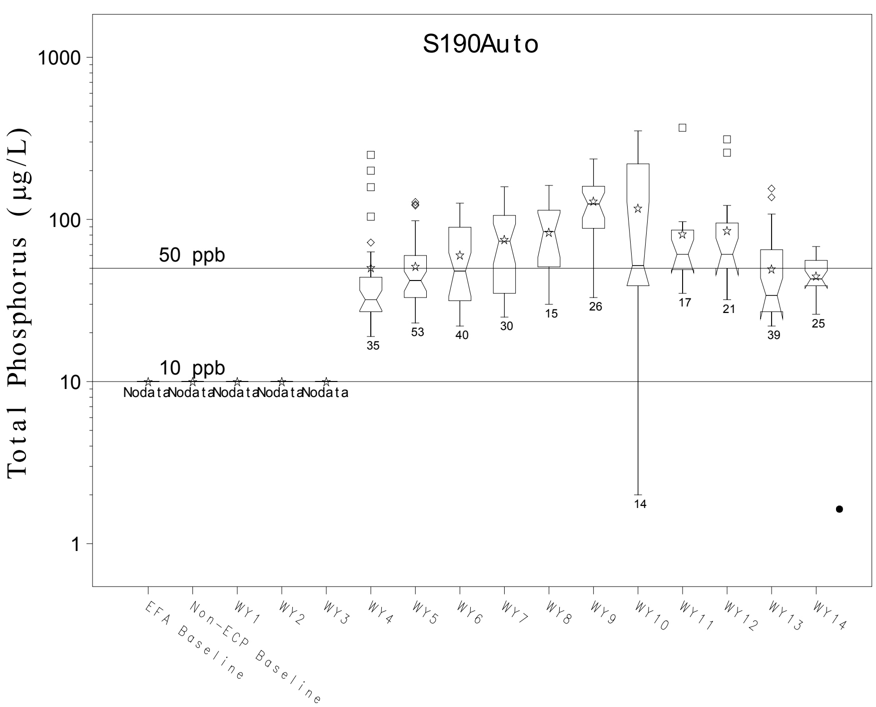
01/22/08
04/26/11

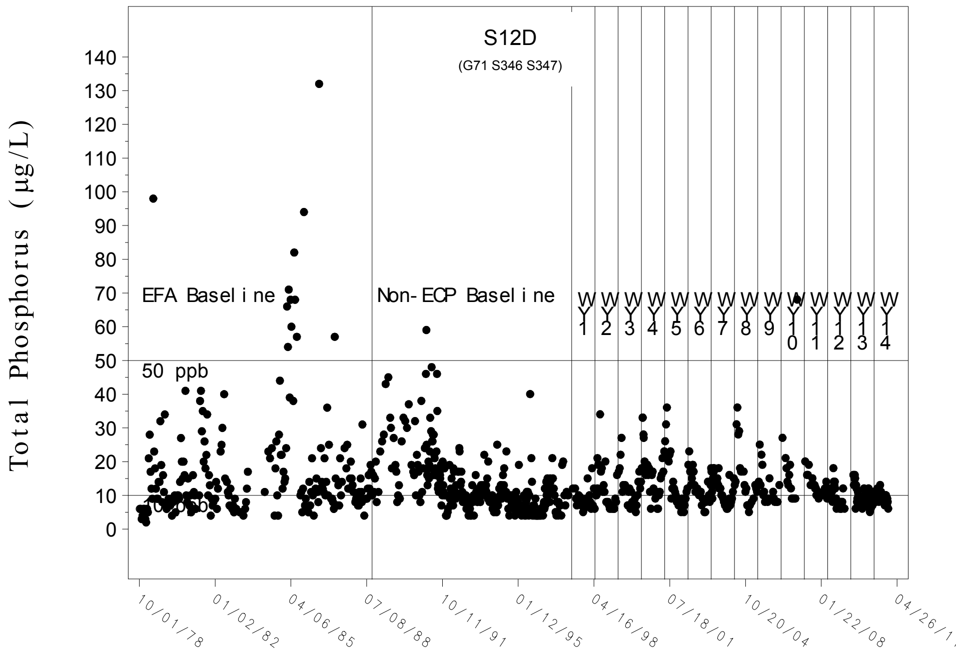

S140Auto
Total Phosphorus (µg/L)
50 ppb
10 ppb
Nodata
EFA Baseline
Non-ECP Baseline
WY1
WY2
WY3
WY4
WY5
WY6
WY7
WY8
WY9
WY10
WY11
WY12
WY13
WY14

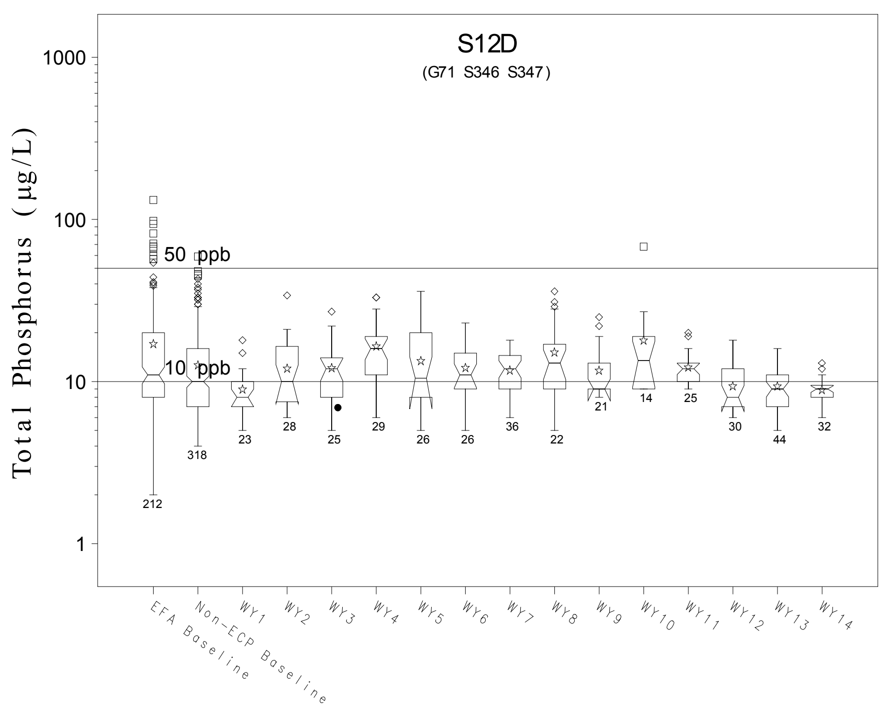

S190
Total Phosphorus (µg/L)
EFA Baseline
Non-ECP Baseline
50 ppb
10 ppb
WY1 WY2 WY3 WY4 WY5 WY6 WY7 WY8 WY9 WY10 WY11 WY12 WY13 WY14
10/01/78
01/02/82
04/06/85
07/08/88
10/11/91
01/12/95
04/16/98
07/18/01
10/20/04
01/22/08
04/26/11

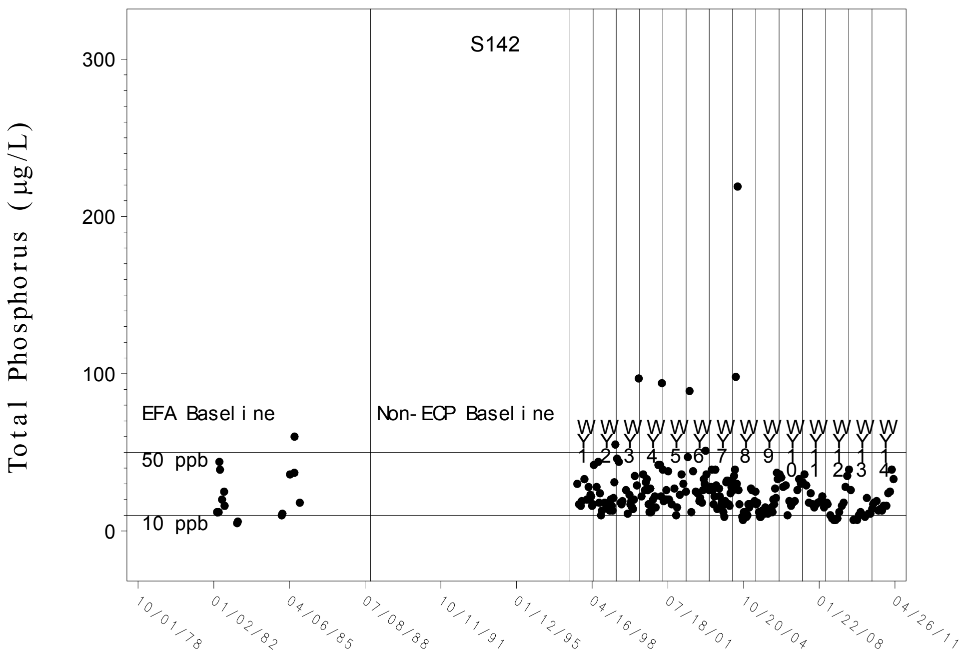

S190
Total Phosphorus (µg/L)
50 ppb
10 ppb
EFA Baseline
Non-ECP Baseline
WY1
WY2
WY3
WY4
WY5
WY6
WY7
WY8
WY9
WY10
WY11
WY12
WY13
WY14

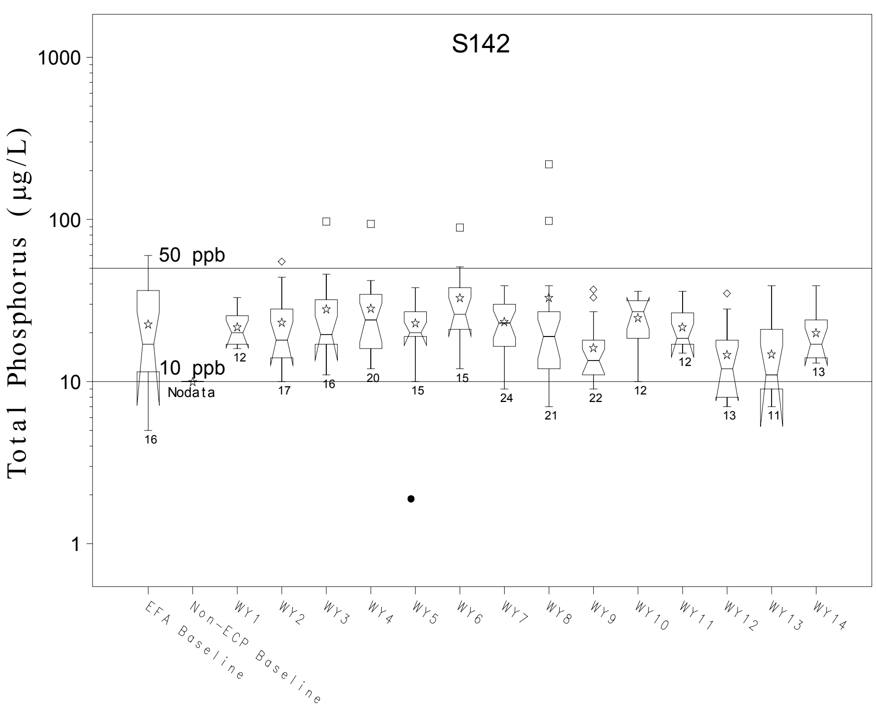

S190Auto
Total Phosphorus (µg/L)
EFA Baseline
Non-ECP Baseline
50 ppb
10 ppb
10/01/78
01/02/82
04/06/85
07/08/88
10/11/91
01/12/95
04/16/98
07/18/01
10/20/04
01/22/08
04/26/11

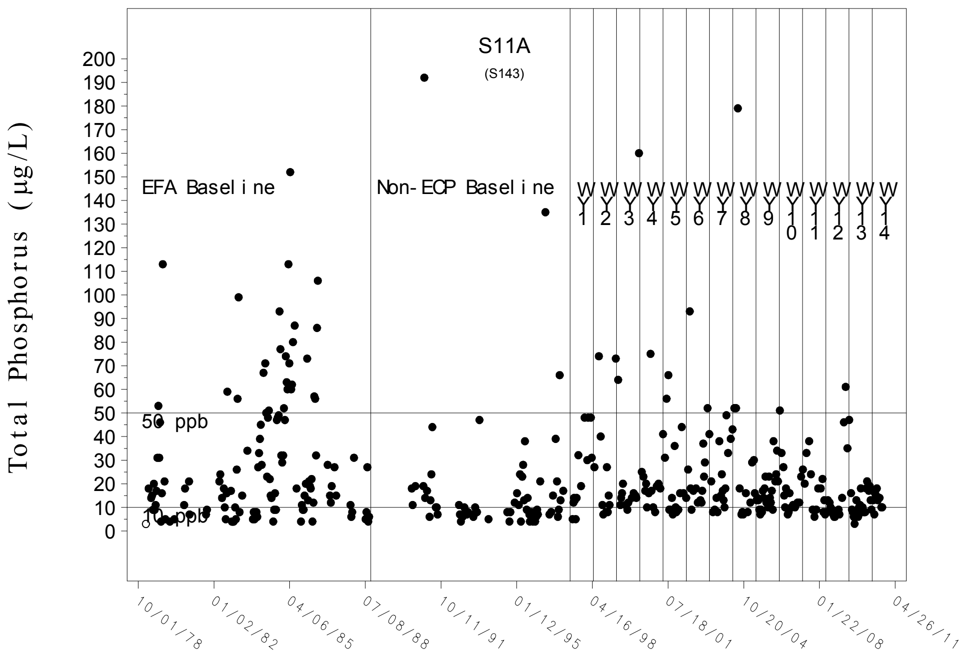

S190Auto
Total Phosphorus (µg/L)
50 ppb
10 ppb
Nodata Nodata Nodata Nodata Nodata
EFA Baseline
Non-ECP Baseline
WY1
WY2
WY3
WY4
WY5
WY6
WY7
WY8
WY9
WY10
WY11
WY12
WY13
WY14

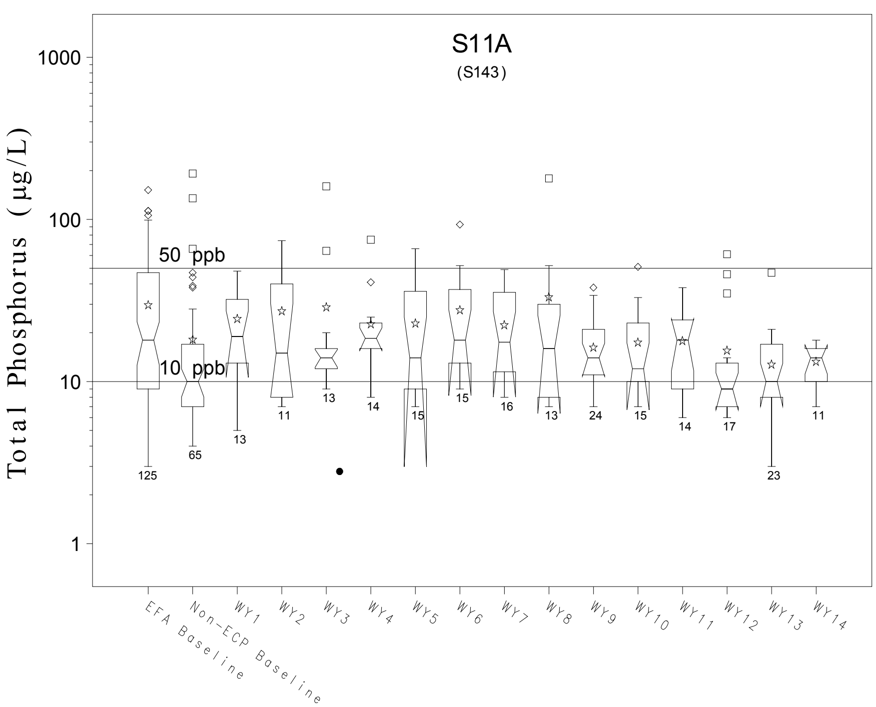

S12D
(G71 S346 S347)
Total Phosphorus (µg/L)
EFA Baseline
Non-ECP Baseline
50 ppb
10 ppb
WY1 WY2 WY3 WY4 WY5 WY6 WY7 WY8 WY9 WY10 WY11 WY12 WY13 WY14
10/01/78 01/02/82 04/06/85 07/08/88 10/11/91 01/12/95 04/16/98 07/18/01 10/20/04 01/22/08 04/26/11

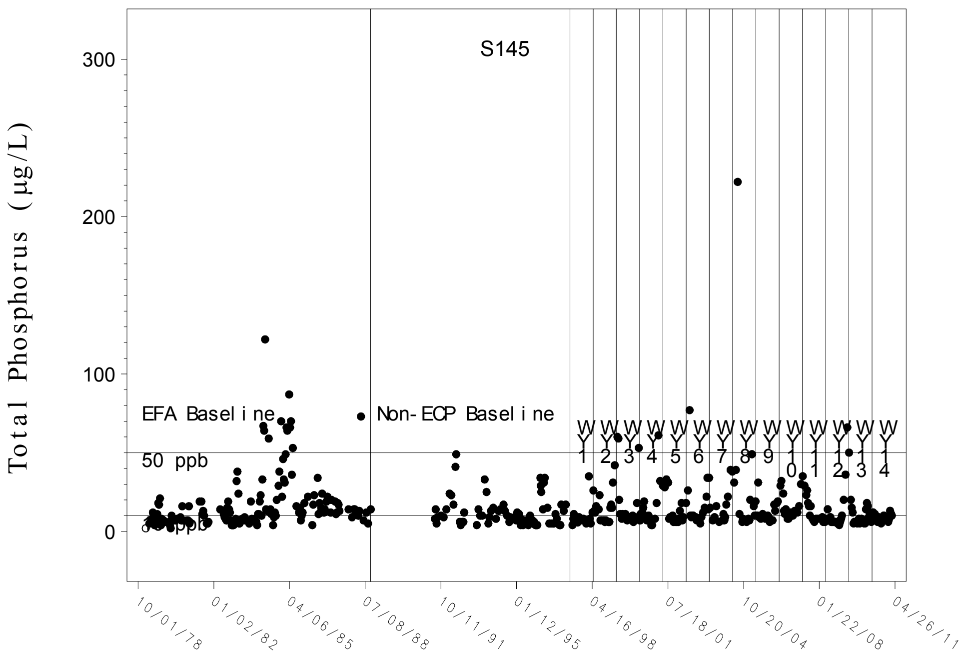

S12D
(G71 S346 S347)
Total Phosphorus (µg/L)
50 ppb
10 ppb
212 318 23 28 25 29 26 26 36 22 21 14 25 30 44 32
EFA Baseline
Non-ECP Baseline
WY1 WY2 WY3 WY4 WY5 WY6 WY7 WY8 WY9 WY10 WY11 WY12 WY13 WY14

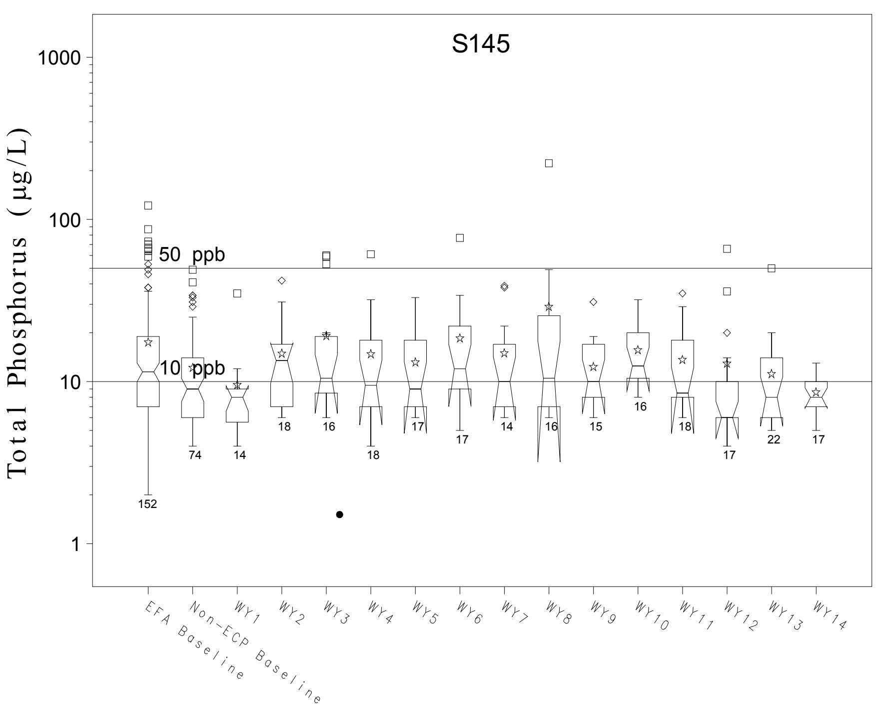

S142
Total Phosphorus (µg/L)
300
200
100
0
EFA Baseline
Non-ECP Baseline
50 ppb
10 ppb
WY1 WY2 WY3 WY4 WY5 WY6 WY7 WY8 WY9 WY10 WY11 WY12 WY13 WY14
10/01/78
01/02/82
04/06/85
07/08/88
10/11/91
01/12/95
04/16/98
07/18/01
10/20/04
01/22/08
04/26/11

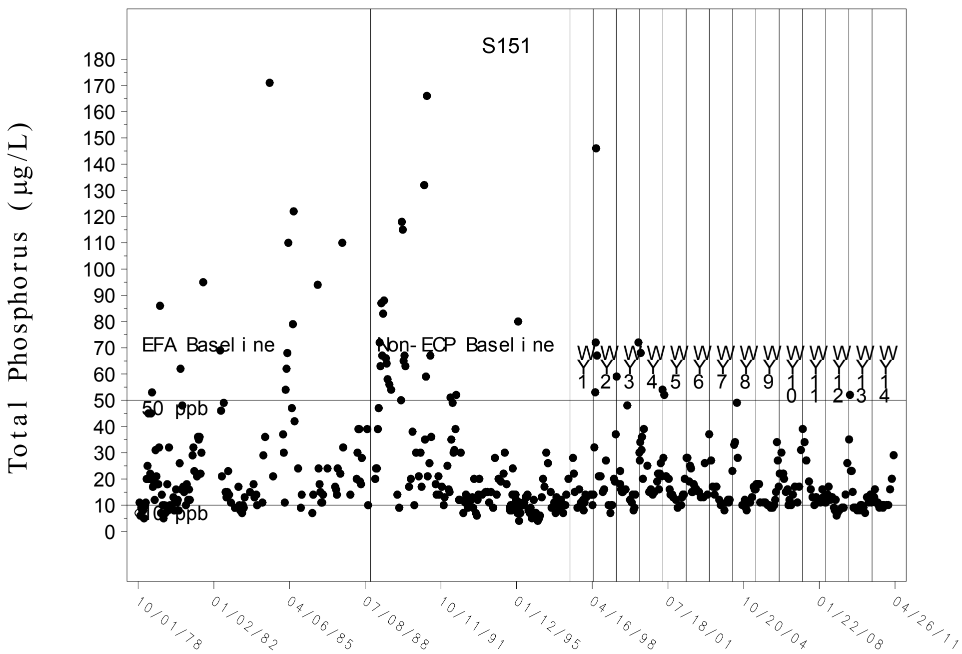

S142
Total Phosphorus (µg/L)
1000
100
10
1
50 ppb
10 ppb
Nodata
16 12 17 16 20 15 15 24 21 22 12 12 13 11 13
EFA Baseline
Non-ECP Baseline
WY1 WY2 WY3 WY4 WY5 WY6 WY7 WY8 WY9 WY10 WY11 WY12 WY13 WY14

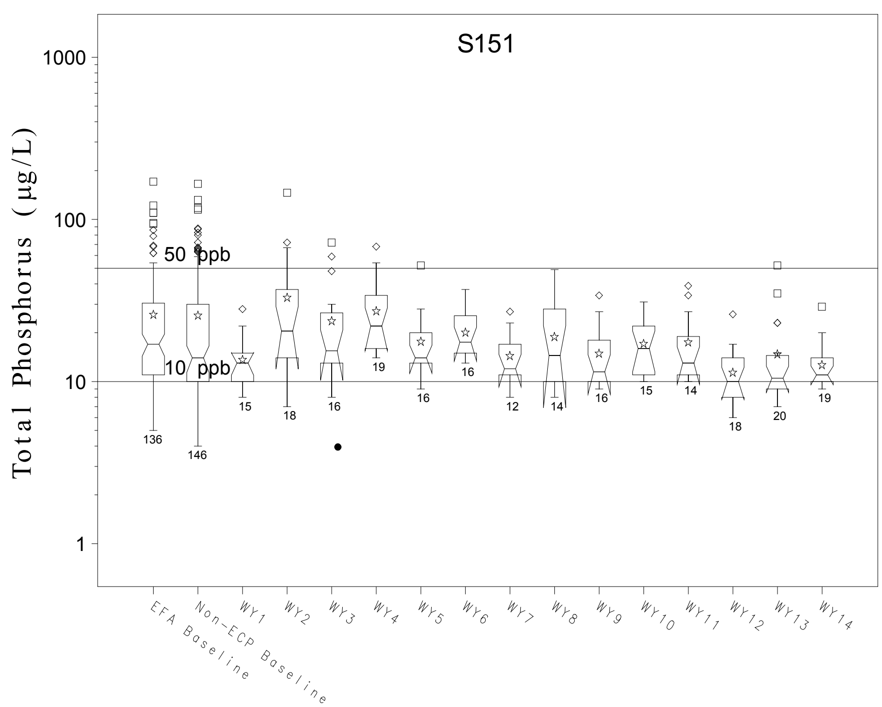

S11A
(S143)
Total Phosphorus (µg/L)
EFA Baseline
Non-ECP Baseline
50 ppb
10 ppb
WY1
WY2
WY3
WY4
WY5
WY6
WY7
WY8
WY9
WY10
WY11
WY12
WY13
WY14
10/01/78
01/02/82
04/06/85
07/08/88
10/11/91
01/12/95
04/16/98
07/18/01
10/20/04
01/22/08
04/26/11

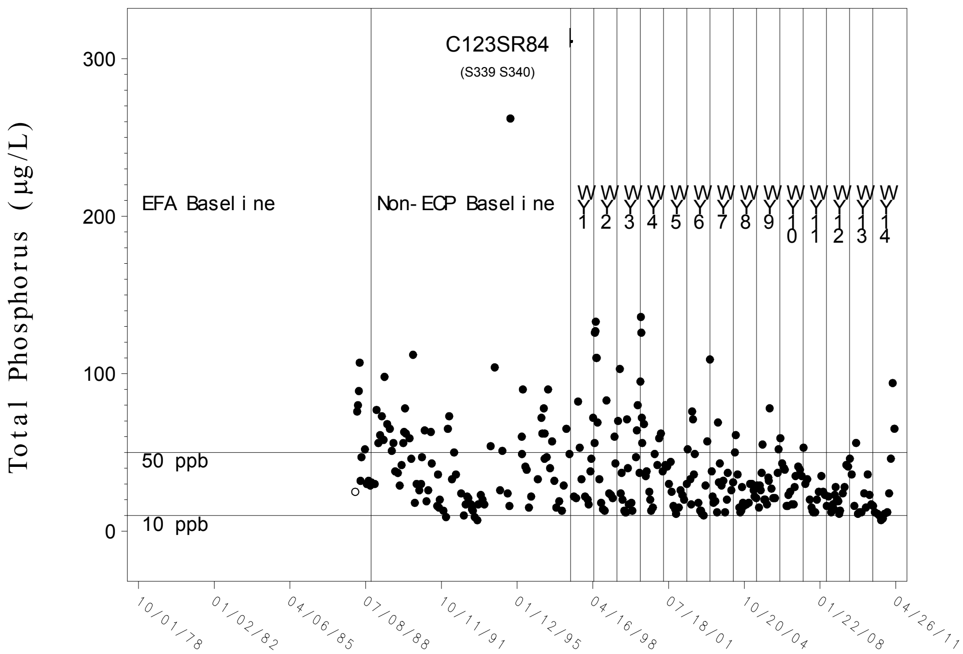

S11A
(S143)
Total Phosphorus (µg/L)
50 ppb
10 ppb
125
65
13
11
13
14
15
15
16
13
24
15
14
17
23
11
EFA Baseline
Non-ECP Baseline
WY1
WY2
WY3
WY4
WY5
WY6
WY7
WY8
WY9
WY10
WY11
WY12
WY13
WY14

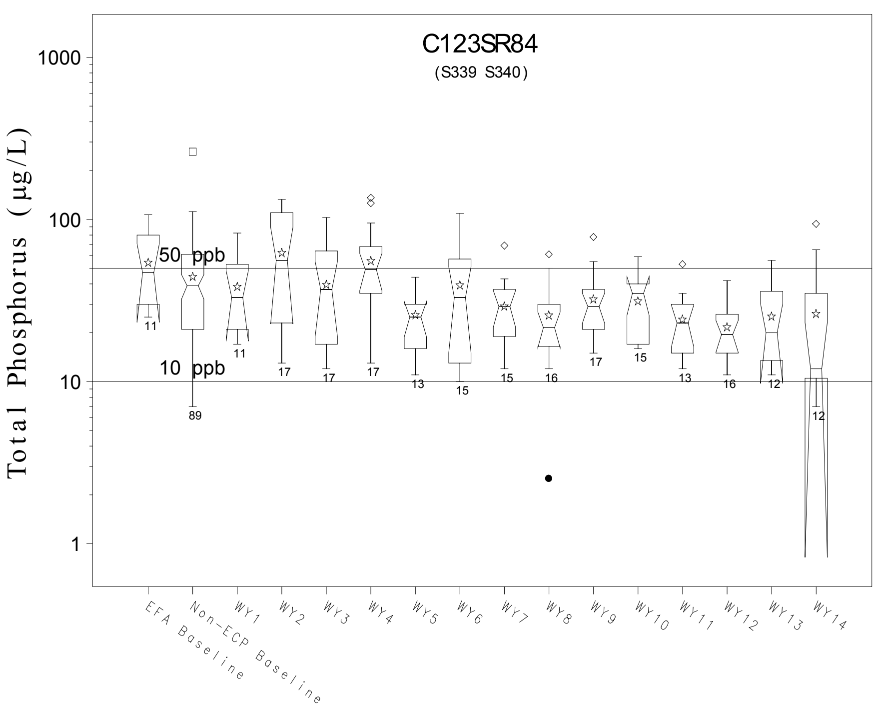

S145
Total Phosphorus (µg/L)
EFA Baseline
Non-ECP Baseline
50 ppb
10 ppb
300
200
100
0
WY1
WY2
WY3
WY4
WY5
WY6
WY7
WY8
WY9
WY10
WY11
WY12
WY13
WY14
10/01/78
01/02/82
04/06/85
07/08/88
10/11/91
01/12/95
04/16/98
07/18/01
10/20/04
01/22/08
04/26/11

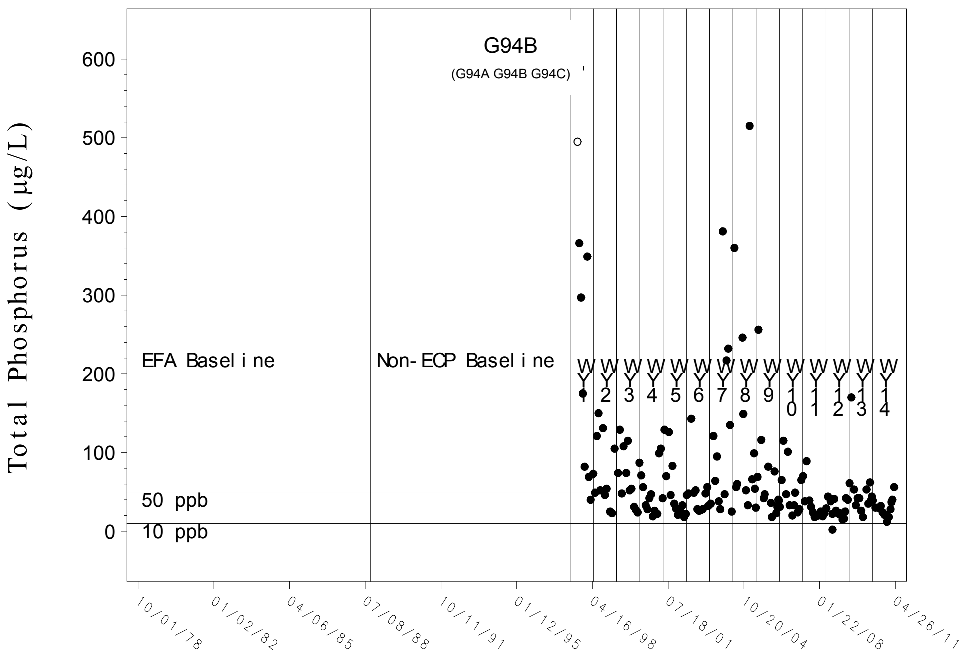

S145
Total Phosphorus (µg/L)
1000
100
10
1
50 ppb
10 ppb
152
74
14
18
16
18
17
17
14
16
15
16
18
17
22
17
EFA Baseline
Non-ECP Baseline
WY1
WY2
WY3
WY4
WY5
WY6
WY7
WY8
WY9
WY10
WY11
WY12
WY13
WY14

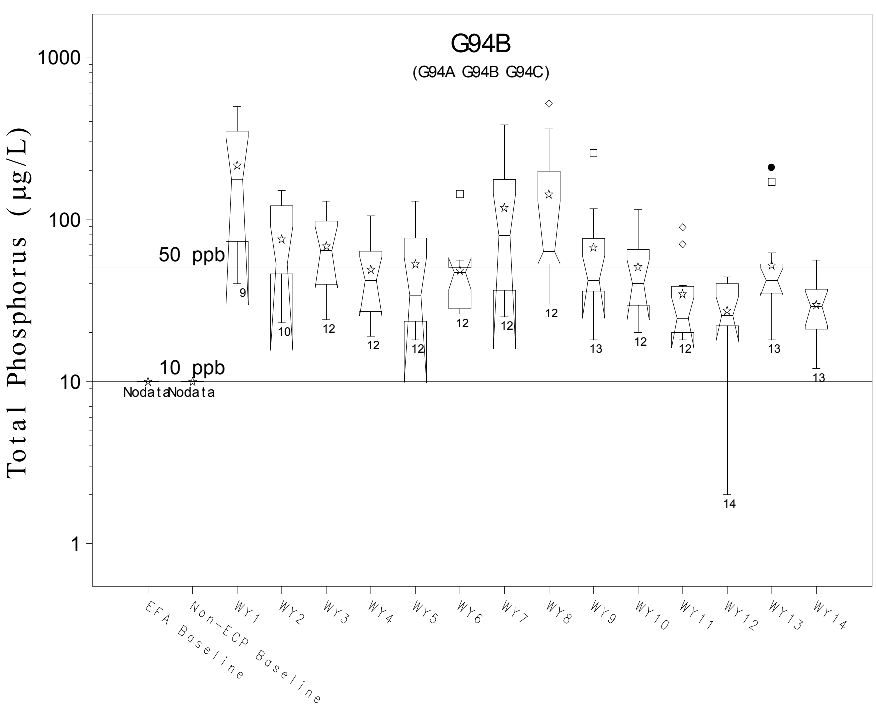

S151
Total Phosphorus (µg/L)
EFA Baseline
Non-ECP Baseline
50 ppb
10 ppb
10/01/78
01/02/82
04/06/85
07/08/88
10/11/91
01/12/95
04/16/98
07/18/01
10/20/04
01/22/08
04/26/11

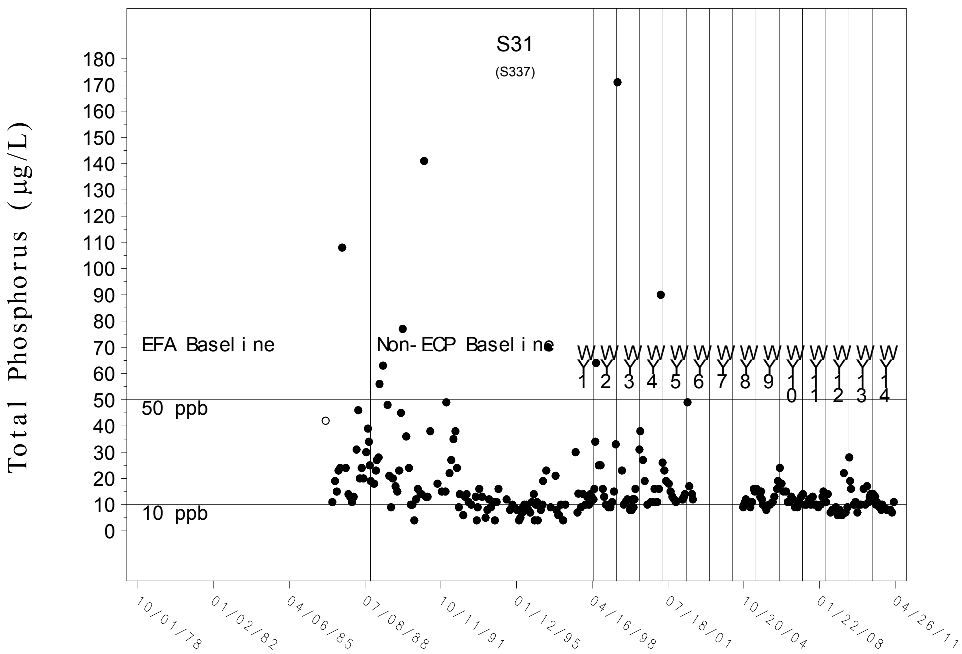

S151
Total Phosphorus (µg/L)
50 ppb
10 ppb
EFA Baseline
Non-ECP Baseline
WY1
WY2
WY3
WY4
WY5
WY6
WY7
WY8
WY9
WY10
WY11
WY12
WY13
WY14

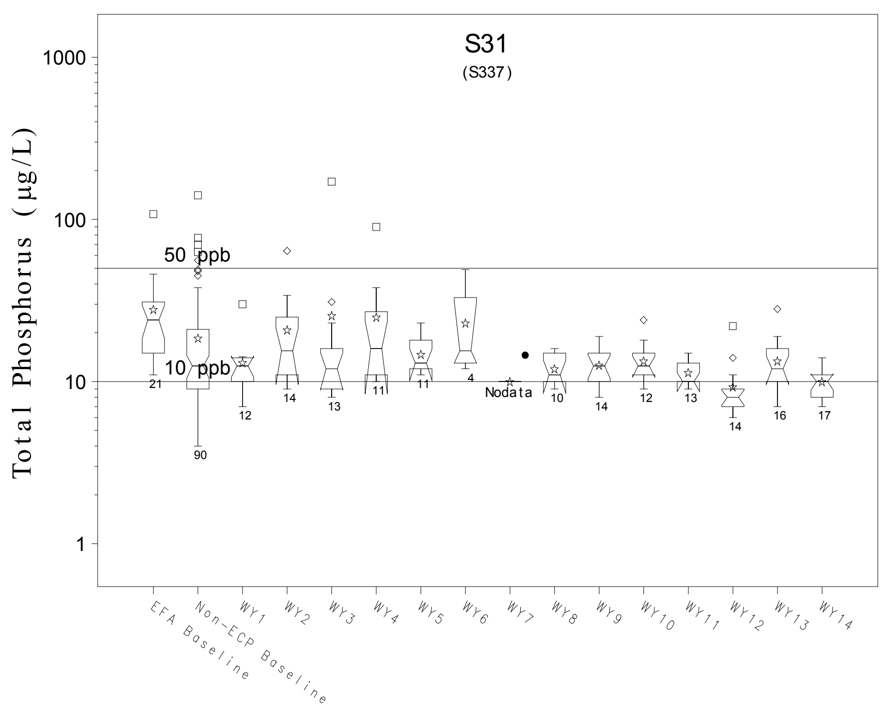

C123SR84
(S339 S340)
Total Phosphorus (µg/L)
EFA Baseline
Non-ECP Baseline
50 ppb
10 ppb
WY1 WY2 WY3 WY4 WY5 WY6 WY7 WY8 WY9 WY10 WY11 WY12 WY13 WY14
10/01/78 01/02/82 04/06/85 07/08/88 10/11/91 01/12/95 04/16/98 07/18/01 10/20/04 01/22/08 04/26/11

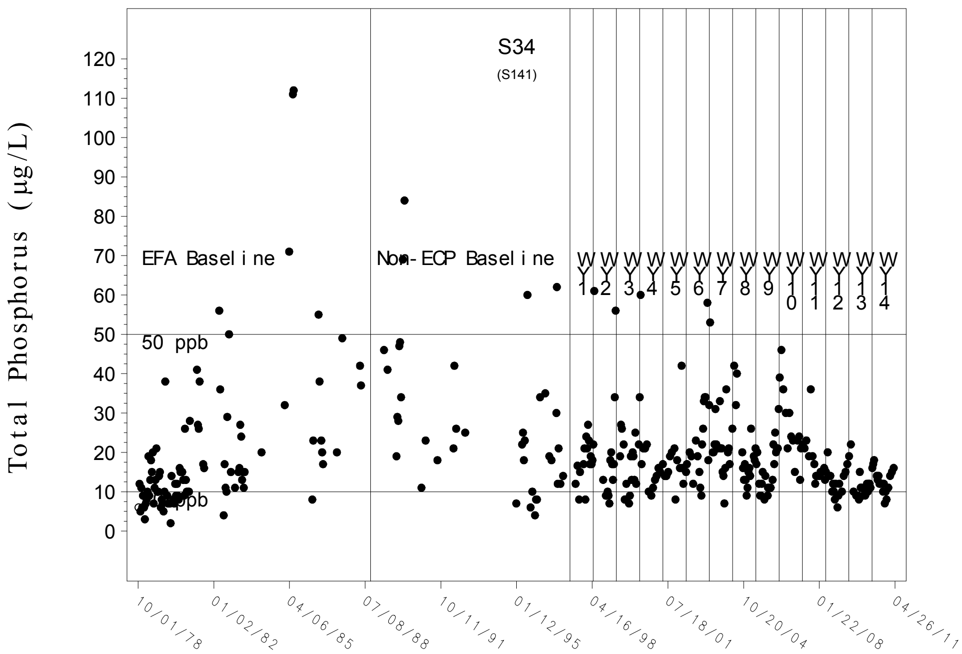

C123SR84
(S339 S340)
Total Phosphorus (µg/L)
50 ppb
10 ppb
EFA Baseline
Non-ECP Baseline
WY1 WY2 WY3 WY4 WY5 WY6 WY7 WY8 WY9 WY10 WY11 WY12 WY13 WY14

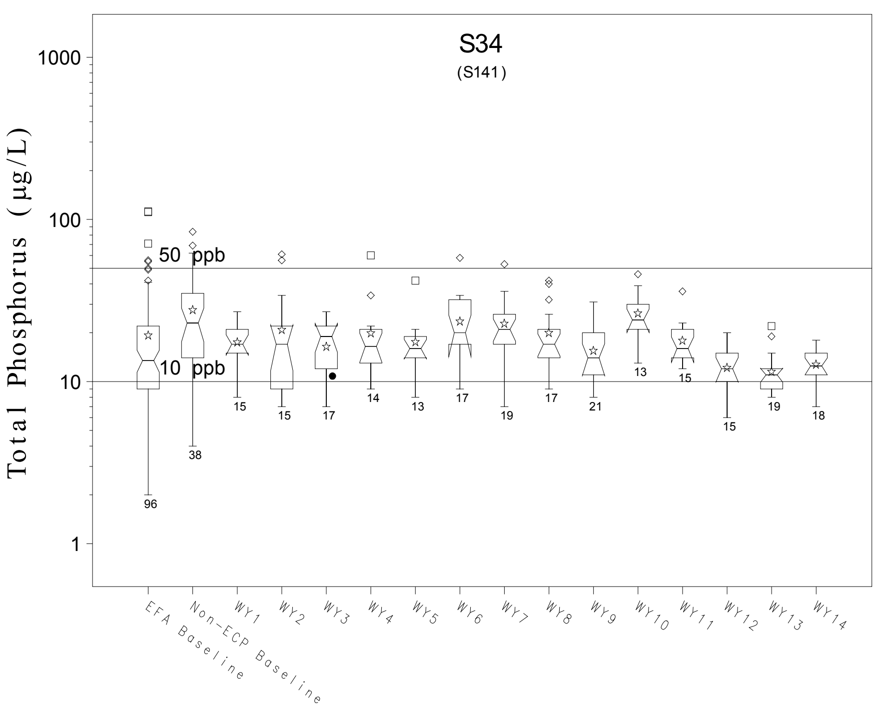

G94B
(G94A G94B G94C)
Total Phosphorus (µg/L)
EFA Baseline
Non-ECP Baseline
50 ppb
10 ppb
10/01/78
01/02/82
04/06/85
07/08/88
10/11/91
01/12/95
04/16/98
07/18/01
10/20/04
01/22/08
04/26/11

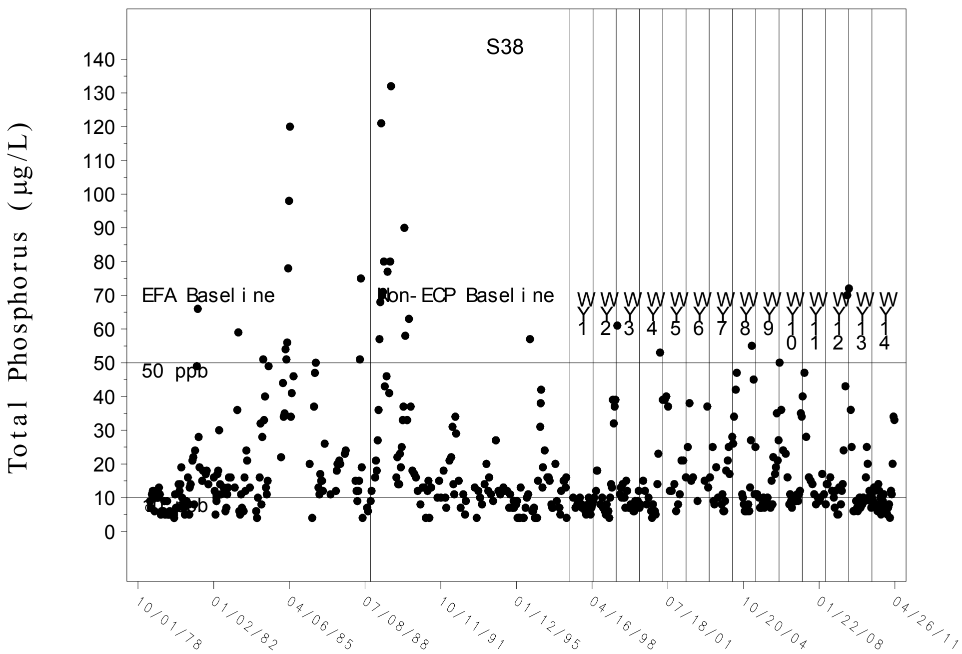

G94B
(G94A G94B G94C)
Total Phosphorus (µg/L)
50 ppb
10 ppb
Nodata
Nodata
EFA Baseline
Non-ECP Baseline
WY1
WY2
WY3
WY4
WY5
WY6
WY7
WY8
WY9
WY10
WY11
WY12
WY13
WY14

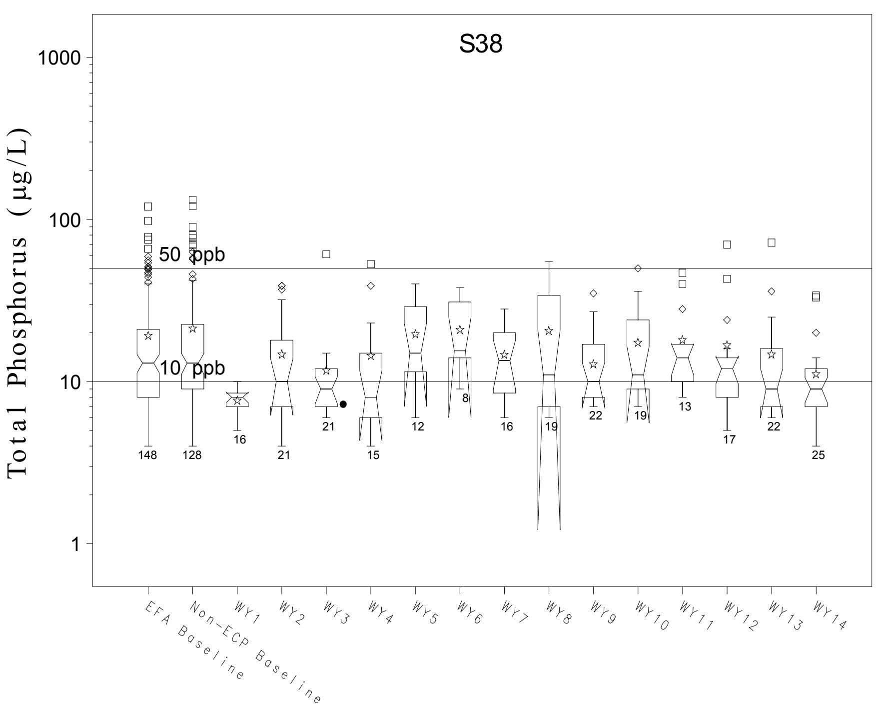

S31
(S337)
Total Phosphorus (µg/L)
EFA Baseline
Non-ECP Baseline
50 ppb
10 ppb
WY1 WY2 WY3 WY4 WY5 WY6 WY7 WY8 WY9 WY10 WY11 WY12 WY13 WY14
10/01/78
01/02/82
04/06/85
07/08/88
10/11/91
01/12/95
04/16/98
07/18/01
10/20/04
01/22/08
04/26/11

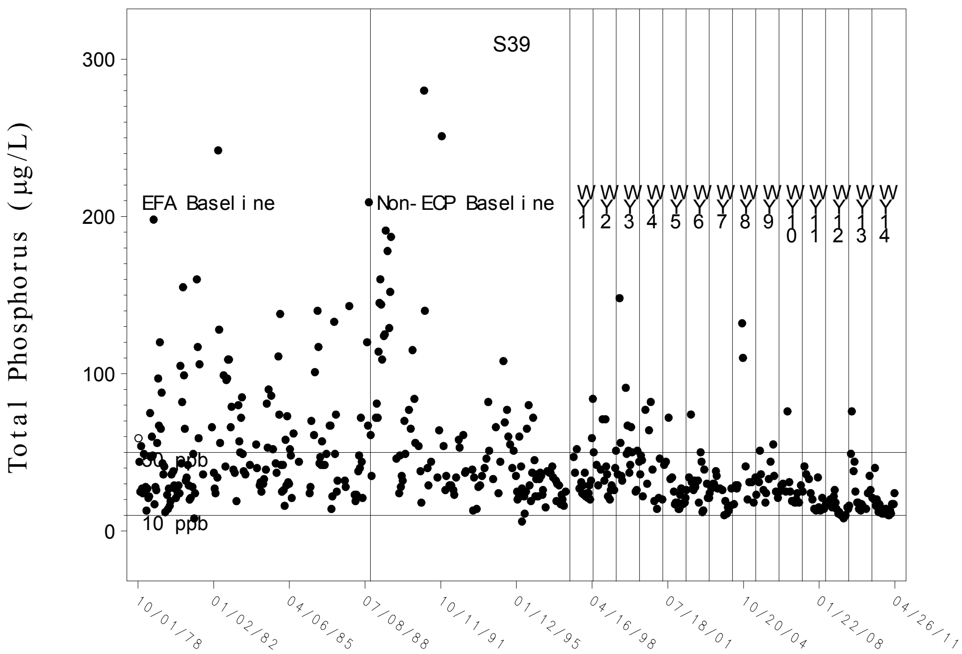

S31
(S337)
Total Phosphorus (µg/L)
50 ppb
10 ppb
Nodata
EFA Baseline
Non-ECP Baseline
WY1 WY2 WY3 WY4 WY5 WY6 WY7 WY8 WY9 WY10 WY11 WY12 WY13 WY14

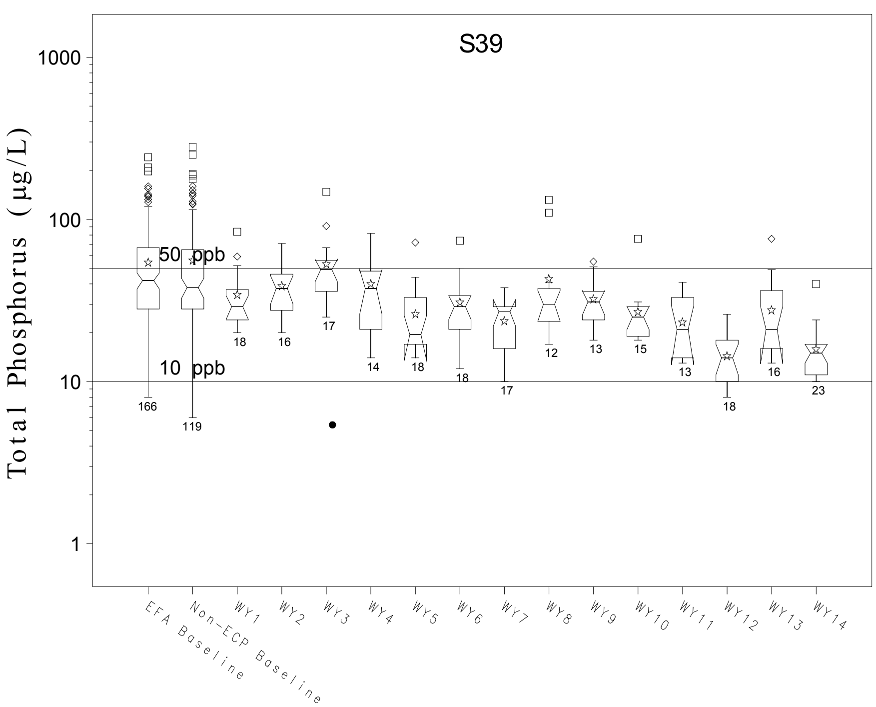

S34
(S141)
Total Phosphorus (µg/L)
EFA Baseline
Non-ECP Baseline
50 ppb
10 ppb
WY1
WY2
WY3
WY4
WY5
WY6
WY7
WY8
WY9
WY10
WY11
WY12
WY13
WY14
10/01/78
01/02/82
04/06/85
07/08/88
10/11/91
01/12/95
04/16/98
07/18/01
10/20/04
01/22/08
04/26/11

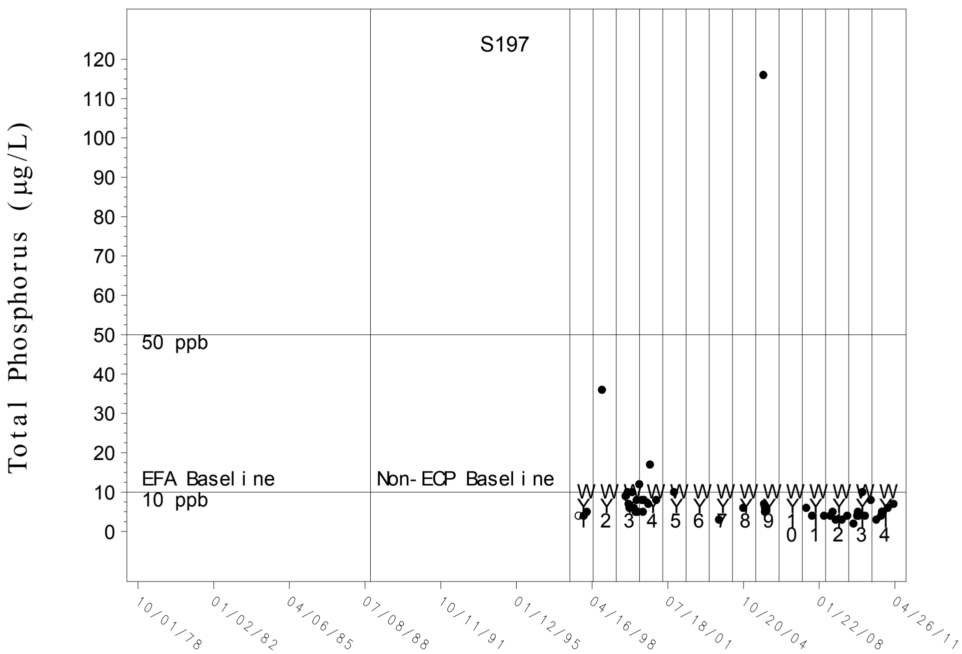

S34
(S141)
Total Phosphorus (µg/L)
50 ppb
10 ppb
EFA Baseline
Non-ECP Baseline
WY1
WY2
WY3
WY4
WY5
WY6
WY7
WY8
WY9
WY10
WY11
WY12
WY13
WY14

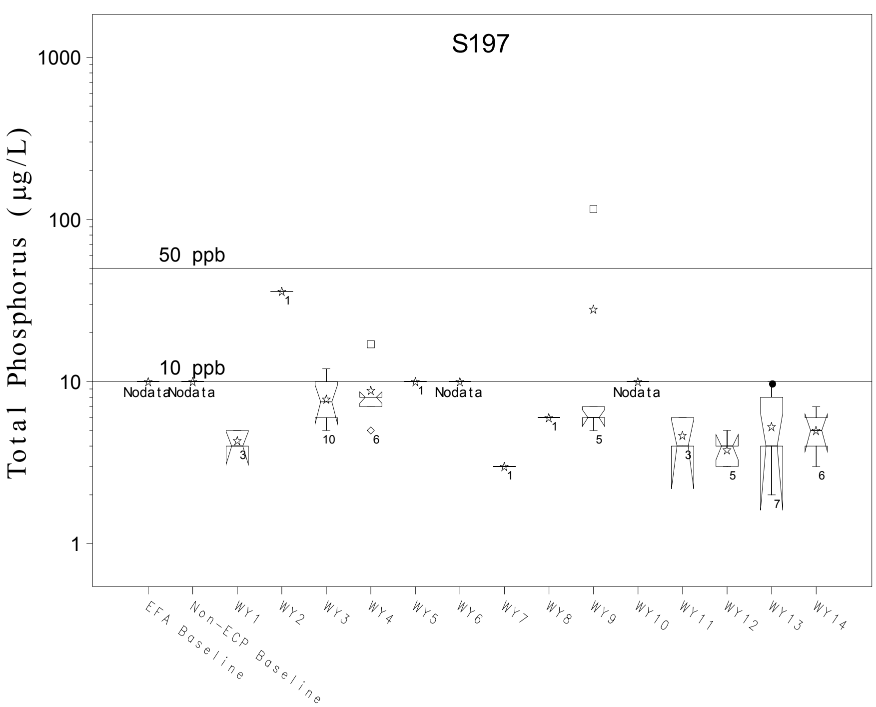

S38
Total Phosphorus (µg/L)
EFA Baseline
Non-ECP Baseline
50 ppb
10 ppb
WY1 WY2 WY3 WY4 WY5 WY6 WY7 WY8 WY9 WY10 WY11 WY12 WY13 WY14
10/01/78
01/02/82
04/06/85
07/08/88
10/11/91
01/12/95
04/16/98
07/18/01
10/20/04
01/22/08
04/26/11

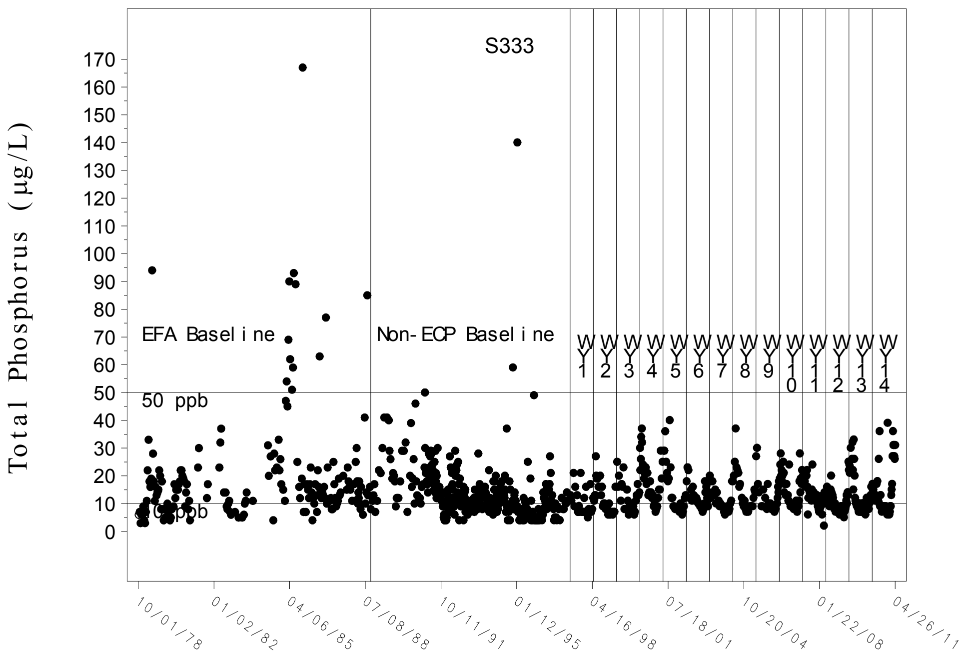

S38
Total Phosphorus (µg/L)
50 ppb
10 ppb
148 128 16 21 21 15 12 8 16 19 22 19 13 17 22 25
EFA Baseline
Non-ECP Baseline
WY1 WY2 WY3 WY4 WY5 WY6 WY7 WY8 WY9 WY10 WY11 WY12 WY13 WY14

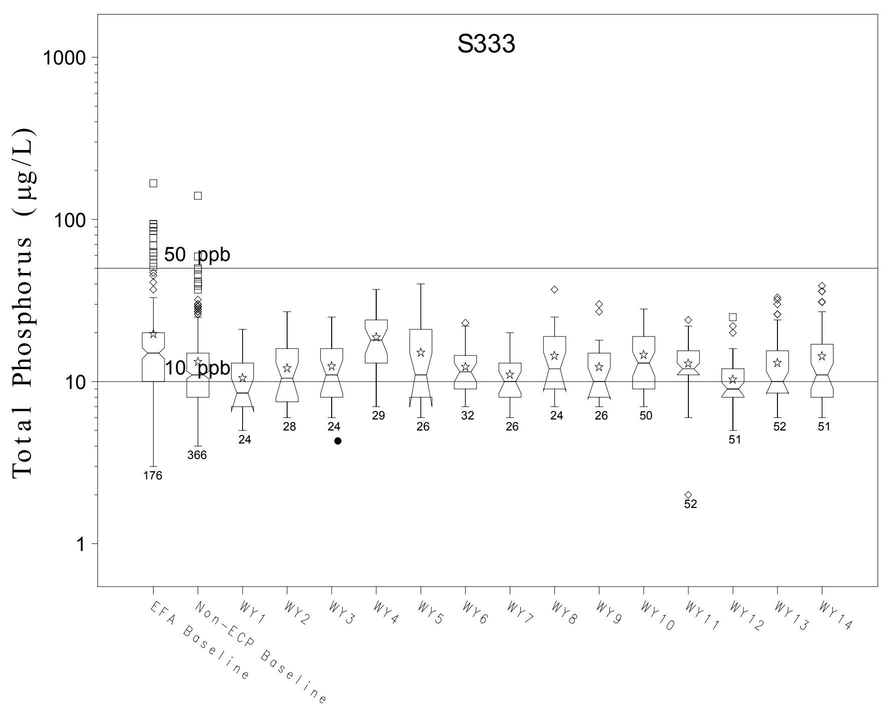

S39
Total Phosphorus (µg/L)
EFA Baseline
Non-ECP Baseline
50 ppb
10 ppb
10/01/78
01/02/82
04/06/85
07/08/88
10/11/91
01/12/95
04/16/98
07/18/01
10/20/04
01/22/08
04/26/11

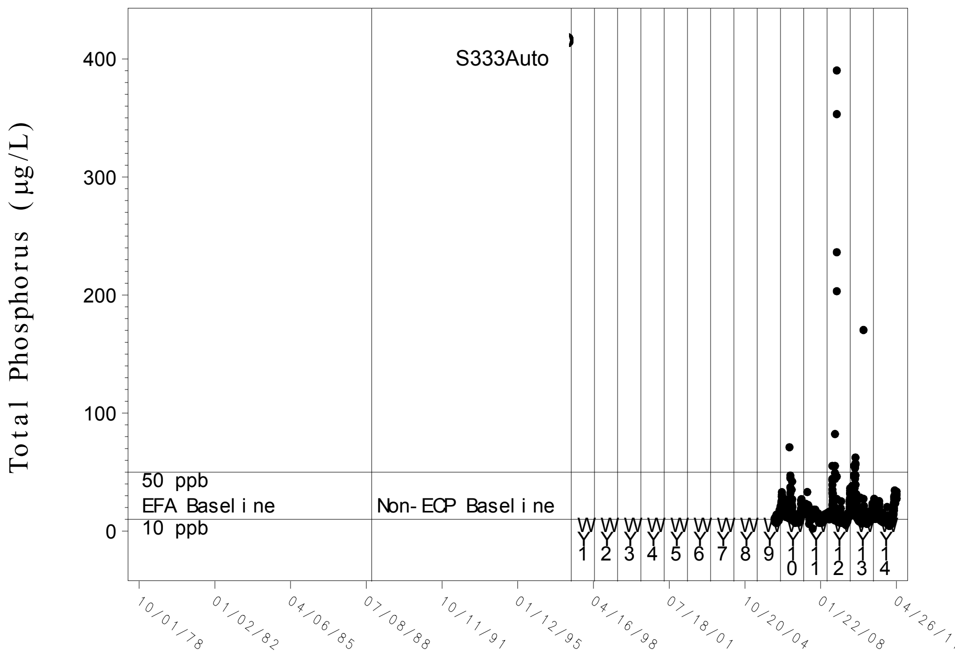

S39
Total Phosphorus (µg/L)
50 ppb
10 ppb
EFA Baseline
Non-ECP Baseline
WY1
WY2
WY3
WY4
WY5
WY6
WY7
WY8
WY9
WY10
WY11
WY12
WY13
WY14

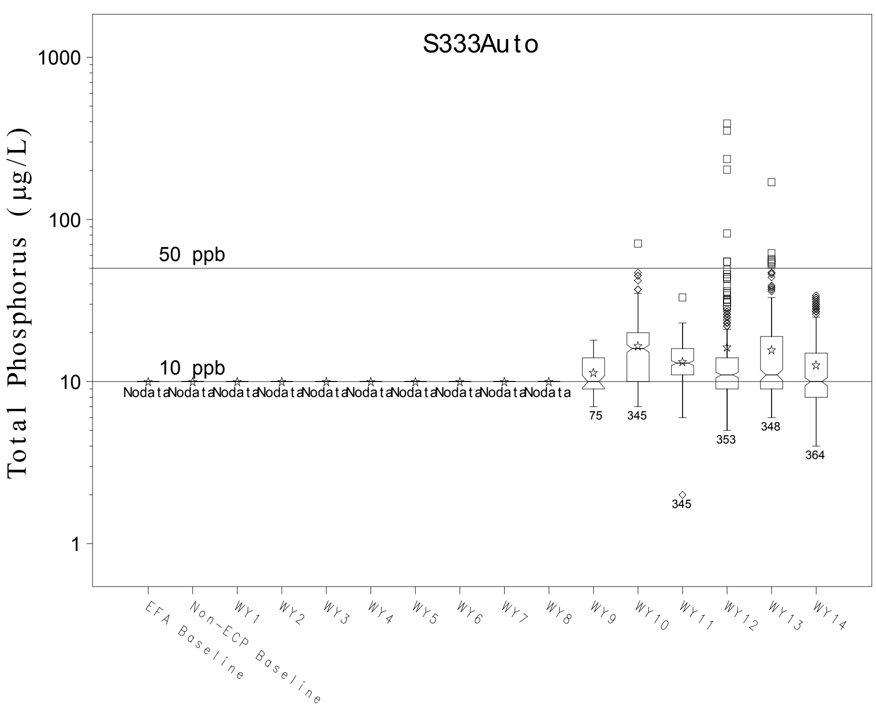

S197
Total Phosphorus (µg/L)
120
110
100
90
80
70
60
50
40
30
20
10
0
50 ppb
EFA Baseline
10 ppb
Non-ECP Baseline
10/01/78
01/02/82
04/06/85
07/08/88
10/11/91
01/12/95
04/16/98
07/18/01
10/20/04
01/22/08
04/26/11

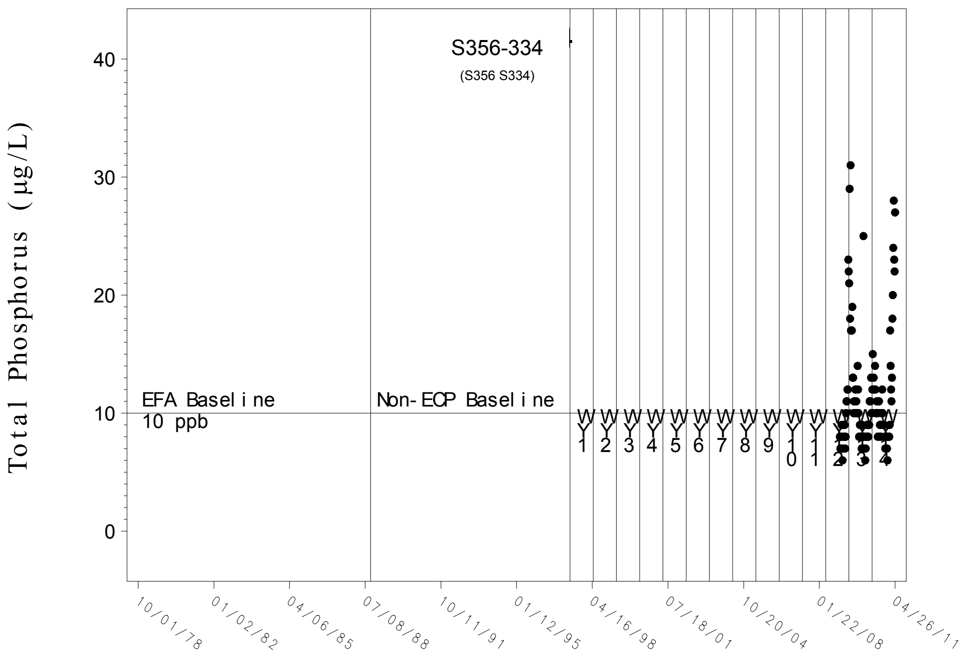

S197
Total Phosphorus (µg/L)
1000
100
10
1
50 ppb
10 ppb
Nodata
Nodata
Nodata
Nodata
EFA Baseline
Non-ECP Baseline
WY1
WY2
WY3
WY4
WY5
WY6
WY7
WY8
WY9
WY10
WY11
WY12
WY13
WY14

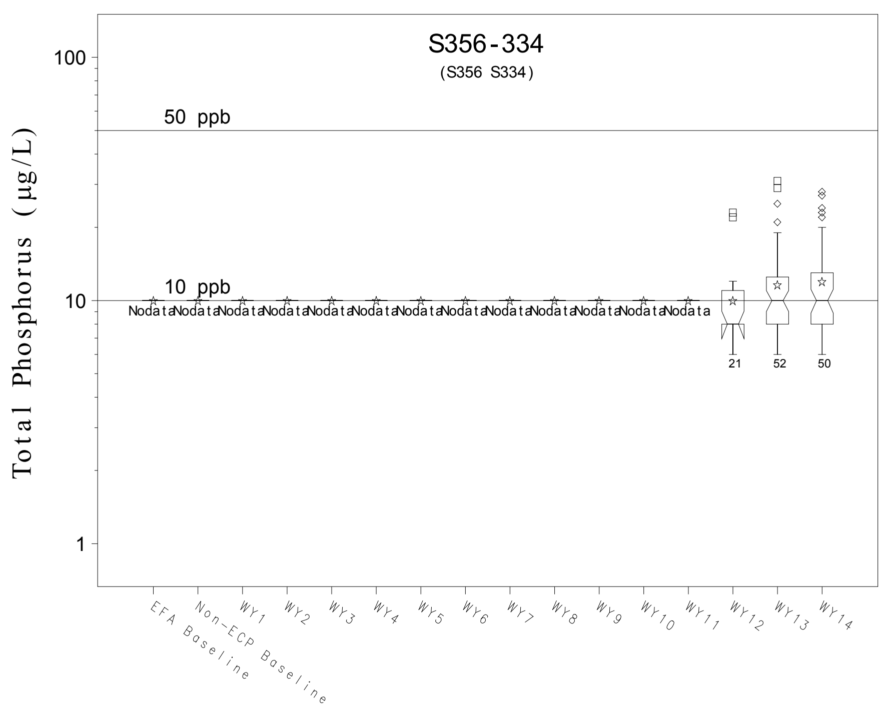

S333
Total Phosphorus (µg/L)
EFA Baseline
Non-ECP Baseline
50 ppb
10 ppb
WY1 WY2 WY3 WY4 WY5 WY6 WY7 WY8 WY9 WY10 WY11 WY12 WY13 WY14
10/01/78
01/02/82
04/06/85
07/08/88
10/11/91
01/12/95
04/16/98
07/18/01
10/20/04
01/22/08
04/26/11

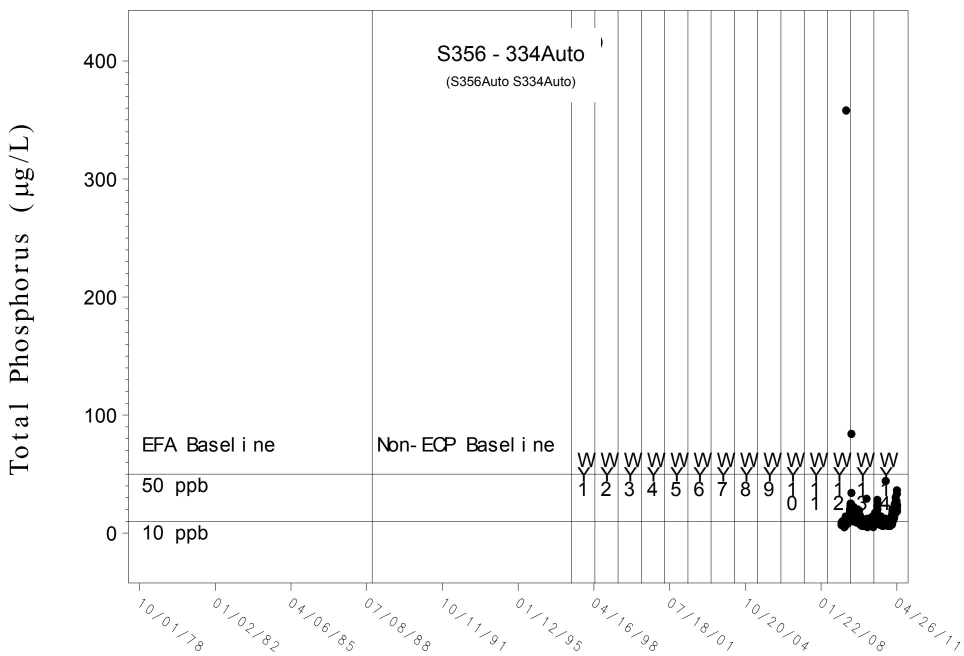

S333
Total Phosphorus (µg/L)
50 ppb
10 ppb
176
366
24
28
24
29
26
32
26
24
26
50
52
51
52
51
EFA Baseline
Non-ECP Baseline
WY1
WY2
WY3
WY4
WY5
WY6
WY7
WY8
WY9
WY10
WY11
WY12
WY13
WY14

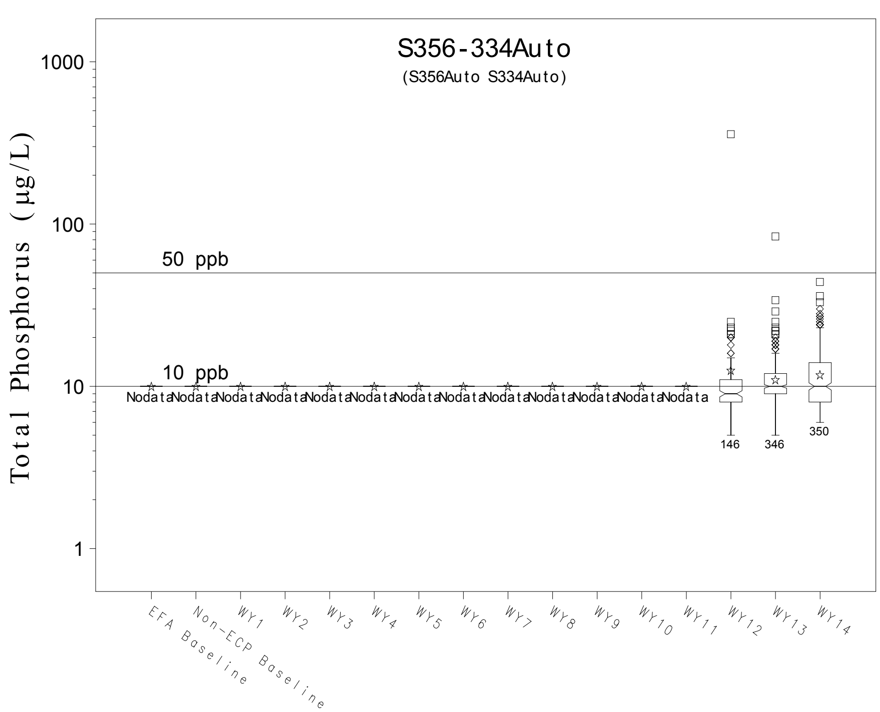

S333Auto
Total Phosphorus (µg/L)
400
300
200
100
0
50 ppb
EFA Baseline
10 ppb
Non-ECP Baseline
WY1
WY2
WY3
WY4
WY5
WY6
WY7
WY8
WY9
WY10
WY11
WY12
WY13
WY14
10/01/78
01/02/82
04/06/85
07/08/88
10/11/91
01/12/95
04/16/98
07/18/01
10/20/04
01/22/08
04/26/11

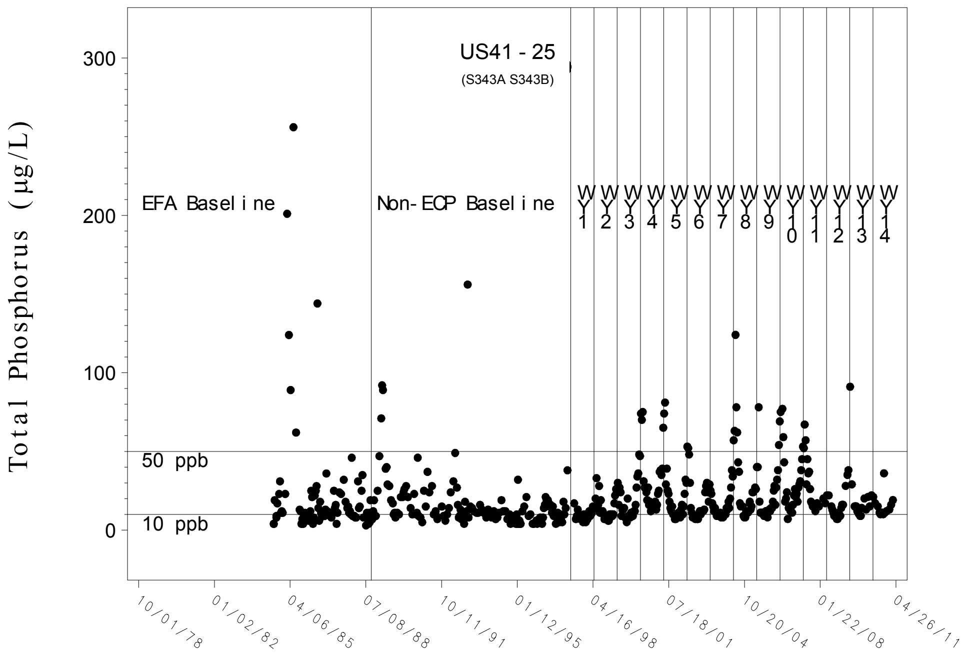

S333Auto
Total Phosphorus (µg/L)
1000
100
10
1
50 ppb
10 ppb
Nodata Nodata Nodata Nodata Nodata Nodata Nodata Nodata Nodata Nodata
75
345
345
353
348
364
EFA Baseline
Non-ECP Baseline
WY1
WY2
WY3
WY4
WY5
WY6
WY7
WY8
WY9
WY10
WY11
WY12
WY13
WY14

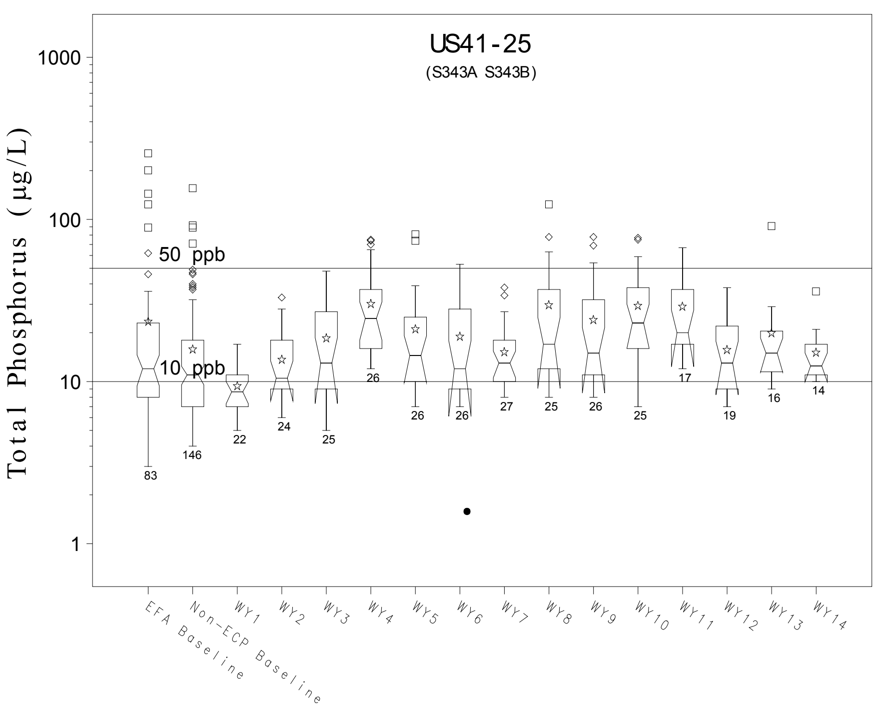

S356-334
(S356 S334)
Total Phosphorus (µg/L)
EFA Baseline
10 ppb
Non-ECP Baseline
10/01/78
01/02/82
04/06/85
07/08/88
10/11/91
01/12/95
04/16/98
07/18/01
10/20/04
01/22/08
04/26/11

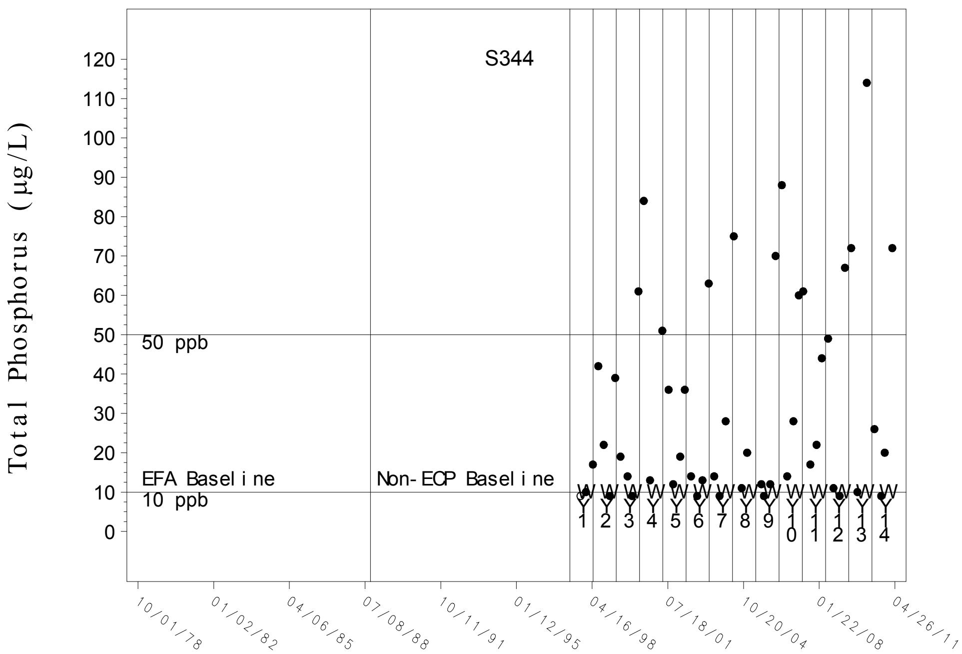

S356-334
(S356 S334)
Total Phosphorus (µg/L)
50 ppb
10 ppb
Nodata
21
52
50
EFA Baseline
Non-ECP Baseline
WY1
WY2
WY3
WY4
WY5
WY6
WY7
WY8
WY9
WY10
WY11
WY12
WY13
WY14

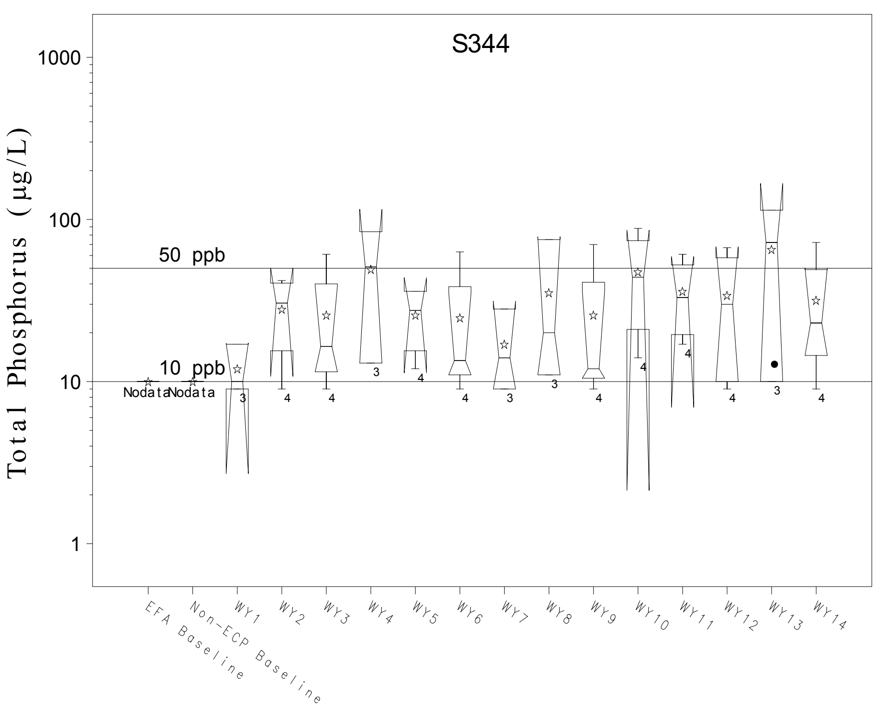

S356 - 334Auto
(S356Auto S334Auto)
Total Phosphorus (µg/L)
EFA Baseline
Non-ECP Baseline
50 ppb
10 ppb
10/01/78
01/02/82
04/06/85
07/08/88
10/11/91
01/12/95
04/16/98
07/18/01
10/20/04
01/22/08
04/26/11

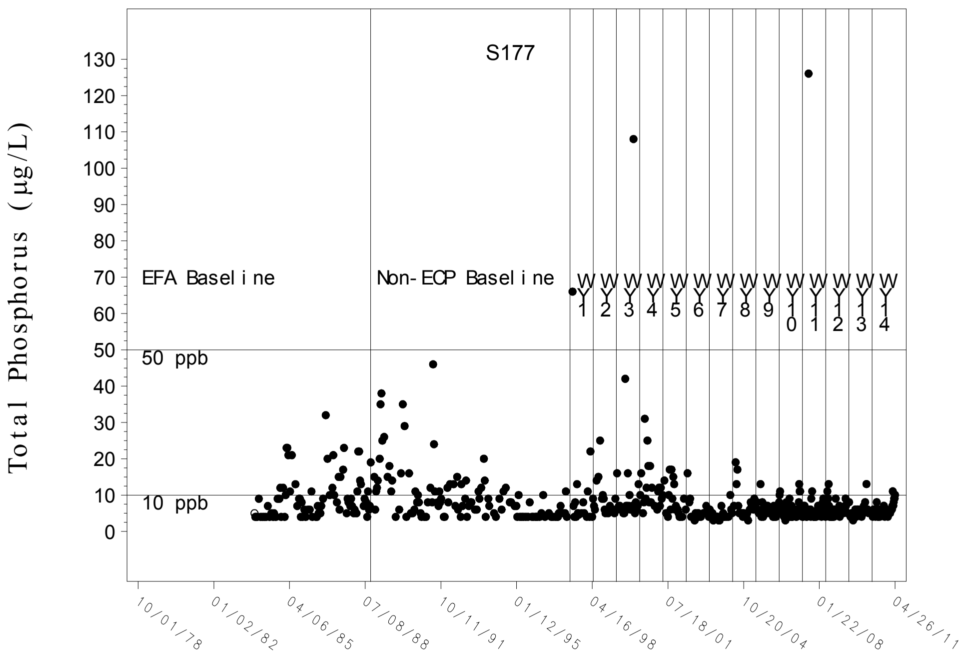

S356-334Auto
(S356Auto S334Auto)
Total Phosphorus (µg/L)
50 ppb
10 ppb
Nodata
146
346
350
EFA Baseline
Non-ECP Baseline
WY1
WY2
WY3
WY4
WY5
WY6
WY7
WY8
WY9
WY10
WY11
WY12
WY13
WY14

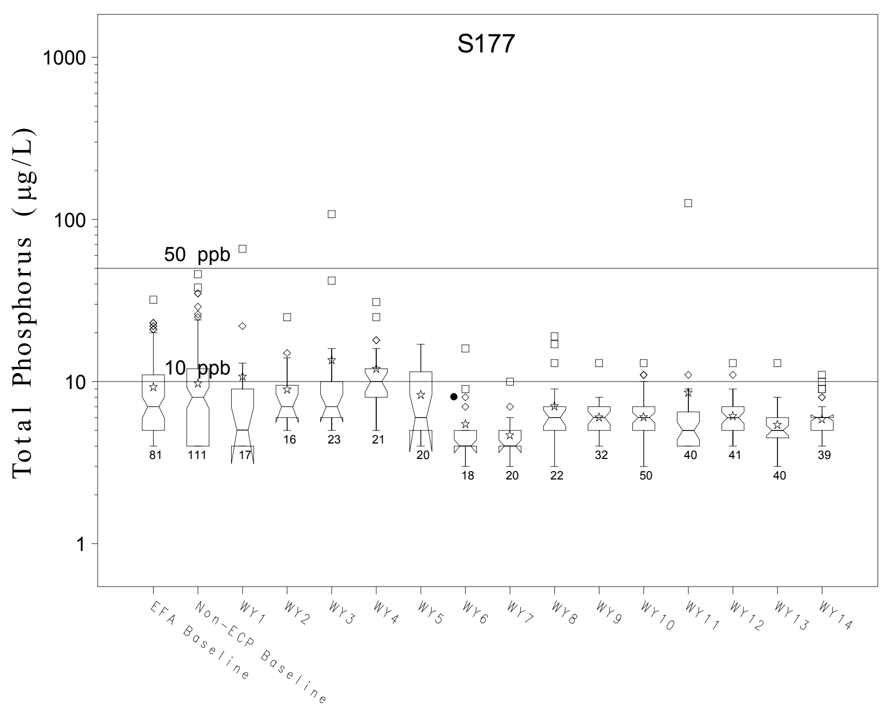

US41 - 25
(S343A S343B)
Total Phosphorus (µg/L)
EFA Baseline
Non-ECP Baseline
WY1 WY2 WY3 WY4 WY5 WY6 WY7 WY8 WY9 WY10 WY11 WY12 WY13 WY14
50 ppb
10 ppb
300
200
100
0
10/01/78 01/02/82 04/06/85 07/08/88 10/11/91 01/12/95 04/16/98 07/18/01 10/20/04 01/22/08 04/26/11

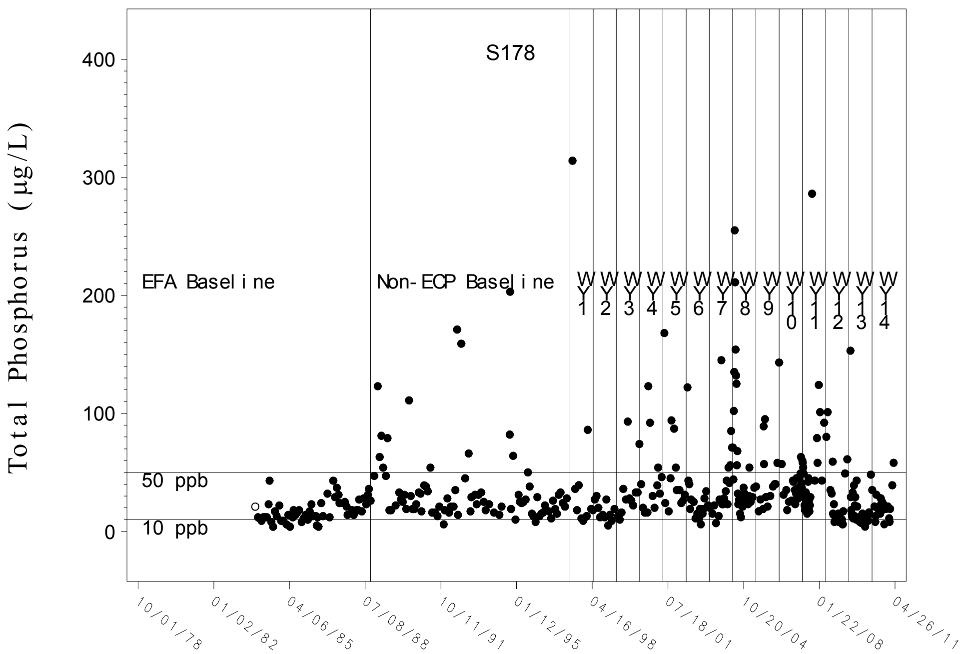

US41-25
(S343A S343B)
Total Phosphorus (µg/L)
1000
100
10
1
50 ppb
10 ppb
83 146 22 24 25 26 26 26 27 25 26 25 17 19 16 14
EFA Baseline
Non-ECP Baseline
WY1 WY2 WY3 WY4 WY5 WY6 WY7 WY8 WY9 WY10 WY11 WY12 WY13 WY14

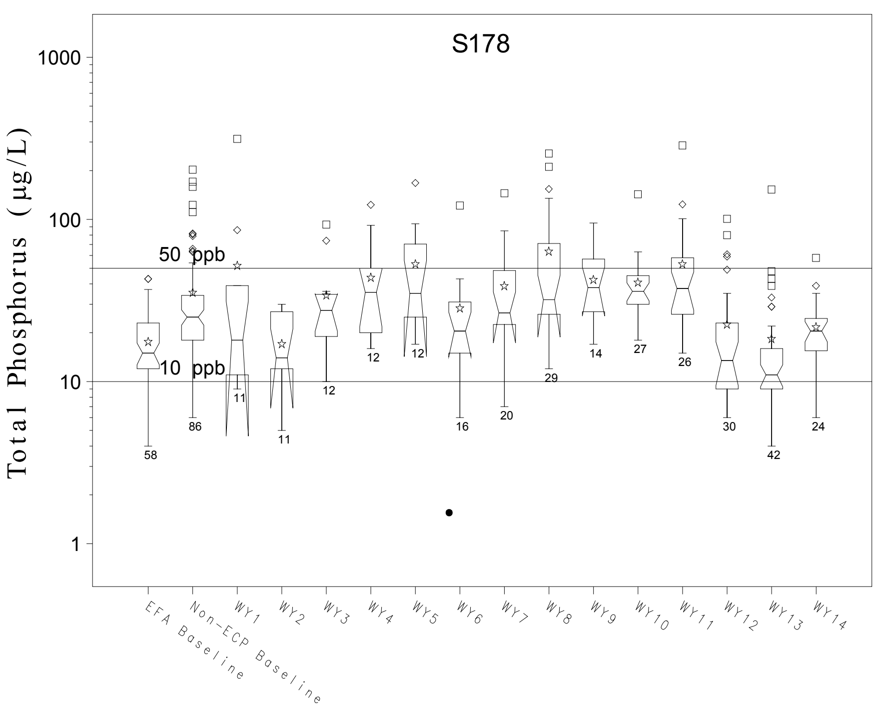

S344
Total Phosphorus (µg/L)
50 ppb
EFA Baseline
10 ppb
Non-ECP Baseline
10/01/78
01/02/82
04/06/85
07/08/88
10/11/91
01/12/95
04/16/98
07/18/01
10/20/04
01/22/08
04/26/11

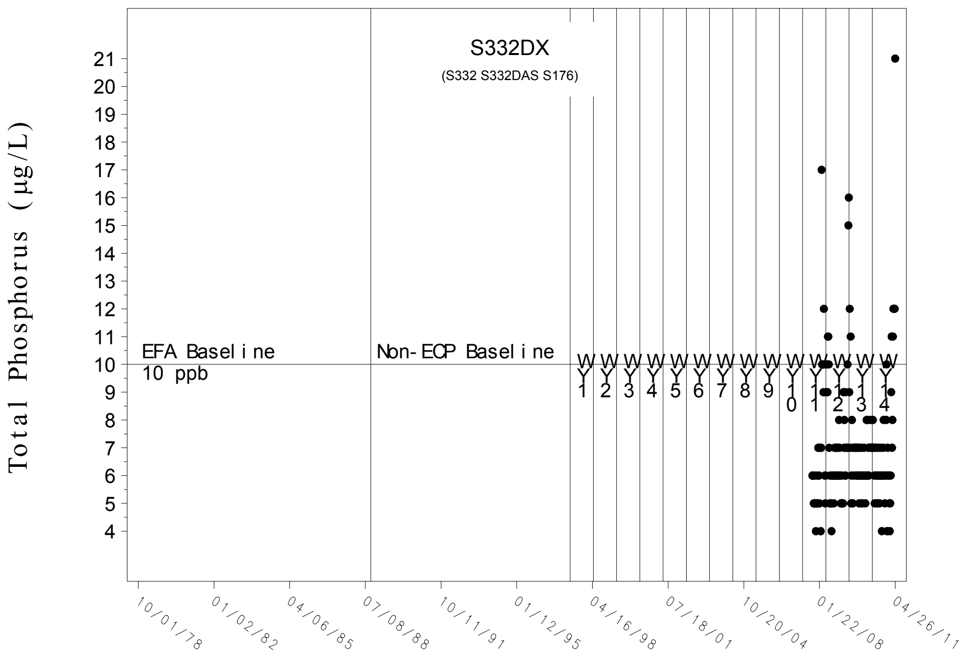

S344
Total Phosphorus (µg/L)
50 ppb
10 ppb
Nodata
Nodata
EFA Baseline
Non-ECP Baseline
WY1
WY2
WY3
WY4
WY5
WY6
WY7
WY8
WY9
WY10
WY11
WY12
WY13
WY14


S177
Total Phosphorus (µg/L)
EFA Baseline
Non-ECP Baseline
WY1 WY2 WY3 WY4 WY5 WY6 WY7 WY8 WY9 WY10 WY11 WY12 WY13 WY14
50 ppb
10 ppb
10/01/78 01/02/82 04/06/85 07/08/88 10/11/91 01/12/95 04/16/98 07/18/01 10/20/04 01/22/08 04/26/11


S177
Total Phosphorus (µg/L)
50 ppb
10 ppb
81 111 17 16 23 21 20 18 20 22 32 50 40 41 40 39
EFA Baseline Non-ECP Baseline WY1 WY2 WY3 WY4 WY5 WY6 WY7 WY8 WY9 WY10 WY11 WY12 WY13 WY14


S178
Total Phosphorus (µg/L)
EFA Baseline
Non-ECP Baseline
WY1 WY2 WY3 WY4 WY5 WY6 WY7 WY8 WY9 WY10 WY11 WY12 WY13 WY14
50 ppb
10 ppb
10/01/78 01/02/82 04/06/85 07/08/88 10/11/91 01/12/95 04/16/98 07/18/01 10/20/04 01/22/08 04/26/11


S178
Total Phosphorus (µg/L)
50 ppb
10 ppb
58 86 11 11 12 12 12 16 20 29 14 27 26 30 42 24
EFA Baseline
Non-ECP Baseline
WY1 WY2 WY3 WY4 WY5 WY6 WY7 WY8 WY9 WY10 WY11 WY12 WY13 WY14


S332DX
(S332 S332DAS S176)
Total Phosphorus (µg/L)
EFA Baseline
10 ppb
Non-ECP Baseline
WY1 WY2 WY3 WY4 WY5 WY6 WY7 WY8 WY9 WY10 WY11 WY12 WY13 WY14
10/01/78
01/02/82
04/06/85
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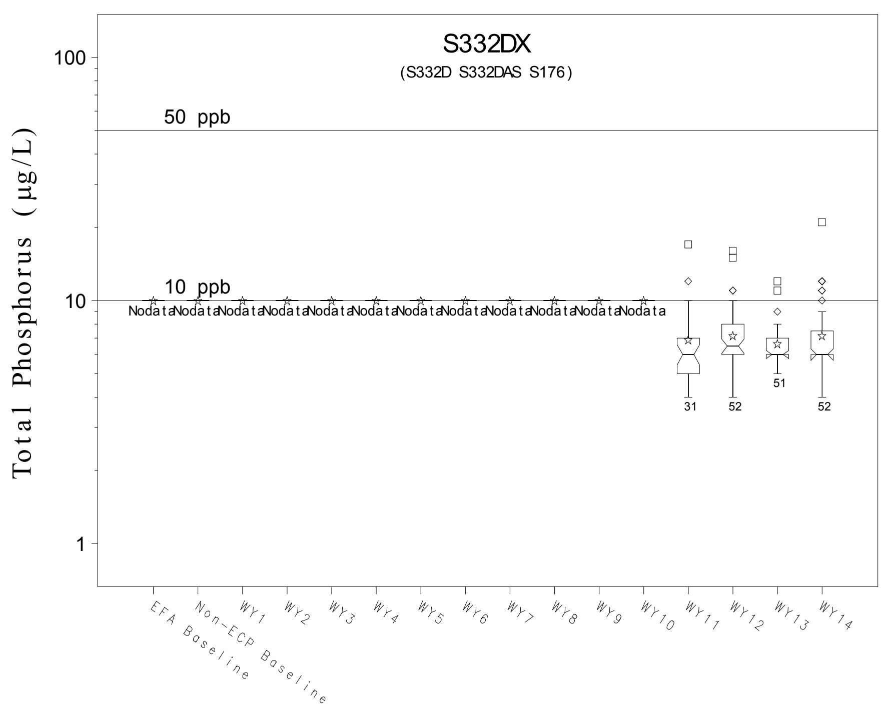
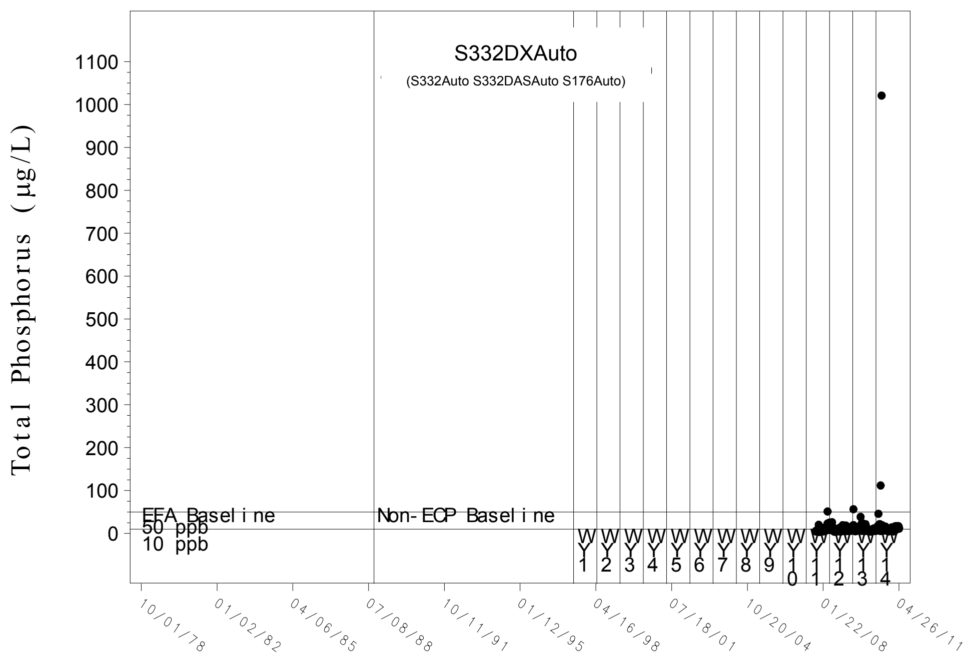
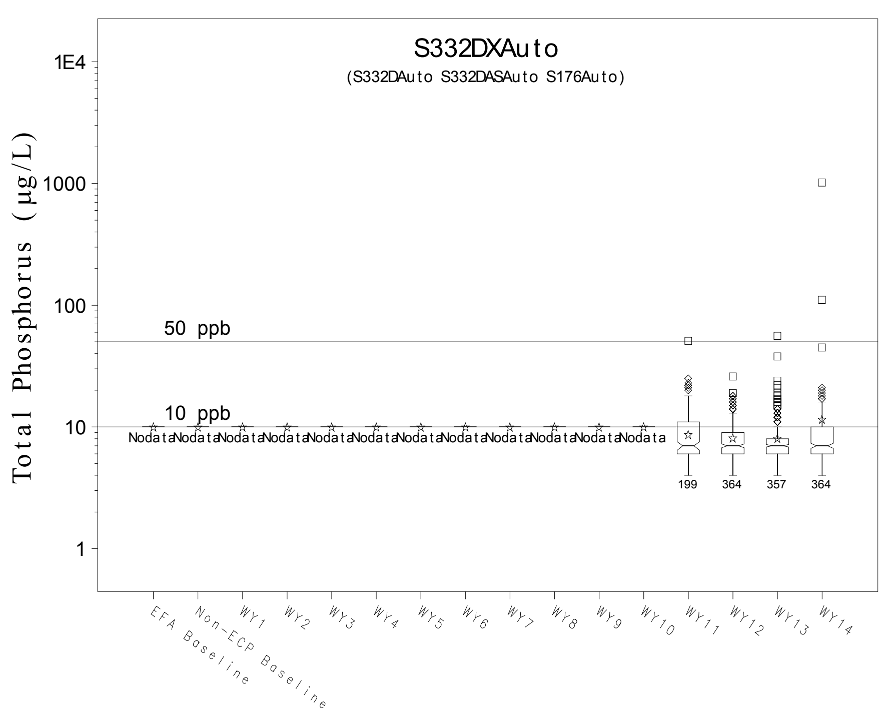
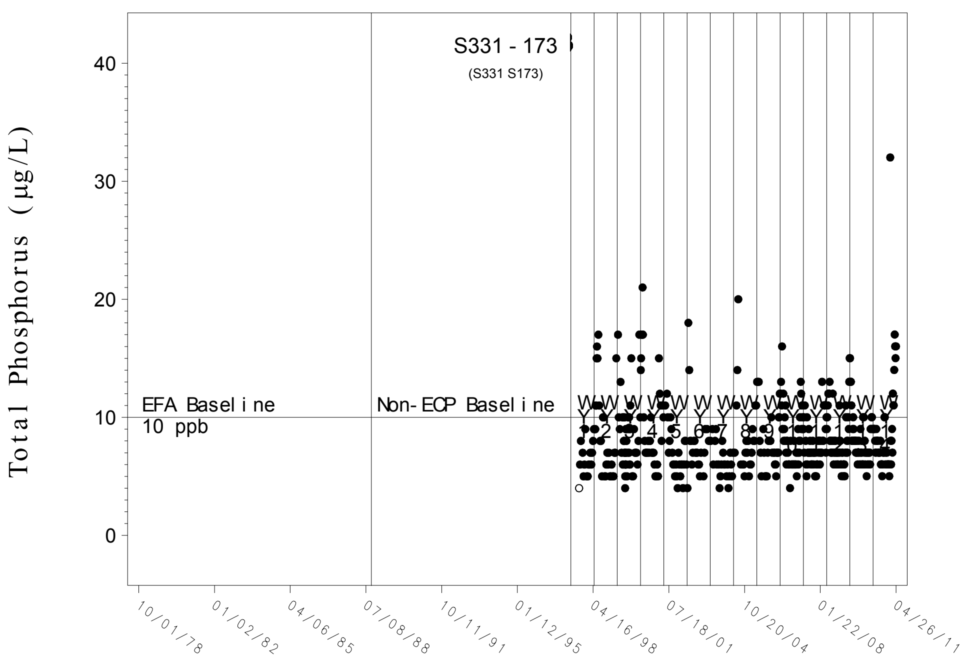
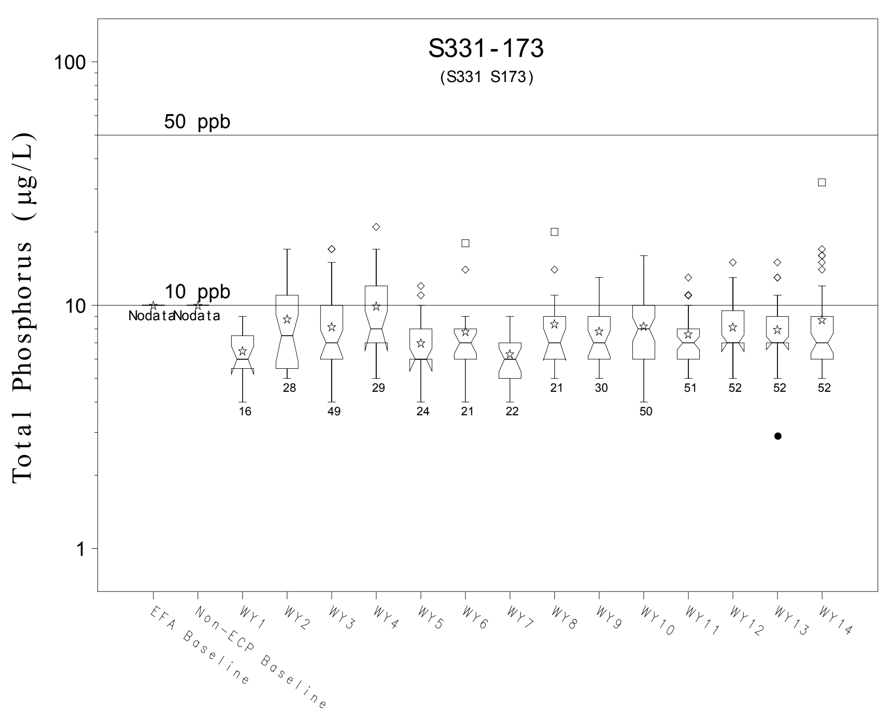
01/22/08
04/26/11

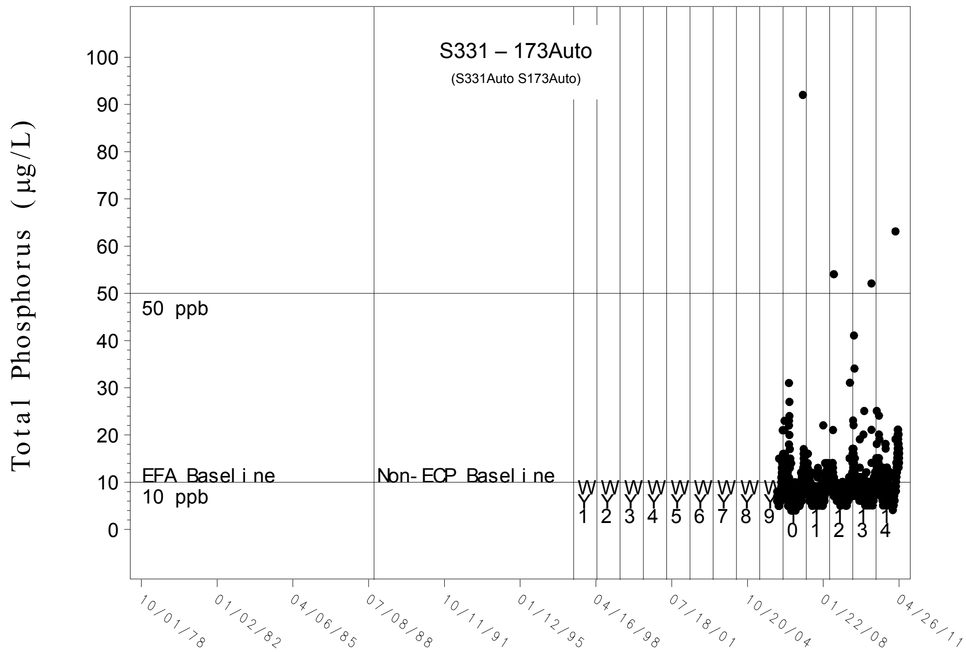

S332DX
(S332D S332DAS S176)
Total Phosphorus (µg/L)
50 ppb
10 ppb
Nodata Nodata Nodata Nodata Nodata Nodata Nodata Nodata Nodata Nodata Nodata Nodata
31
52
51
52
EFA Baseline
Non-ECP Baseline
WY1 WY2 WY3 WY4 WY5 WY6 WY7 WY8 WY9 WY10 WY11 WY12 WY13 WY14

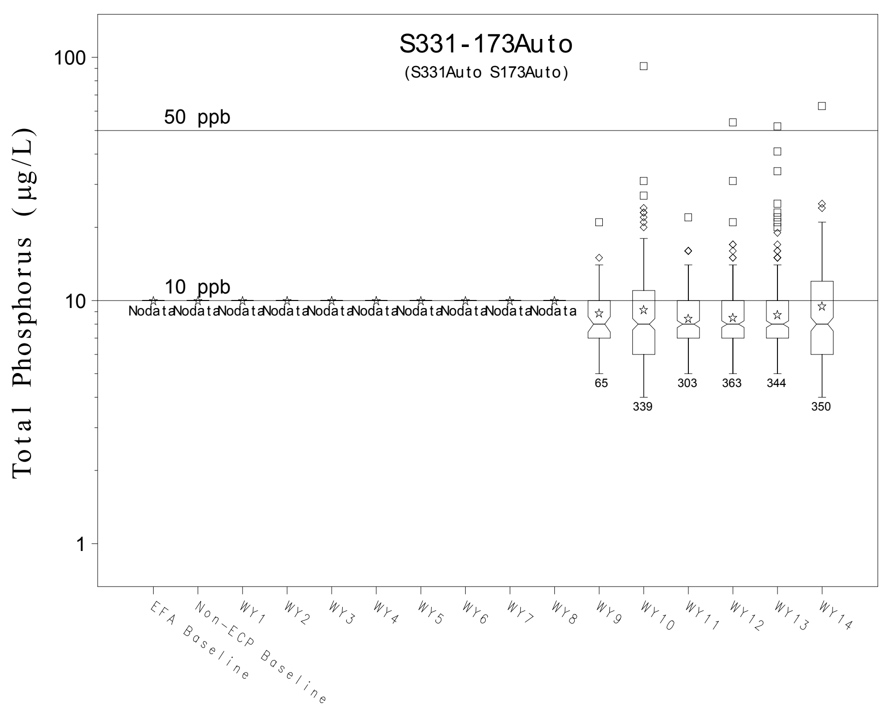

S332DXAuto
(S332Auto S332DASAuto S176Auto)
Total Phosphorus (µg/L)
EFA Baseline
Non-ECP Baseline
50 ppb
10 ppb
WY1 WY2 WY3 WY4 WY5 WY6 WY7 WY8 WY9 WY10 WY11 WY12 WY13 WY14
10/01/78 01/02/82 04/06/85 07/08/88 10/11/91 01/12/95 04/16/98 07/18/01 10/20/04 01/22/08 04/26/11

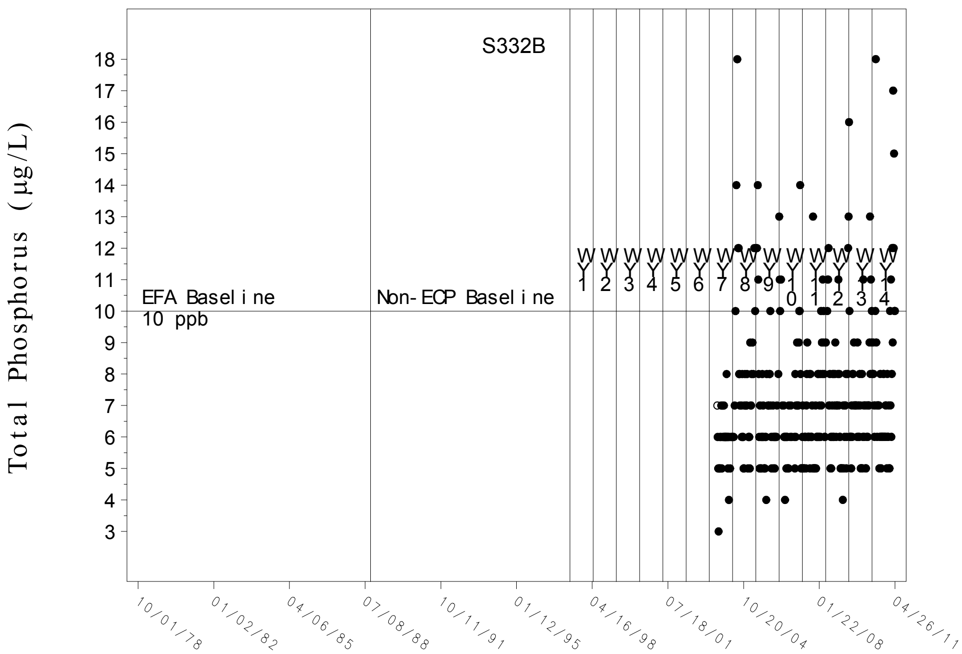

S332DXAuto
(S332DAuto S332DASAuto S176Auto)
Total Phosphorus (µg/L)
50 ppb
10 ppb
Nodata
199 364 357 364
EFA Baseline
Non-ECP Baseline
WY1 WY2 WY3 WY4 WY5 WY6 WY7 WY8 WY9 WY10 WY11 WY12 WY13 WY14

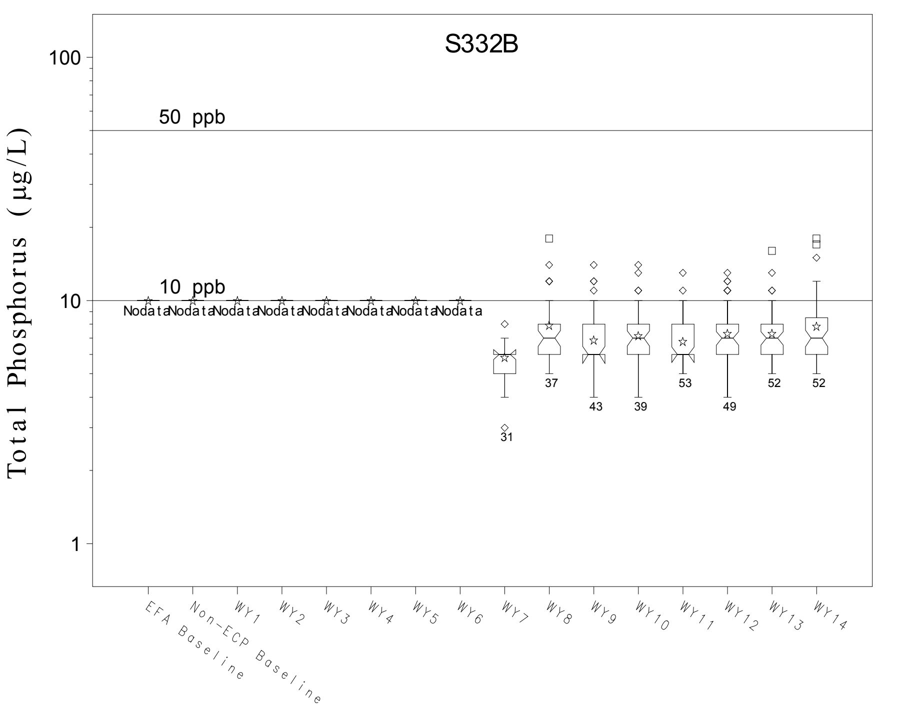

S331 - 173
(S331 S173)
Total Phosphorus (µg/L)
EFA Baseline
10 ppb
Non-ECP Baseline
10/01/78
01/02/82
04/06/85
07/08/88
10/11/91
01/12/95
04/16/98
07/18/01
10/20/04
01/22/08
04/26/11

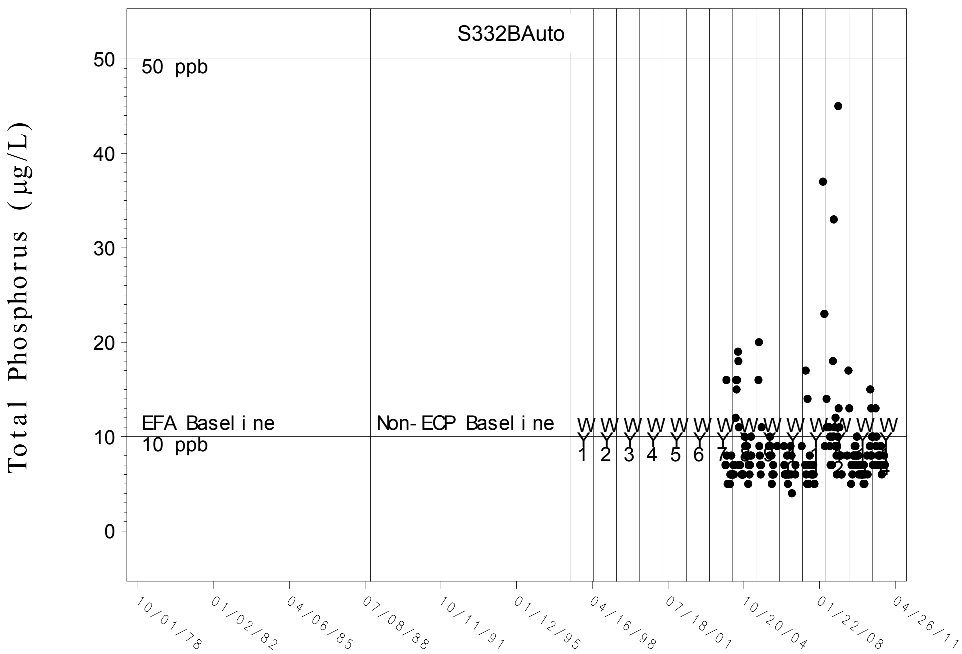

S331-173
(S331 S173)
Total Phosphorus (µg/L)
50 ppb
10 ppb
Nodata
Nodata
EFA Baseline
Non-ECP Baseline
WY1
WY2
WY3
WY4
WY5
WY6
WY7
WY8
WY9
WY10
WY11
WY12
WY13
WY14


S331 – 173Auto
(S331Auto S173Auto)
Total Phosphorus (µg/L)
50 ppb
EFA Baseline
10 ppb
Non-ECP Baseline
WY1 WY2 WY3 WY4 WY5 WY6 WY7 WY8 WY9 WY10 WY11 WY12 WY13 WY14
10/01/78 01/02/82 04/06/85 07/08/88 10/11/91 01/12/95 04/16/98 07/18/01 10/20/04 01/22/08 04/26/11


S331-173Auto
(S331Auto S173Auto)
Total Phosphorus (µg/L)
50 ppb
10 ppb
Nodata Nodata Nodata Nodata Nodata Nodata Nodata Nodata Nodata Nodata
65 339 303 363 344 350
EFA Baseline Non-ECP Baseline WY1 WY2 WY3 WY4 WY5 WY6 WY7 WY8 WY9 WY10 WY11 WY12 WY13 WY14


S332B
Total Phosphorus (µg/L)
EFA Baseline
10 ppb
Non-ECP Baseline
WY1 WY2 WY3 WY4 WY5 WY6 WY7 WY8 WY9 WY10 WY11 WY12 WY13 WY14
10/01/78 01/02/82 04/06/85 07/08/88 10/11/91 01/12/95 04/16/98 07/18/01 10/20/04 01/22/08 04/26/11


S332B
Total Phosphorus (µg/L)
50 ppb
10 ppb
Nodata Nodata Nodata Nodata Nodata Nodata Nodata Nodata
31 37 43 39 53 49 52 52
EFA Baseline Non-ECP Baseline WY1 WY2 WY3 WY4 WY5 WY6 WY7 WY8 WY9 WY10 WY11 WY12 WY13 WY14


S332BAuto
50 ppb
EFA Baseline
10 ppb
Non-ECP Baseline
Total Phosphorus (µg/L)
0
10
20
30
40
50
10/01/78
01/02/82
04/06/85
07/08/88
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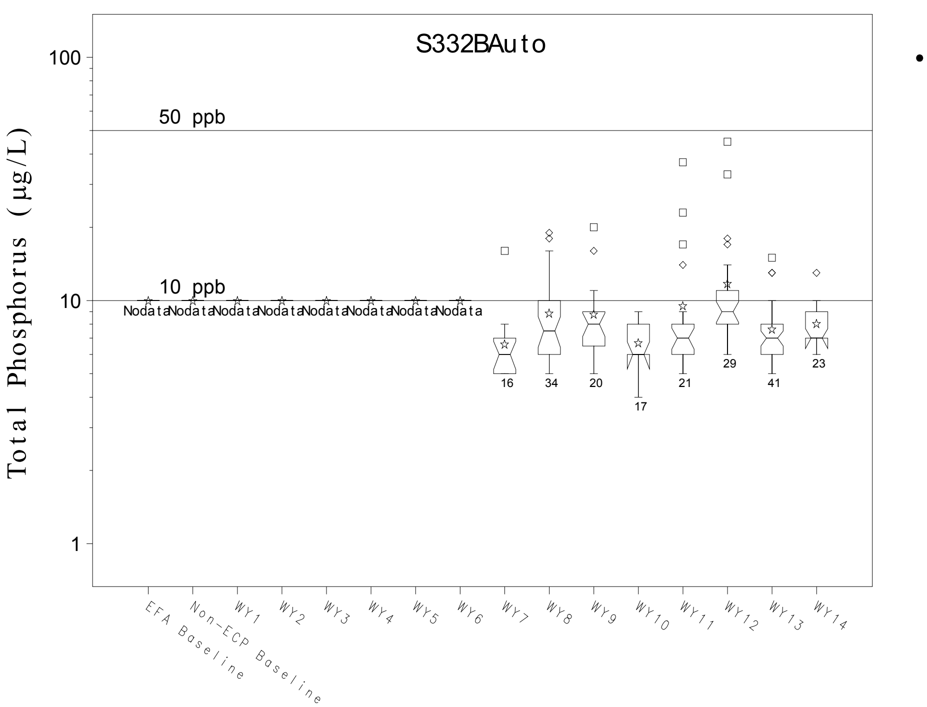
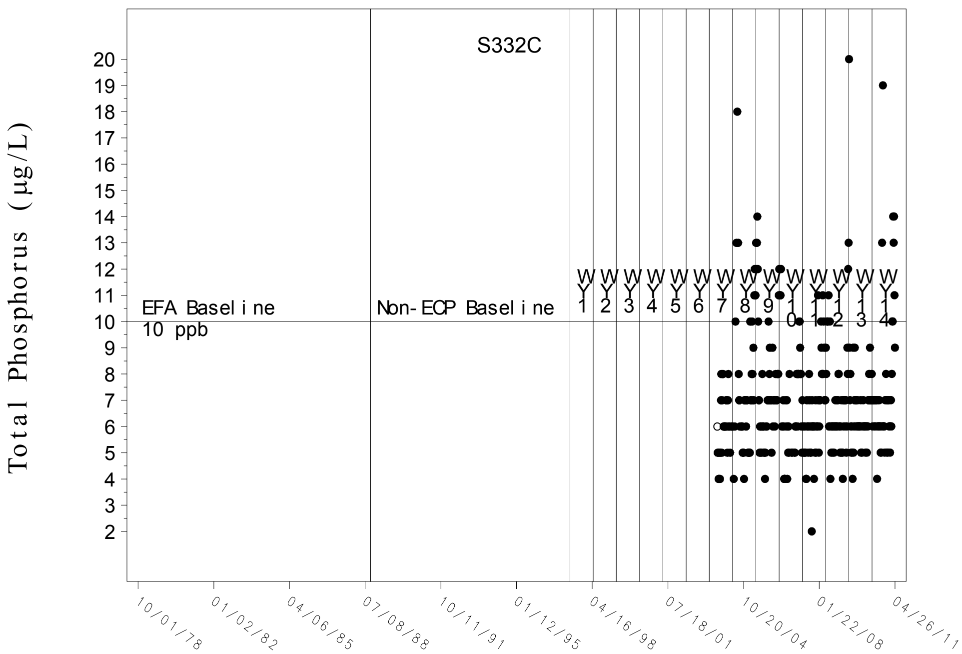
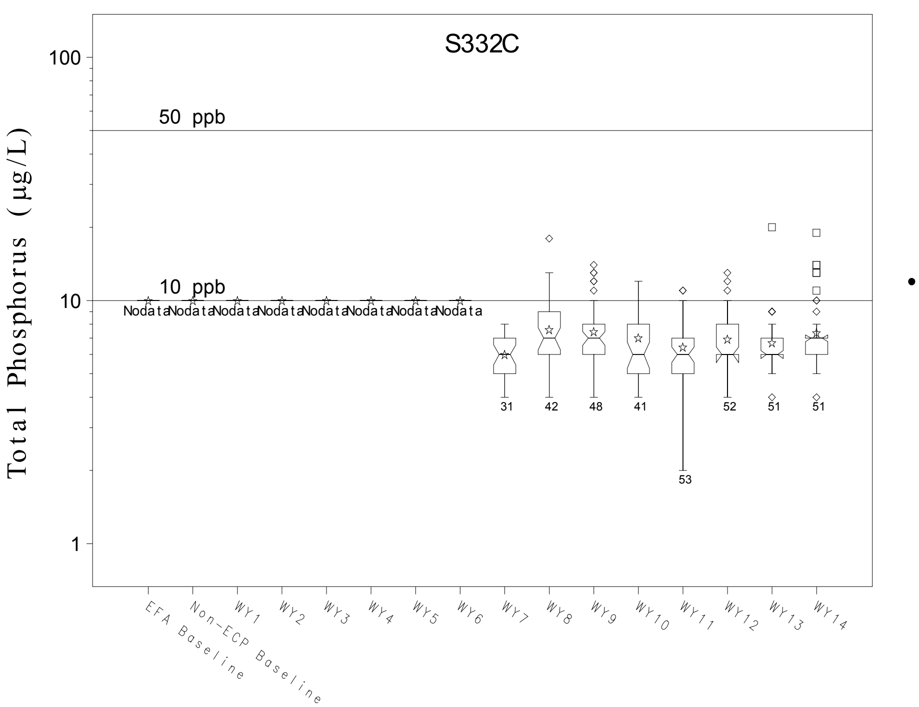
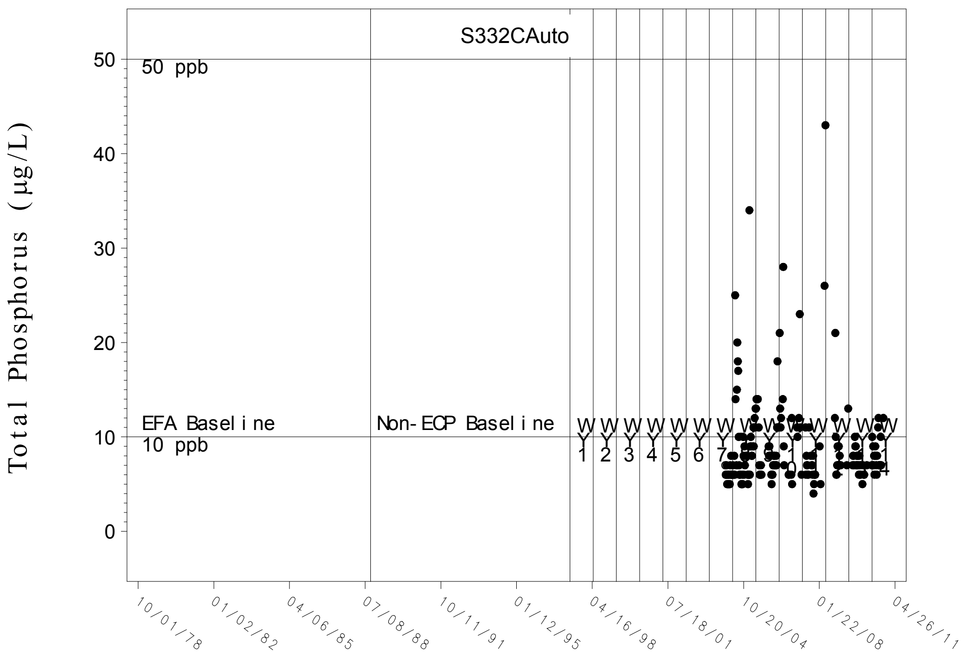
01/22/08
04/26/11


S332BAuto
50 ppb
10 ppb
Total Phosphorus (µg/L)
1
10
100
Nodata
16
34
20
17
21
29
41
23
EFA Baseline
Non-ECP Baseline
WY1
WY2
WY3
WY4
WY5
WY6
WY7
WY8
WY9
WY10
WY11
WY12
WY13
WY14


S332C
Total Phosphorus (µg/L)
EFA Baseline
10 ppb
Non-ECP Baseline
WY1 WY2 WY3 WY4 WY5 WY6 WY7 WY8 WY9 WY10 WY11 WY12 WY13 WY14
10/01/78 01/02/82 04/06/85 07/08/88 10/11/91 01/12/95 04/16/98 07/18/01 10/20/04 01/22/08 04/26/11


S332C
Total Phosphorus (µg/L)
50 ppb
10 ppb
Nodata Nodata Nodata Nodata Nodata Nodata Nodata Nodata
31 42 48 41 53 52 51 51
EFA Baseline Non-ECP Baseline WY1 WY2 WY3 WY4 WY5 WY6 WY7 WY8 WY9 WY10 WY11 WY12 WY13 WY14


S332CAuto
50 ppb
EFA Baseline
10 ppb
Non-ECP Baseline
Total Phosphorus (µg/L)
10/01/78
01/02/82
04/06/85
07/08/88
10/11/91
01/12/95
04/16/98
07/18/01
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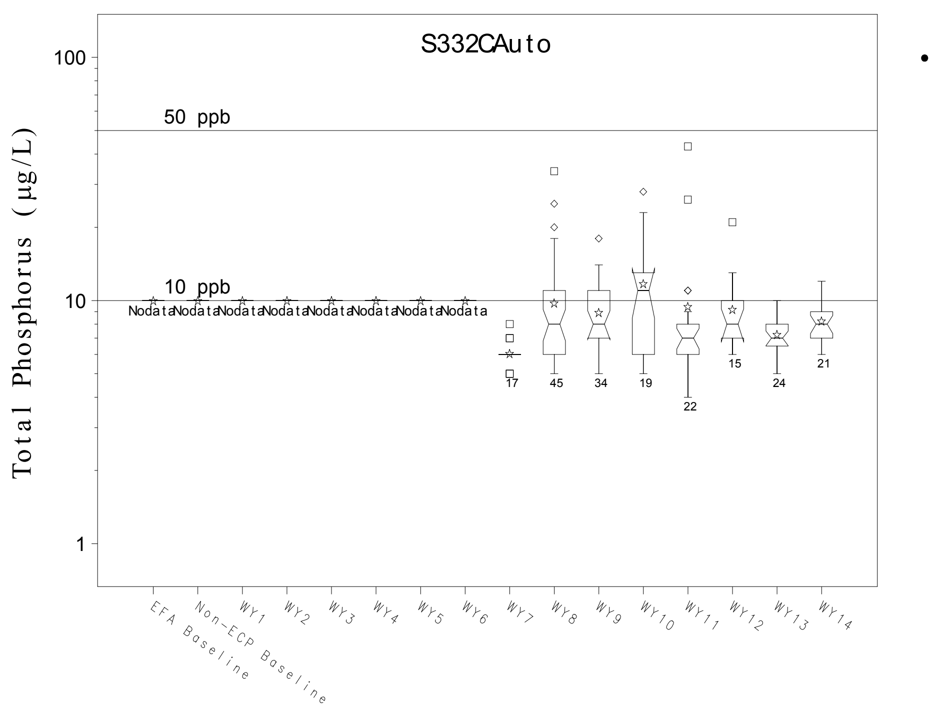
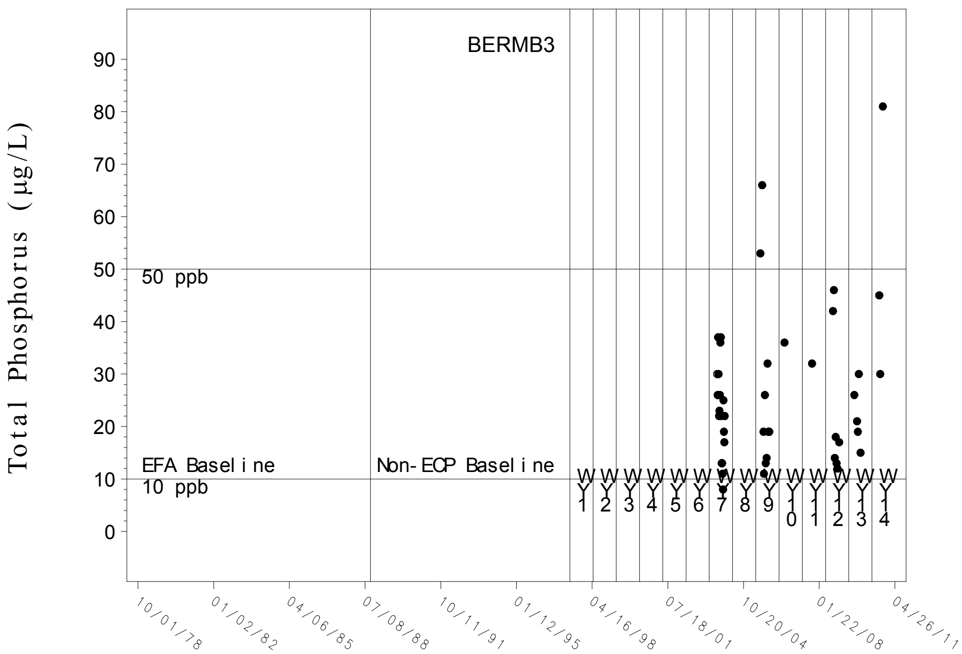
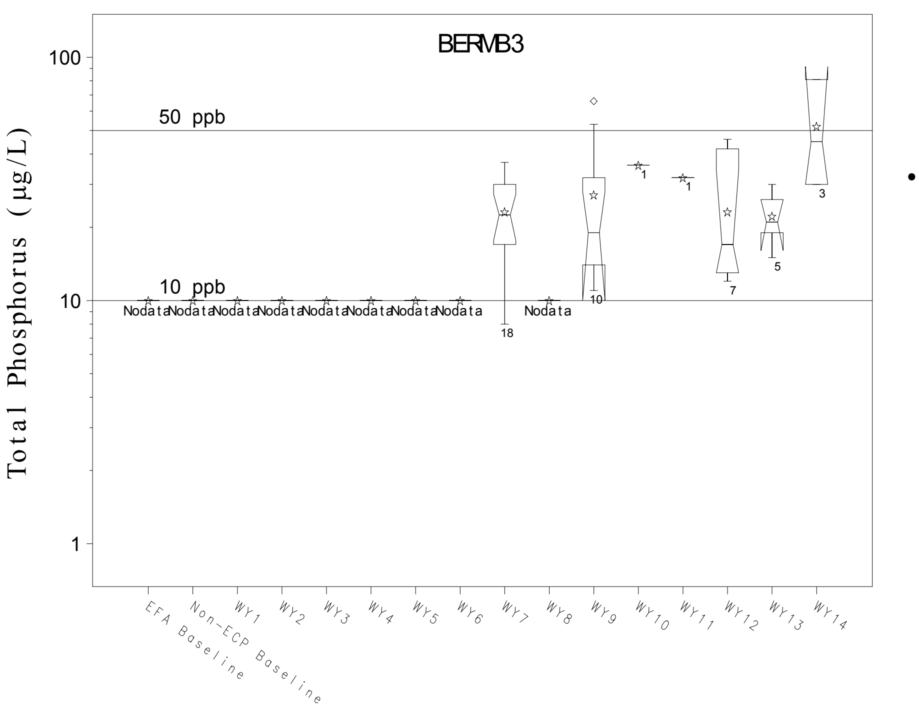
01/22/08
04/26/11


S332CAuto
50 ppb
10 ppb
Total Phosphorus (µg/L)
Nodata
17
45
34
19
22
15
24
21
EFA Baseline
Non-ECP Baseline
WY1
WY2
WY3
WY4
WY5
WY6
WY7
WY8
WY9
WY10
WY11
WY12
WY13
WY14


BERMB3
Total Phosphorus (µg/L)
50 ppb
EFA Baseline
10 ppb
Non-ECP Baseline
WY1 WY2 WY3 WY4 WY5 WY6 WY7 WY8 WY9 WY10 WY11 WY12 WY13 WY14
10/01/78 01/02/82 04/06/85 07/08/88 10/11/91 01/12/95 04/16/98 07/18/01 10/20/04 01/22/08 04/26/11


BERMB3
Total Phosphorus (µg/L)
50 ppb
10 ppb
Nodata
EFA Baseline Non-ECP Baseline WY1 WY2 WY3 WY4 WY5 WY6 WY7 WY8 WY9 WY10 WY11 WY12 WY13 WY14

Attachment F: Annual Permit Compliance Monitoring Report for Mercury in Downstream Receiving Waters of the Everglades Protection Area

Ben Gu and Nicole Howard

Contributors: Joseph Claude, Ricardo Lopez, Marion Parsons, Deena Ruiz, Karl Strayer, Erik Tate-Boldt, Kevin Nicholas, Tonya Jilek, Francine Matson[1], Richard Walker, Michael Tompkins, Michael Wright and Yvette Rauscher

SUMMARY

This attachment summarizes data from compliance monitoring of mercury (Hg) influx and bioaccumulation in the downstream receiving waters of the Everglades Protection Area (EPA). Results in this attachment are based on Calendar Year 2010 (CY2010) (January 1, 2010–December 31, 2010) for atmospheric wet deposition and total mercury (THg) in bird feathers and Water Year 2011 (WY2011) (May 1 2010–April 30, 2011) for total mercury (THg) in fish.

The key findings presented in this attachment are as follows:

1. Total annual wet deposition for the ENP in CY2010 was 163 kilograms of mercury per year (kg Hg/yr), which represents the third year of consecutive decline since CY2008. This value represents the average of stations FL11 (ENP), FL34 (Stormwater Treatment Area 1 West), and FL97 (Western Broward County). In CY2010, annual volume-weighted maximum THg concentrations differed slightly among the three stations with a slight decreasing trend from the north to the south station. Typically, missed samples occur as a result of issues associated with sampling handling, low collection volumes, and mechanical failures. Consequently, estimates for both the volume-weighted (wet) concentration and annual wet deposition should be considered along with these uncertainties.
2. Mosquitofish (*Gambusia holbrooki*) collected from downstream marsh sites had THg levels ranging from 11 nanograms per gram (ng/g) at site WCA2F1 to 139 ng/g at site LOXF4. The average basin-wide concentration in WY2011 was 68 ng/g, representing a slight increase (2 ng/g) from the basin-wide mean concentration in WY2010. The grandmean for the period of record (POR) (WY1999–WY2011) over all basins is 66 ng/g (± 4.6). Several sites displayed considerable changes in THg concentration in WY2011: mosquitofish THg concentration increased by 101 ng/g in LOXF4 and decreased by 35 and 84 ng/g in

[1] Retired from the District as of March 2010.

CA35ALT and WCAU3, respectively. Since WY2006, sites CA33ALT and ROTENC have shown consistent increases in THg levels.

3. Sunfish (*Lepomis* spp.) collected from downstream sites had THg levels ranging from a minimum of 15 ng/g at site WCA2F1 to a maximum of 906 ng/g at site WCA315. The basin-wide average concentration for sunfish in WY2011 was 185 ng/g, representing a 27 percent decrease over WY2010. In WY2011, sunfish continued to show marked spatial variation in Hg levels; fish from sites CA33ALT, CA35ALT, CA315, L67F1, WCA2U3 and ROTENC contained the highest median concentrations (ranging from 207–404 ng/g) and sites CA35ALT and L67F1 were greater than all other sites.
4. Fillets from individual largemouth bass (*Micropterus salmoides*) (LMB) collected from downstream sites had tissue THg concentrations ranging from a minimum of 24 ng/g (age 0) at site WCA2F1 to a maximum of 2,030 ng/g (age 3) at site L67F1. Site-specific, age-standardized concentrations (estimated for a three-year-old bass, EHg3) ranged from 281 ng/g at site LOXF4 to 1,444 ng/g at site L67F1. Standardized total mercury levels (EHg3) increased 32.6 percent from WY2010 to WY2011.
5. Great egret *(Ardea alba*) feathers were collected from five locations in Water Conservation Area 3 during CY2011. The average feather THg concentrations ranged from 7.2 to 12.0 micrograms per gram (µg/g). In CY2011, three of the five sites were newly established sites; as such, long-term comparisons are not included in this reporting
6. For WY2011, THg concentrations decreased by 17 and 30 percent in mosquitofish and sunfish, respectively, and increased by about 33 percent in largemouth bass. The northernmost sites (LOXF4 and WCA2F1 and CA2NF), along with a site in WCA-3 (CA3F2), are still comparatively low in tissue Hg concentration in LMB. WCA-2 U3, WCA315 and L67F1 remain high in LMB THg concentration. Site LOXF4, ROTENC, WCA2U3 and WCA33ALT had consistently high THg concentration across trophic levels. Site L67F1 had the highest LMB THg concentration again in WY2011, but moderately levels of THg in mosquitofish and sunfish. Based on guidance from the U.S. Fish and Wildlife Service and the U.S. Environmental Protection Agency on mercury concentrations in fish, localized populations of fish-eating birds and mammals continue to be at potential risk from adverse effects due to mercury exposure depending on their respective foraging areas. Consequently, most of South Florida remains under fish consumption advisories for the protection of human health.

INTRODUCTION

This attachment is the annual permit compliance report for Calendar Year 2010 (CY2010) (January 1, 2010–December 31, 2010) for atmospheric deposition and Water Year 2011 (WY2011) (May 1 2010–April 30, 2011) for fish, summarizing the results of mercury (Hg) monitoring in the downstream receiving waters of the Everglades Protection Area (EPA). Additionally, this attachment summarizes data from great egret (*Ardea alba*) feather collections in CY2011. This report, along with Attchment C, Appendix 3-1 of this volume, satisfies the mercury-related reporting requirements of the Florida Department of Environmental Protection (FDEP) Non-ECP Permit No. 0237803-010.

BACKGROUND

In 1994, the Florida legislature enacted the Everglades Forever Act [EFA; Chapter 373.4592, Florida Statutes (F.S.)], which established long-term water quality goals for the restoration and protection of the Everglades. To achieve these goals, the South Florida Water Management District (SFWMD or District) implemented the Everglades Construction Plan. A crucial element of EFA implementation was the construction of six wetlands (Everglades STAs) to reduce phosphorus loading in runoff from the Everglades Agricultural Area (EAA). The original STAs were built mainly on formerly cultivated lands within the EAA and total over 26,000 hectares (approximately 65,000 acres, equating to approximately 45,000 acres of effective treatment area). The downstream receiving waters to be restored and protected by the EFA are part of the Everglades Protection Area (EPA).

Despite legislation and related goals, concerns were expressed that the restoration effort might inadvertently worsen the Everglades mercury problem while reducing downstream eutrophication (Mercury Technical Committee, 1991). Mercury is a persistent, bioaccumulative, toxic pollutant that can build up in the food chain to levels harmful to human and wildlife health. Widespread elevated concentrations of mercury were first discovered in freshwater fish from the Everglades in 1989 (Ware et al., 1990). Based on the mercury levels observed in 1989, state fish consumption advisories were issued for select species and locations [Florida Department of Health and Rehabilitative Services (known as FDOH) and Florida Game and Fresh Water Fish Commission (currently the Florida Fish and Wildlife Conservation Commission, or FWC), March 6, 1989]. Subsequently, elevated concentrations of mercury have also been found in predators, such as raccoons (*Procyon lotor*), alligators (*Alligator mississippiensis*), Florida panthers (*Felis concolor*), and wading birds (Fink et al., 1999).

A key to understanding the Everglades mercury problem is recognizing that it is primarily a methylmercury (MeHg) problem, not an inorganic or elemental mercury problem. MeHg is more toxic and bioaccumulative than the inorganic or elemental form. Elsewhere in the world, industrial discharge or mine runoff (e.g., chlor-alkali plant in Lavaca Bay in Texas, New Idria Mine in California, and Idrija Mercury Mine in Slovenia) can contain total mercury (THg) concentrations much greater (in some areas three-hundredfold higher) than that found in the Everglades, but at the same time have lower MeHg concentrations. In the Everglades, atmospheric loading has been found to be the dominant, proximate source of inorganic mercury, with the ultimate source likely being coal-fired utility boilers (far field) and municipal and medical waste incinerators (Atkeson and Parks, 2002). After deposition, a portion of this inorganic mercury is then converted to MeHg by sulfate-reducing bacteria (SRB) in the sediments of aquatic systems (Gilmour et al., 1992; Gilmour et al., 1998; Jeremiason et al., 2006). This methylation process is extraordinarily effective in the Everglades due to the availability of sulfate, the large pool of labile dissolved organic matter, and high mercury input from atmospheric deposition (Gilmour and Krabbenhoft, 2001; Renner, 2001; Bates et al., 2002).

To provide assurance that EFA implementation was not exacerbating the mercury problem, construction and operation permits for the STAs, issued by the FDEP, required that the District monitor the levels of THg and MeHg in various abiotic (e.g., water and sediment) and biotic (e.g., fish and bird tissues) media, within both the downstream receiving waters of the EPA and in the STAs (see Appendix 5-5). The downstream system is monitored to track changes in mercury concentrations over space and time in response to the changes in hydrology and water quality associated with the EFA.

MERCURY MONITORING AND REPORTING PROGRAM

RAINFALL

From 1992 through 1996, the District, the FDEP, the U.S. Environmental Protection Agency (USEPA), and a consortium of southeastern U.S. power companies sponsored the Florida Atmospheric Mercury Study (FAMS). The FAMS results, in comparison with monitoring of surface water inputs to the Everglades, showed that more than 95 percent of the annual mercury came from rainfall. As such, it was clear that the major source of mercury to the Everglades was from the atmosphere. Accordingly, the District continues to monitor atmospheric wet deposition of THg to the Everglades by collecting information from the National Atmospheric Deposition Program's (NADP) Mercury Deposition Network (MDN). Under MDN protocols, bulk rainfall samples are collected weekly at STA-1W (station FL34), Western Broward County (Broward County station FL97), and the ENP (station FL11) to measure wet deposition (i.e., dry deposition is not measured; for locations see **Figure 1**). Surface measurements at the Broward County station began at the end of November 2006, replacing former monitoring site Andytown station.

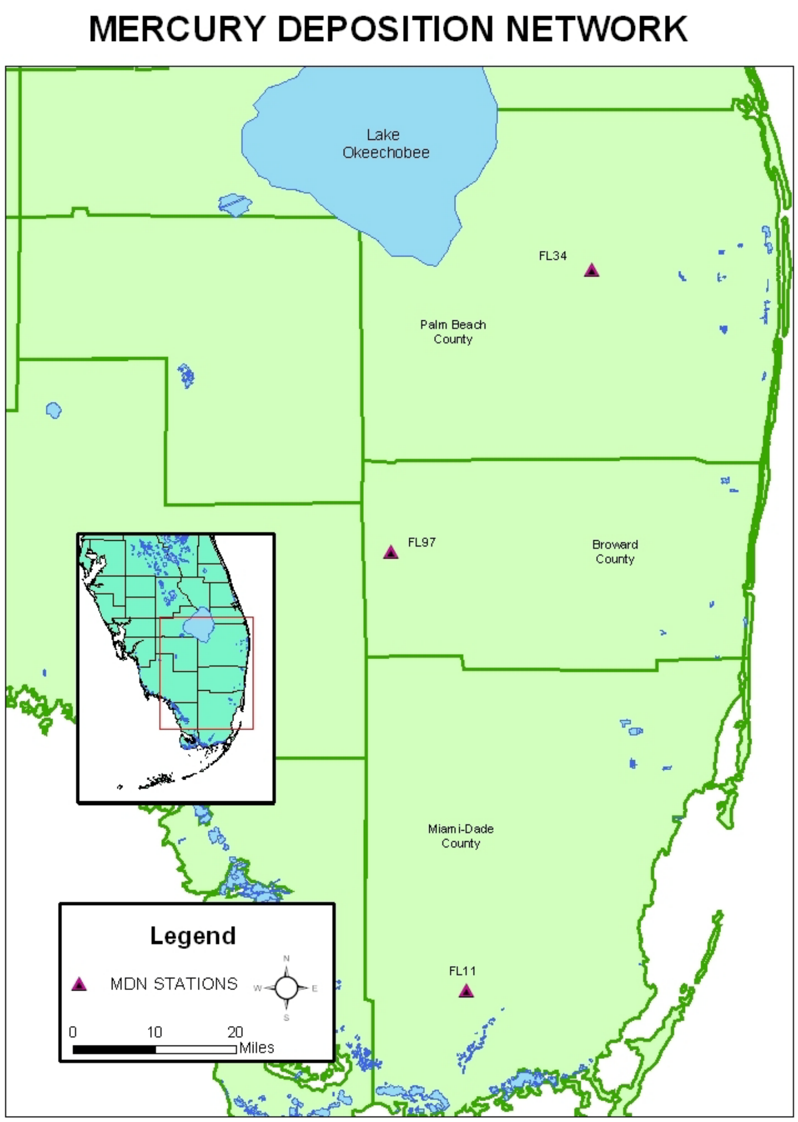


Figure 1. Mercury Deposition Network sites in South Florida.

PREYFISH

Grab samples of between 100 and 250 mosquitofish (*Gambusia* spp.) are collected with a dip net during single sampling events at 12 downstream interior marsh sites **(Figure 2)**. Mosquitofish are selected as a representative indicator of short-term, localized changes in water quality because of their small size range, short life span, and widespread occurrence in the Everglades. Mosquitofish become sexually mature at approximately three weeks of age and have an average life span of only four to five months (though some individual females may live up to 1.5 years); the life span of males is shorter than females (Haake and Dean, 1983; Haynes and Cashner, 1995; Cabral and Marques, 1999). After collection, the mosquitofish are homogenized, the homogenate is sub-sampled (aliquot), and each sub-sample is analyzed for THg. On March 5, 2002, the FDEP approved a reduction in the number of aliquots of the homogenate from five to three (correspondence from F. Nearhoof, FDEP). In March 2007, the District revised its use of three aliquots to one aliquot. In October 2007, the District began analyzing all fish types (mosquitofish and large-bodied fish) for THg that do not require pesticide analysis. Samples requiring both mercury and pesticide analysis are analyzed by the FDEP.

SECONDARY PREDATOR FISH

Up to 20 sunfish (*Lepomis* spp.) are collected at the same 12 downstream interior marsh sites using electroshocking techniques (**Figure 2**). Sunfish are thought to have an average life span of four to seven years in the wild. Each whole fish is analyzed for THg. Sunfish are prevalent in the Everglades and are the preferred prey for several fish-eating species; therefore, this species was selected as an indicator of mercury exposure for wading birds and other fish-eating wildlife.

TOP-PREDATOR FISH

Using electroshocking techniques, up to 20 largemouth bass (*Micropterus salmoides*) (LMB) are also collected at the 12 downstream interior marsh sites (**Figure 2**); the fillets are analyzed for THg. Largemouth bass are long-lived (oldest bass collected as part of this effort was nine years old) and have been monitored at several Everglades sites since 1989. Therefore, LMB were selected as an indicator of potential human exposure to mercury.

Tissue concentrations in each of these three monitored fish species reflect ambient MeHg levels; i.e., their exposure is a function of a combination of factors, including body size, age, rate of biomass turnover, and trophic position. Mosquitofish should respond rapidly to changing ambient MeHg concentrations due to their small size, lower trophic status, short life span, and rapid biomass turnover. Conversely, sunfish and LMB should take a greater amount of time to respond, in terms of tissue concentrations, to changes in ambient MeHg availability. Most importantly, sunfish and LMB represent exposure at higher trophic levels (TLs) with a requisite time lag for trophic exchange. While focusing on 3-year-old bass is appropriate to evaluate exposure to fishermen, it complicates the data results by only interpreting tissue concentration integrated over a three-year period. The key is to use these species-related differences to better assess MeHg availability within the system.

More than 85 percent of the mercury found in the muscle tissue of fish is in the methylated form (Grieb et al., 1990; Bloom, 1992). Therefore, the analysis of fish tissue for THg, which is a more straightforward and less costly procedure than the analysis for MeHg, can be interpreted as being equivalent to the analysis of MeHg.

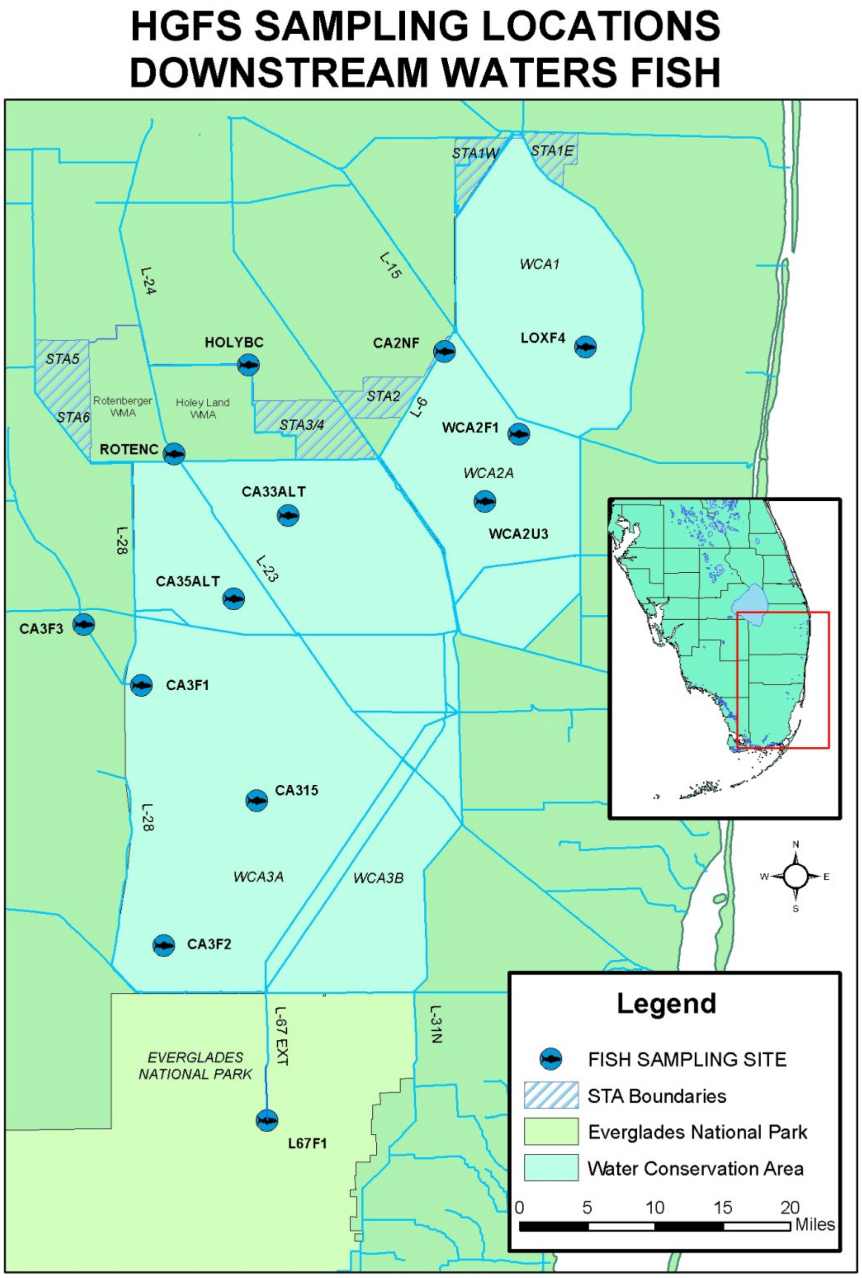


Figure 2. Collection sites for monitoring total mercury (THg) levels in mosquitofish (*Gambusia* spp.), sunfish (*Lepomis* spp.), and largemouth bass (*Micropterus salmoides*). CA3F1 was replaced with CA3F3 in WY2011 due to accessibility problem to CA3F1 which is located in Tribal Land. CA3F3 is located in the L-28 Interceptor Canal within Big Cypress National Preserve. Monitoring at station CA3F3 began 10/7/10. The District has been unable to request a permit modification to Non-ECP Permit 06,502590709 to formally replace station CA3F1 with CA3F3 because the permit is on administrative hold until litigation issues are resolved.

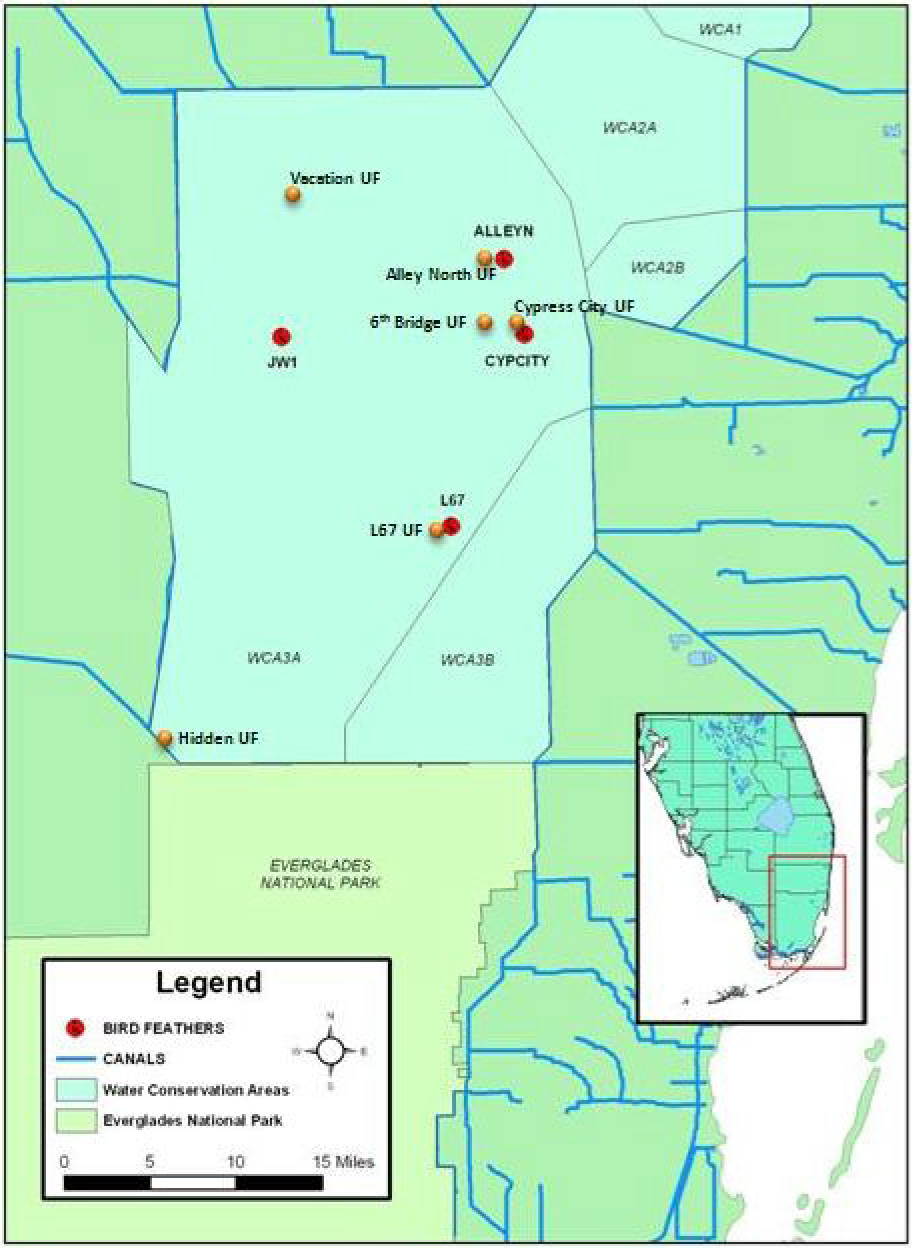


Figure 3. Collection sites for great egret (*Ardea alba*) nestling feathers. Although efforts to collect repeatedly from the same colony are made, colonies are sometimes inactive or abandoned, thus requiring collection at an alternate colony.

FEATHERS

To monitor temporal trends in mercury bioaccumulation of fish-eating wildlife, the District collects feathers from great egret nestlings. The District's monitoring program has focused on two egret colonies, designated as JW1 and L67, which are located in WCA-3A (**Figure 3**). These two colonies consistently showed the highest THg concentrations during background studies (Frederick et al., 1997; FTN Associates, 1999; Sepulveda et al., 1999). However, nesting at the JW1 colony has been erratic in recent years and, consequently, samples have been collected from another nearby colony designated Cypress City (**Figure 3**). Under appropriate state and federal permits, feathers are collected (for THg analysis) from the oldest nestling in 10 nests in each of the two different nesting colonies. This sampling design (approved in permit modification 0237803-10, Exhibit E) is consistent with protocols used in the collection of background data (Frederick et al., 1997). In early 2009, the District contracted the University of Florida (UF) to conduct annual juvenile egret feathers collections. UF researchers collected or attempted collection of feathers from the traditional District sites (Alley North, L67F1, Cypress City, and JW1), with additional collections from other areas within the WCAs (**Figure 3**). All sampling locations can be used for the purpose of evaluating spatial and temporal THg trends in juvenile great egrets.

In addition to the monitoring program described above, in accordance with Condition 4.iv of the Mercury Monitoring Program, the District is required to "report changes in wading bird habitat and foraging patterns using data collected in ongoing studies conducted by the permittee and other agencies." Further details regarding rationales for sampling scheme, procedures, and data reporting requirements are in the District's Everglades Mercury Monitoring Plan revised in March 1999 (Appendix 1 of the Quality Assurance Protection Plan, June 7, 1999). Information about wading bird nesting activity is provided in Volume I, Chapter 6.

QUALITY ASSESSMENT FOR THE MERCURY MONITORING PROGRAM

Details on all quality assurance and quality control measurements for data collected under the EFA permits is provided in Attachment C, Appendix 3-1 of this volume.

STATISTICAL METHODS

Temporal trends in atmospheric THg deposition were evaluated using the Seasonal Kendall test (SAS; for macro see USEPA, 1993), which is a generalization of the Mann-Kendall trend test for trend detection (Gilbert, 1987). The test is applied to datasets exhibiting seasonality, and may be used even though there are missing, tied, or non-detect values. The validity of the test does not depend on the data being normally distributed. However, use of this analysis presupposes the presence of large multiyear, multi-season datasets. Five years is the minimum dataset for proper use of both the test and standard statistical tables. Consequently, the application of this test on quarterly obtained data, some of which were unusable due to fatal qualifiers, should be approached cautiously, and results should be viewed as approximations only.

Monitoring mercury concentrations in aquatic animals provides several advantages. However, interpretability of residue levels in animals can be problematic due to the confounding influences of age or species. For comparative purposes, special procedures are used to normalize the data. Standardization to size, age, or lipid content is a common practice (Wren and MacCrimmon, 1986; Hakanson, 1980). To be consistent with the reporting protocol used by the FWC (Lange et al., 1998;1999), Hg concentrations in LMB were standardized to an expected mean concentration in 3-year-old fish (EHg3) at a given site by regressing Hg on age (Lange et al., 1999). Because sunfish were not aged, age normalization was not available. Instead, arithmetic means were reported. However, efforts were made to estimate a least square mean (LSM) THg concentration based on the weight of the fish. Additionally, the distribution of the different species of sunfish, including warmouth (*L. gulosus*), spotted (*L. punctatus*), bluegill (*L. macrochirus*), and redear (*L. microlophus*), collected during electroshocking was also considered to be a potential confounding influence on THg concentrations prior to each comparison. To be consistent with the reporting protocol of Frederick et al. (1997; see also Sepulveda et al., 1999), THg concentrations in egret nestling feathers were similarly standardized for each site and were expressed as LSM for chicks with a 7.1 centimeter (cm) bill.

Where appropriate, an analysis of covariance (ANCOVA; SAS GLM procedure) was used to evaluate spatial and temporal differences in Hg concentrations with age (LMB), weight (sunfish), or bill size (egret nestlings) as a covariate. However, the use of ANCOVA is predicated on several critical assumptions (Zar, 1996), including that regressions are simple linear functions and are statistically significant (i.e., non-zero slopes); that the covariate is a random, fixed variable; that both the dependent variable and residuals are independent and normally distributed; and that slopes of regressions are homogeneous (parallel). Where these assumptions were not met, standard analysis of variance (ANOVA) or Student's t-test was used; possible covariates were considered separately. If multigroup null hypotheses were rejected under ANOVA, then the groups were compared using either Tukey HSD (Honestly Significant Difference; for equal-sized datasets) test or the Tukey-Kramer (for unequal-sized datasets). The assumptions of normality and equal variance were tested by the Kolmorogov-Smirnov and Levene Median tests, respectively. Datasets that either lacked homogeneity of variance or departed from normal distribution were natural-log transformed and reanalyzed. If transformed data met the assumptions, then they were used in ANOVA. If the assumptions were not met, then the raw datasets were evaluated using non-parametric Mann-Whitney or Kruskal-Wallis Rank sum tests. If the multigroup null hypothesis was rejected, then groups were compared using either Nemenyi test (for equal-sized datasets) or Dunn's Method (for unequal-sized datasets). Pearson Product moment (or the non-parametric equivalent Spearman Rank Order) was used to evaluate the relationship between two parameters. Linear regression was used to develop a line of best fit (linear model) between two parameters.

MONITORING RESULTS

RAINFALL: NATIONAL ATMOSPHERIC DEPOSITION PROGRAM, MERCURY DEPOSITION NETWORK

Samples of rainfall were collected weekly under the protocols of the National Atmospheric Deposition Program (NADP) Mercury Deposition Network (MDN) at STA-1W (FL34), the Baird Research Center in the Park (FL11), and the Western Broward County station (FL97) (**Figure 1**). For more information on MDN and to retrieve raw data, see nadp.sws.uiuc.edu/mdn. In 2004, difficulties were encountered due to the landfall of four hurricanes (Rumbold et al., 2006); in 2005, the pattern and difficulties continued with the landfall or near misses of three hurricanes. In 2004, the northernmost station, STA-1W, was most affected; in 2005, the southern station, ENP, was most significantly affected by the storms. During these events, the collectors recorded significant precipitation with little THg. All three collectors were non-functioning during Hurricane Wilma in 2005. Therefore, among-year differences in both volume-weighted concentration and deposition should be considered with these uncertainties. Missing samples at each station were due to a combination of no precipitation and mechanical failure.

Notwithstanding the uncertainties caused by tropical rainfall events and periodic mechanical failures, wet atmospheric deposition of THg to South Florida continues to be highly variable both spatially and temporally (**Table 1**; **Figures 4** and **5**). As observed in previous years, THg concentrations in precipitation were substantially higher during the summer months (**Figure 4**), likely due to seasonal and tall, convective thunderclouds that can scavenge particulate mercury and water-soluble reactive gaseous mercury from the middle and upper troposphere. This is commonly understood, as observed with several studies, e.g., Guentzel (1997); Lai et al. (2007); Selin and Jacob (2008). Because both THg concentrations and rainfall volumes generally increase during summer, THg wet deposition typically peaks in mid-summer (**Figure 4**).

In CY2010, annual volume-weighted THg concentrations displayed a decreasing trend from north to south (**Table 2**). The average of the three stations in 2010 was slightly lower than in 2009. In 2010, site FL34 showed an increase in THg by nearly 6 $\mu g/m^2$ while FL11 decreased by 7 $\mu g/m^2$ (**Table 3**). Unlike previous years (Gabriel et al., 2011), THg deposition failed to track annual precipitation depth (**Figure 4**). Site FL34 (147 cm) and FL11 (146 cm) shared similar precipitation depth but differed considerably in THg deposition. An anomalously high THg concentration was observed during the week of 8/18/2009 at station FL97. From 2005–2009, all sites showed no apparent decreasing or increasing trend in atmospheric Hg deposition. Temporal trends are discussed further in the following section.

Seasonal Kendall analyses (of ranks) revealed a significant decreasing trend in monthly mean THg concentrations at FL34 (1998–2010; n = 156 months; Tau = -0.228; p = 0.01); however, there was no trend for FL11 (1997–2010; n = 168 months; Tau = -0.089; p = 0.20) or FL04/97 (2007–2010; n = 156 months; Tau = -0.199; p = 0.10). The finding of no trends is consistent with Nilles (2004) and previous District MDN investigations, which found no trends in volume-weight monthly averages from the three sites in South Florida. Seasonal Kendall analysis did not show any long-term trend in the monthly deposition and monthly total rainfall at all sites for the POR. Based on the average deposition rates measured at the three sites, wet-only atmospheric loading of THg to the EPA (9.01×10^9 m^2) was estimated at 163 kilograms of mercury per year (kg Hg/yr), which is the third year of continuous decline (**Table 4**). While the focus is only on wet deposition, dry deposition likely adds 30 to 60 percent of wet deposition to the overall atmospheric load (FDEP, 2003; Marsik et al., 2007). It should be noted that the estimate of 163 kg Hg/yr has uncertainty as mechanical failure or collection efficiency issues are associated with several samples.

Table 1. THg concentration [nanograms per liter (ng/L); wet only] from compliance sites of the Mercury Deposition Network (MDN) in CY2010.

Week ending	STA-1W (FL34)	Broward (FL97)	ENP (FL11)
1/5/10	5.6	4.6	9.0
1/12/10	8.4	9.2	9.5
1/19/10	3.8	4.5	4.9
1/26/10	9.0	8.9	5.5
2/2/10	4.8	9.3	6.5
2/9/10	8.1	12.9	10.6
2/16/10	5.0	4.9	5.4
2/23/10	NA	13.6	17.7
3/2/10	6.3	5.2	6.8
3/9/10	7.5	NA	9.4
3/16/10	7.8	10.2	7.3
3/23/10	12.3	NA	11.5
3/30/10	11.5	13.3	11.9
4/6/10	NA	NA	NA
4/13/10	8.9	15.9	14.0
4/20/10	9.0	4.5	3.6
4/27/10	10.4	9.1	5.5
5/4/10	NA	NA	7.4
5/11/10	25.6	19.6	30.6
5/18/10	13.3	20.1	12.1
5/25/10	18.3	25.8	13.2
6/1/10	15.9	NA	13.3
6/8/10	30.3	21.8	13.4
6/15/10	18.2	28.1	33.3
6/22/10	37.4	30.2	NA
6/29/10	11.9	23.8	10.3
7/6/10	11.4	9.1	20.4
7/13/10	9.8	30.1	23.8
7/20/10	15.7	15.4	20.2
7/28/10	NA	7.1	6.7
8/3/10	18.5	11.2	24.9
8/10/10	10.9	14.0	NA
8/17/10	29.4	13.8	16.4
8/24/10	28.9	19.3	20.5
8/31/10	24.0	32.6	9.1
9/7/10	14.9	14.1	6.9
9/14/10	14.0	17.0	14.7
9/21/10	6.6	NA	2.7
9/28/10	8.8	14.8	8.2
10/5/10	3.1	5.5	1.5
10/12/10	NA	NA	19.9
10/19/10	5.4	NA	6.0
10/26/10	12.0	10.9	17.1
11/2/10	11.3	3.2	12.0
11/9/10	7.4	12.1	8.5
11/16/10	NA	4.9	19.8
11/23/10	NA	11.6	8.9
11/30/10	NA	27.3	9.0
12/7/10	NA	NA	8.9
12/14/10	11.4	10.7	18.2
12/21/10	4.5	3.9	NA
12/28/10	4.2	3.4	3.8

NA – not available

Table 2. Historical volume-weighted THg concentration (ng/L) from MDN compliance sites.

Year	STA-1W (FL34)	Broward (FL97)	ENP (FL11)
1997*	18.7	NA	14.7
1998*	11.4	13.8[b]	12.7
1999*	10.8	12.3[b]	11.6
2000*	13.7	15.8[b]	13.6
2001*	13.9	13.2[b]	13.1
2002*	12.3	14.2[b]	12.1
2003*	16.1	16.4[b]	16.4
2004*	13.7[a]	14.7[b]	14.7
2005*	11.7	13.7[b]	10.6
2006*	12.6	14.9[c]	12.4
2007	11.8	11.3	14.5
2008	10.8	13.5	13.7
2009	12.6	14.9	14.8
2010	14.6	13.9	11.4

Table 3. Annual mercury deposition (µg/m^2) from MDN compliance sites.

Year	STA-1W (FL34)	Broward (FL97)	ENP (FL11)
1997*	32.4	NA	27.2
1998*	26.1	20.10[b]	20.3
1999*	12.1	17.50[b]	17.7
2000*	14.3	18.10[b]	20
2001*	21	21.10[b]	18
2002*	10.3[a]	18.70[b]	18.2
2003*	17.8	28.50[b]	26.8
2004*	a	18.30[b]	18.7
2005*	11.5	14.50[b]	17.5
2006*	14.4	NA[a,c]	15.4
2007	13.5	22.3	16.8
2008	17.8	24.7	21.9
2009	15.7	17.55	22.81
2010	21.5	17.0	15.7

*Adapted from the *2008 South Florida Environmental Report – Volume I*
[a] Rain gauge malfunction in 2004; several trips missed because of highly active tropical season (four hurricanes)
NA – Not available due to mechanical problems with collector, failure to meet quality control criteria, or no precipitation
NA[a] – No calculation due to discontinuation of station FL04 and not enough data existed for station FL97 to calculate annual deposition
[b] Data just from the Andytown station (FL04)
[c] Combination of data from the Andytown (FL04) and Broward County stations (FL97)

Table 4. Atmospheric THg loading to the EPA.

Calendar Year	Atmospheric Deposition (kg Hg/yr)
1994[a]	238
1995[a]	206
2003	161-258[b]
2004	172[d]
2005	131[e]
2006	134[f]
2007	157[g]
2008	193[g]
2009	167[g]
2010	163[g]

[a] USEPA (2001, as cited by FDEP, 2003) annual deposition derived from Florida Atmospheric Mercury Study (FAMS), 1993–1996; surface water loading derived from biweekly monitoring of into structures discharging from the Everglades Agricultural Area into the Everglades Protection Area
[b] Rumbold (2005)
[d] Rumbold et al. (2006)
[e] Value highly uncertain due to passage or near misses of Hurricanes Katrina (fourth week of August), Rita (third week of September), and Wilma (fourth week of October) in 2005
[f] Based on average annual loading from FL34 and FL11
[g] Based on an average annual loading from FL34, FL11, and FL97 and the total area of EPA of 9.01×10^9 m^2

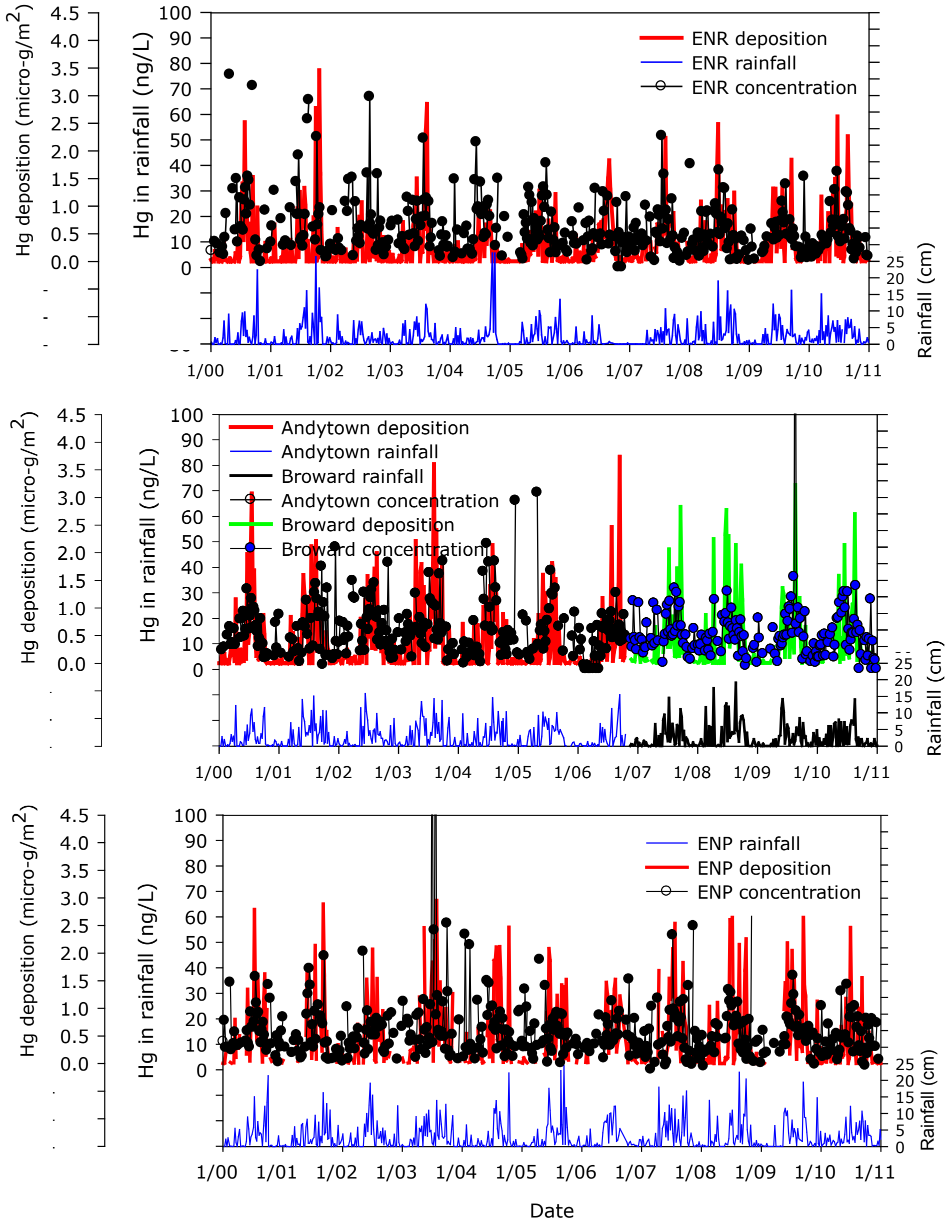


Figure 4. Time series of rainfall, rainfall Hg concentrations, and wet Hg deposition at STA-1W (FL34), Andytown (FL04), Everglades National Park (ENP) Bair Research Center (FL11), and Broward County (FL97), as reported by the MDN. STA-1W (FL34) is the same site as ENR.

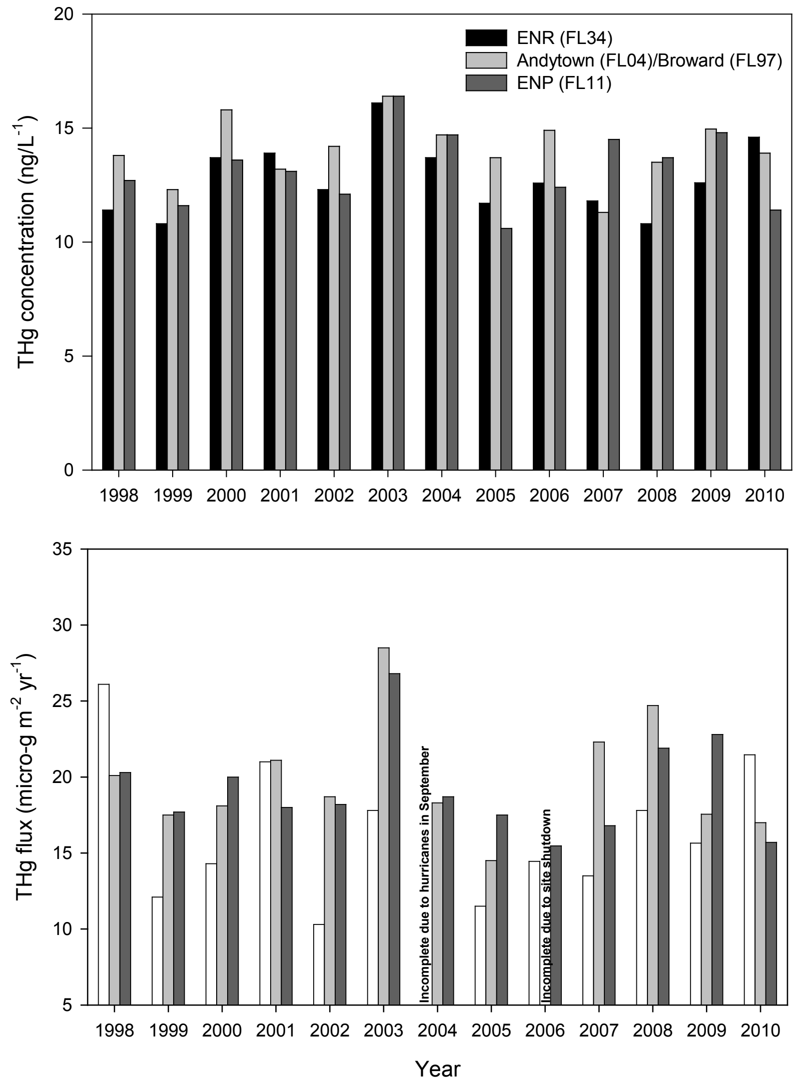


Figure 5. Time series of annual volume-weighted concentration (top) and annual THg flux (bottom) at three MDN stations. The Andytown site closed down in mid-2006 and was replaced with Broward County site FL97. STA-1W (FL34) is the same site as ENR.

FISH FROM EFA AND NON-EFA INTERIOR MARSHES

Results from monitoring downstream interior marsh mosquitofish, sunfish, and LMB are summarized in **Tables 5** through **7**, respectively. Raw data for individual fish is available on the District's website at www.sfwmd.gov/dbhydro. In 2010, 12 downstream marsh sites in the interior of the WCAs and the ENP (**Figure 2**) were targeted for fish collections. Three of these sites (LOXF4, WCA2U3, and CA315) have been monitored by the FWC since 1993. If fish could not be collected from a targeted marsh site due to inaccessibility, poor habitat, or both, then collections defaulted to nearby marshes or, in some cases, canals where fish were more plentiful if source water was similar (approval for these alternate sites was received from the FDEP on March 5, 2002; correspondence from F. Nearhoof, FDEP). To preserve long-term datasets that are crucial for temporal trend assessment, reverting to the original target site will involve sampling at both the alternate and the original site for some period to assess spatial differences. Accordingly, sampling will revert to the original targeted site only after it has been established that long-term hydrologic and habitat restoration has occurred so that chances of finding fish year-to-year are high. Although this level of restoration may take several years at certain sites (e.g., sites WCA2F1, CA33ALT, and CA35ALT), waiting until fish are present consistently will prevent alternating collections between the two sites and the concomitant disruption of data continuity.

Fish collected in CY2010 showed both spatial and temporal patterns in tissue mercury concentrations. In keeping with the primary objective of the Mercury Monitoring Program, the focus is on temporal changes in mercury concentration in fish tissues to assess possible adverse effects from the EFA construction components and the operation of the STAs. Nevertheless, spatial patterns of tissue mercury concentrations are important, particularly if there has been a variation from pre-EFA conditions established by the FWC. Therefore, spatial patterns are reviewed in detail only where significant changes have occurred over time.

Table 5. THg concentrations [nanograms per gram (ng/g) wet weight] in mosquitofish composites collected in WY2010-WY2011 from downstream sites. Value presents the concentration of one aliquot.

Site	2010	2011	Between Year Change (%)	Cumulative Mean
LOXF4	38	139	72.7	68
WCA2F1	10	11	9.1	13
CA2NF	19	20	2.6	24
HOLYBC	29	36	19.4	43
ROTENC	100	130	23.1	71
WCA2U3	179	95	-88.4	119
CA33ALT	105	114	7.9	68
CA35ALT	128	93	-37.6	94
CA3F1	22	20#	-9.0	49
CA315	88	29	-203.4	85
CA3F2	24	20	-20.0	47
L67F1	50	64	21.9	85
Annual mean	66	68	-16.8	64

*[(2011–2010)/2011]*100

Note: Grandmean for period of record (POR) (WY1999–2011; aliquots pooled across time and space) ± 95% C.I. of mean: n = 501; 66 ± 5 ng/g; 50th, 75th, and 90th percentiles for POR were 52, 83, and 140 ng/g,

† Mean includes dropped stations no longer under permit # data from CA3F3

Table 6. THg (mean±SD, n) in sunfish collected in WY2010–WY2011 from downstream of the Everglades Stormwater Treatment Areas. [Note: Mean=nanograms per gram (ng/g) wet weight; SD=standard deviation, n=number of sample (fish).]

Site	2010	2011	Between-Year-Change (%)[$]	Cumulative Mean
LOXF4	135±42, 20	115±34, 20	-16.7	130
WCA2F1		44±23, 20	NA	52
CA2NF	137±96, 20	84±67, 20	-62.4	116
HOLYBC	221±114, 20	156±45, 20	-41.4	161
ROTENC	294±90, 20	338±166, 20	13.0	204
WCA2U3	286±191, 20	292±136, 20	1.8	205
CA33ALT	403±250, 20	183±94, 20	-120.2	220
CA35ALT	566±156, 3	359±126, 20	-57.6	264
CA3F1	126±85, 20		NA	123
CA315	338±112, 23	404±190, 20	16.4	283
CA3F2	148±104, 2	112±68, 20	-32.2	121
CA3F3		164±130, 20		164
L67F1	455±185, 20	448±233, 20	-1.5	402
Annual mean	2010	2011	-30.1	188

[$][(2011–2010)/2011]*100

NA – Data not available due to low water or no fish available

Note: Grandmean for period of record (POR) (WY1999–2011) ± 95% C.I. of mean: n = 2799; 66 ± 5 ng/g; 50th, 75th, and 90th percentiles for POR were 140, 242, and 387 ng/g, respectively

† Mean includes dropped stations no longer under permit

Table 7. Age-standardized (EHg3) of THg in largemouth bass fillets (ng/g wet weight) collected in WY2011 from non-Everglades Forever Act (non-EFA) marsh sites. [Note: Arithmetic mean concentrations, standard deviation, and sample size are shown in parentheses.]

Site	EHg3 ± 95th C.I. (mean ± 1 SD, n) ng/g wet	Between-Year Change (%) (2009 to 2010)	Cumulative EHg3
LOXF4	464 ± 119 281 ± 171 (20)	NA	448
WCA2F1	NA	NA	259
CA2NF	523 ± 173 523 ± 31 (20)	34.6	426
HOLYBC	777 ± 136 760 ± 196 (20)	27.7	606
ROTENC	NA 586 ± 134 (13)	NA	806
WCA2U3	1,055 ± 226 824 ± 326 (20)	-1.4	819
CA33ALT	NA 456 ± 59 (3)	NA	1,311
CA3F1	NA	NA	529
CA35ALT	NA	NA	NC(1)
CA315	856 ± 166 583 ± 239 (20)	NA	835
CA3F2	NA 291 ± 166 (4)	NA	474
L67F1	1,576 ± 299 1,444 ± 431 (19)	32.6	1,299

$[(2011–2010)/2011]*100

NA – Data not available due to low water or no fish available

NC: not calculated due to sample size = 1

Note: Cumulative mean for period of record (POR) (WY1999–2011)

± 95% C.I. of mean: n = 2156; 552 ± 18 ng/g; 50th, 75th, and 90th percentiles or POR were 368, 610, and 950 ng/g, respectively

† Mean includes dropped stations no longer under permit

Mosquitofish

THg levels in mosquitofish collected from marsh sites in WY2011 ranged from 11 nanograms per gram (ng/g) at site WCA2F1 to 139 ng/g at site LOXF4 (**Table 5**; **Figure 2**). The average annual basin-wide THg concentration in mosquitofish collected in WY2010 is 68 ng/g (**Table 5**; **Figure 6**), which is on average 2 ng/g below the basin-wide mean concentration in WY2010 (70 ng/g). The mean aliquot for tissue THg concentrations in mosquitofish for the POR (WY1999–2011; n = 548) was 66 ng/g. In WY2011, THg levels in mosquitofish declined at four of the 12 sites (**Table 5**). **Figure 7** shows that the spatial variability in mean mosquitofish THg levels is relatively high. A few stations reveal consistently low (e.g., WCA2F1, CA2NF, CA3F2) or high (L67F1 and ROTENC) levels. Several sites displayed marked changes in THg concentration in WY2011: mosquitofish THg concentration increased by 101 ng/g in LOXF4 and decreased by 35 and 84 ng/g in CA35ALT and WCAU3, respectively. From WY2009–WY2011, concentrations increased at sites CA33ALT and ROTENC and decreased at site CA35ALT. Concentration also increased in WCA2F1 for three consecutive years but the increase is slow and concentration remained the lowest (**Figure 6**). Since WY2006, sites WCA2U3, CA33ALT, CA35ALT, and ROTENC have shown increases in THg levels; however, only sites CA33ALT (Pearson r = 0.89, p =0.002) and ROTENC (Pearson r = 0.97, p <0.001) have shown statistically significant increases.

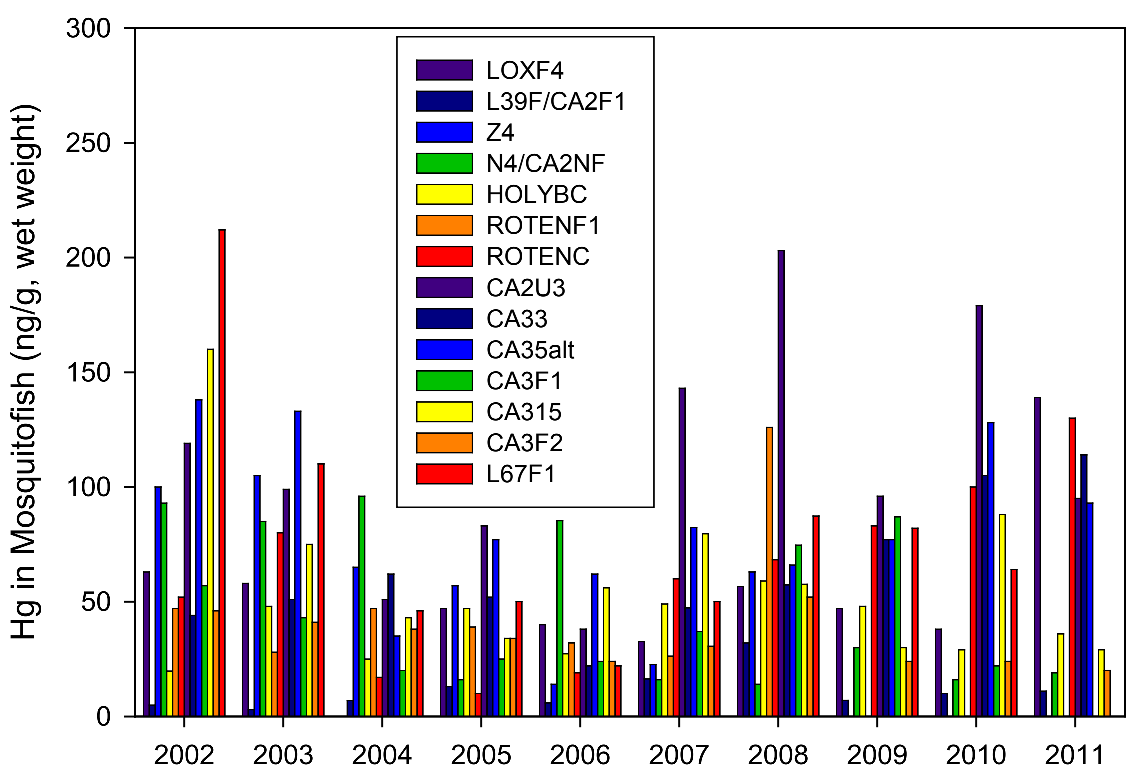


Figure 6. THg concentrations in mosquitofish (ng/g, wet weight) collected at non-EFA marsh sites from WY2002–WY2011. [Note: Not all sites were sampled in all years.]

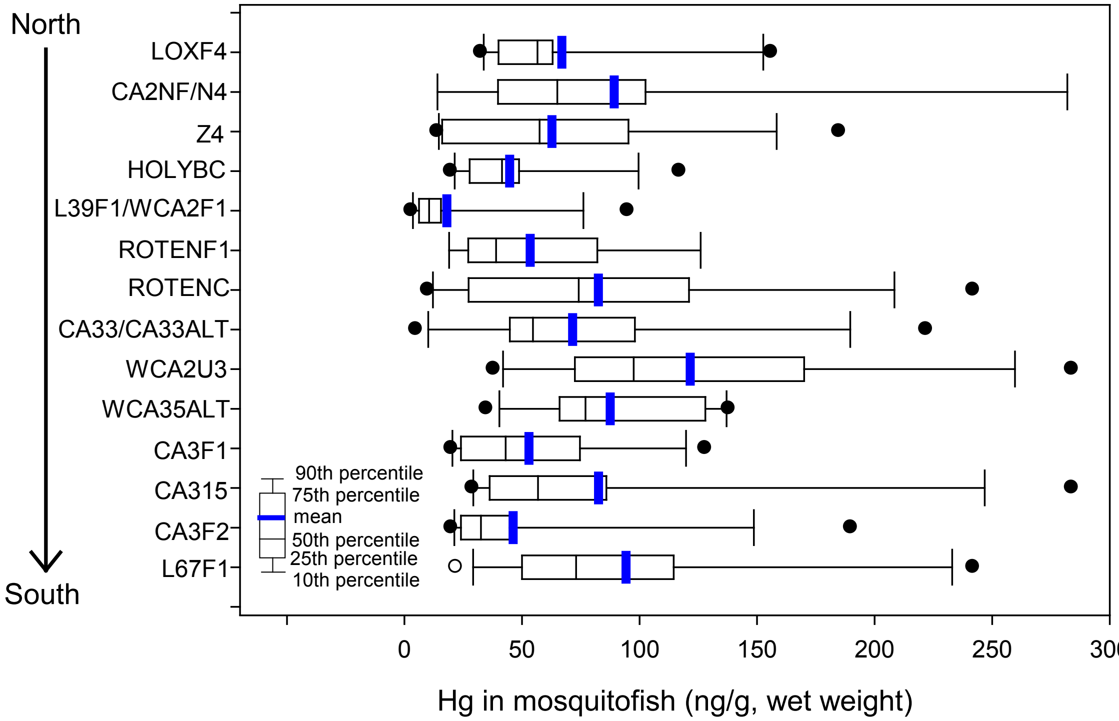


Figure 7. THg concentration (ng/g, wet weight) distributions in mosquitofish collected at non-EFA marsh sites from WY1999–WY2011.
[Note: Not all sites were sampled in all years.]

Sunfish

THg levels in sunfish collected from downstream sites in WY2011 (n = 240) ranged from 15 ng/g in a bluegill from WCA2F1 near the inflow in northern WCA-2 to a high of 906 ng/g in a bluegill from CA315 (**Table 6**) in the interior WCA-3A. Long-term low levels remain in or around L39F1 (WCA2F1). The grandmean of all sites in WY2011 was 185 ng/g compared to the grandmean of 254 ng/g in WY2010, indicating a 27 percent decrease. This is compared to a 20 percent increase in 2010 over 2009.

In WY2011, sunfish continued to show significant spatial variation in THg levels (**Table 6**; **Figure 8**); One-way ANOVA on rank for sites with 12 to 13 years of data showed significant differences among sites (df = 6; H = 50; $p < 0.001$). Fish from sites CA33ALT, CA35ALT, CA315, L67F1, WCA2U3 and ROTENC contained the highest median concentrations (ranging from 207–404 ng/g) and sites CA35ALT and L67F1 were statistically greater than all other sites (Dunn's Method, $p < 0.05$).

Sunfish collected from different sites came with different sizes and age, which might make the cross-site comparison difficult. Although there are statistical methods to address confounding factors, such as age or weight, addressing species differences is more problematic, particularly when convolved with size differences. As discussed in Rumbold et al. (2006) and Gabriel et al. (2007), attempts to use ANCOVA to evaluate patterns of mercury concentrations in sunfish using weight as a covariate were often unavailable because concentration-weight relationship slopes were either not significant or not parallel for each year. For WY2011, the length-adjusted THg concentration in sunfish is closely correlated with the measured concentration (R^2 = 0.83, $p < 0.001$). Correlation between total length and weight of fish and THg showed significant relationships ($p < 0.05$), but the correlation coefficients (0.17 and 0.14) are very weak. This suggests that it is appropriate to use the measured values to conduct inter-site comparison.

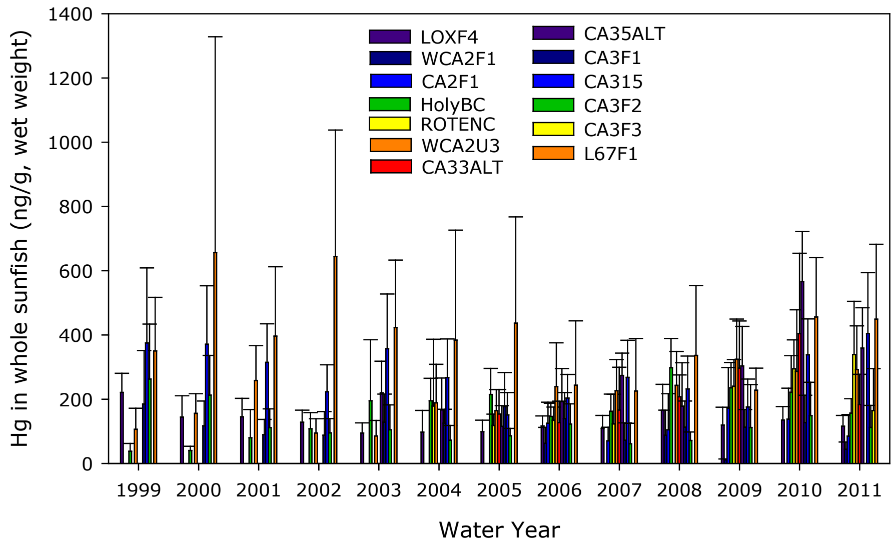


Figure 8. THg concentration of whole sunfish collected at Everglades Construction Project (ECP) and non-ECP sites from WY1999–WY2011. Prior to 2006, collections were made at site Z4 (CA2NF/N4 after January 1, 2006).

As observed over the past several years, in WY2011 fish species were a significant factor in tissue mercury concentration when data were pooled across sites (Kruskal-Wallis Analysis; df = 3; H = 44; $p < 0.001$). In WY 2011, mercury levels were lowest in redear sunfish (median value = 114 ng/g) followed by bluegill sunfish (126 ng/g) which are not statistically different from each other (Dunn's test, Q = 3.7, $p > 0.05$). Spotted sunfish (323 ng/g) and warmouth sunfish (326 ng/g) shared similar and high THg concentration (Q = 0.478, $p < 0.05$). Their THg concentrations are significantly greater than both redear and bluegill.

Largemouth Bass

During October–November 2010, 163 largemouth bass (LMB) were collected at 12 downstream sites. LMB could not be collected from sites WCA2F1 and CA35ALT in CY2009 but were collected in WY2011. However, LMB collected in CA3F1 continuously over the past 12 year were not collected in WY2011. Two LMB collected from WCA2F1 and three from CA2NF with age between 0 and 1 had THg concentrations ranging from 24 to 91 ng/g. The highest THg concentration was 2,030 ng/g in a three-year-old LMB from L67F1. Site-specific, age-standardized concentrations (estimated for a three-year-old bass symbolized as EHg3) ranged from 464 ng/g at LOXF4 to 1,576 ng/g at L67F1 (**Table 6** and **Figure 9**). Calculation of EHg3 was not appropriate at sites ROTENC, CA3F2, CA33ALT, and CA315 either because the tissue mercury-age relationship was not significant ($p > 0.05$) or because small sample size was too small. Based on sites where it was appropriate to calculate site-specific EHg3, the grandmean value was 849 ng/g in WY2011, representing a 22 percent increase over the grandmean estimated for WY2010.

Similar to previous years, in WY2011, LMB exhibited spatial patterns in tissue Hg concentrations (**Table 6**; **Figure 9**). The northernmost sites (LOXF4, WCA2F1, and CA2NF), along with a site in WCA-3 (CA3F2), are still comparatively low in tissue Hg concentration. LMB Hg concentrations in WCA-2 U3, WCA315, and L67F1 remain high. This suggests that mercury monitoring sites closed to canal inflow typically have lower THg concentration in LMB than the interior sites with the exception of LOXF4. This is likely related to site-specific mercury methylation rate, which is controlled by the concentration of sulfate. One-way ANOVA analysis on EHg3 or age 3 LMB revealed significant differences ($p < 0.05$) in Hg concentration among sites. The high EHg3 concentrations are consistently observed in L67F1, exceeding 1,000 ng/g for all years except 2008. Corresponding to the highest LMB Hg level in L67F1 among the monitoring sites, sunfish Hg concentration (455 ng/g) is also the highest at this site. However, mosquitofish THg fall into the low range, with an average of 50 ng/g, which is below the USEPA's trophic level (TL) 2/3 limit (77 ng/g). Further data analysis using environmental information such as sulfate concentration, hydrology and trophic ecology may help explain the mercury hotspots in EPA.

For most monitoring sites, there are no increasing trends in THg concentration, which fluctuated during the monitoring period (**Figure 9**). One exception is WCA2U3, where Pearson correlation analysis showed a statistically significant increase in age 3 LMB ($r = 0.40$, $p = 0.002$). THg concentration in L67F1 displayed three consecutive years of increase from 2005–2007, followed by a sudden drop in 2008 with subsequent increases in 2009 and 2010. A similar pattern is also found in HOLYBC (**Figure 9**). In CA3F1, THg concentration displayed an increase trend from 2000 to 2004. After peaking at 2004, THg concentration decreased continuously. More data analysis is required to explain the temporal variations in LMB in EPA.

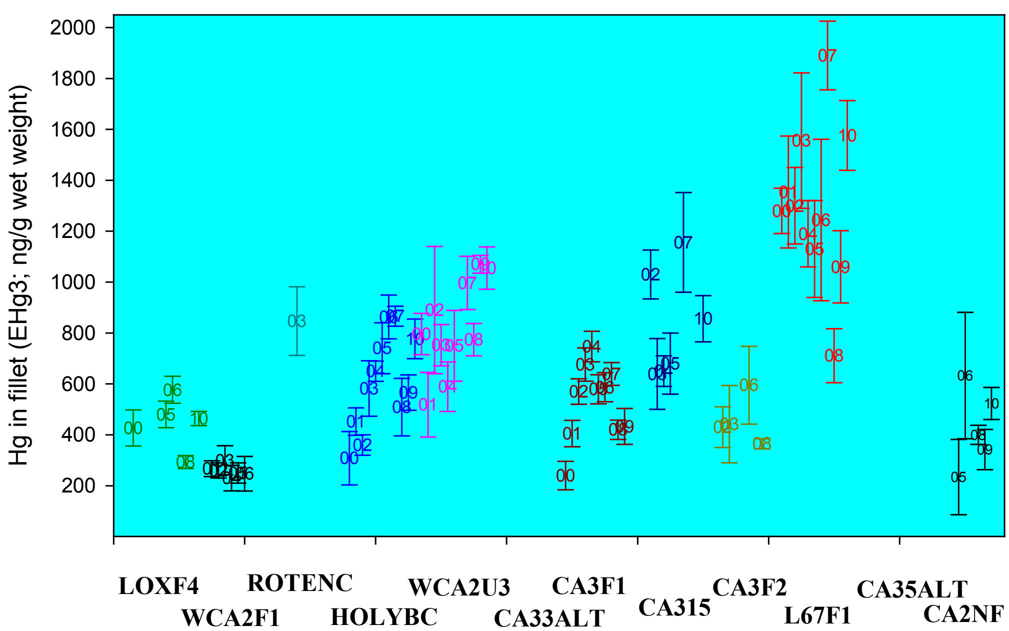


Figure 9. THg concentrations in largemouth bass collected at downstream sites from WY1999–WY2011. [Note: Site WCA2F1 is the same as L39F1.]

PREDATOR PROTECTION CRITERIA

Mercury levels in fish tissues can also be evaluated and put into perspective regarding mercury risk to wildlife. The U.S. Fish and Wildlife Service (USFWS) has proposed a predator protection criterion of 100 ng/g of THg in prey species (Eisler, 1987). The USEPA has proposed criteria of 77 ng/g and 346 ng/g for TL 3 and TL 4 fish, respectively, for the protection of fish-eating avian and mammalian wildlife (USEPA, 1997).

In WY2011, 33 percent of all mosquitofish collected (considered to be TL 2 and TL 3, depending on age; Loftus et al., 1998) exceeded both the USEPA criterion of 77 ng/g and USFWS criterion of 100 ng/g. These exceedances were from the LOXF4, ROTENC, WCA2U3, and CA315 stations (**Table 4**). This is a slight decrease over exceedances observed in CY2009. Sunfish also showed a decrease compared with 2009. In 2010, 80 percent of all sunfish, which are TL 3, exceeded the USEPA criterion of 77 ng/g, 72 percent exceeded the USFWS 100 ng/g criterion, and 22 percent exceeded the EPA 346 ng/g criterion (**Table 5)**. In comparison, in 2009, 90 percent of all sunfish exceeded TL 3 criteria and 89 percent exceeded USFWS criteria of 100 ng/g. As discussed in previous reports, these findings are significant because sunfish and mosquitofish represent the preferred prey item of many fish-eating species in the Everglades.

In WY2011, there was also an increase in THg concentration for largemouth bass. Based on the equation developed for whole-body weighted THg concentration (whole body THg = 0.695 x fillet THg (Lange et al., 1998), 58 percent of all LMB exceeded the TL 4 criteria in WY2011. Exceedances in 2010 were primarily at stations L67F1, WCA2U3, HOLYBC, CA315, ROTENC and CA3F3. In 2010, 8.5 percent of fish samples exceeded the USEPA human health criterion of 850 ng/g, which is a limited consumption criterion for women of child-bearing age and young children. These samples came from station L67F1 (12 fish), WCA2U3 (2 fish) and CA315ALT (one fish). No fish samples exceeded the FDOH's human health no consumption advisory of 1,500 ng/g in WY2011. Further information on Florida fish consumption advisories is available on the Florida Department of Health's website at www.doh.state.fl.us/floridafishadvice. Based on 2009 findings, certain Everglades populations of fish-eating avian and mammalian wildlife continue to be at risk of adverse effects from mercury exposure depending on where they forage.

WADING BIRD FEATHERS FROM WATER CONSERVATION AREA 3A

Similar to the past two years, the District contracted with UF to collect juvenile great egret feather samples from March–June 2011. During this period, UF researchers collected samples at Vacation, Hidden, Jourle, Twest and Younteau while samples were not available from several long-term sites (**Table 8**). Sample sizes ranged from 5 to 10 feather collections at each site. In total, 34 feather samples were collected and analyzed for THg. Because three new sites were established in CY2011, historical trends in THg concentration cannot be assessed. Feather THg concentration in site Hidden in CY2011 was slightly lower than those from CY2009 and CY2010, while feather THg concentration in site Vacation for CY2011 was 4 µg/g greater in CY2009 (**Table 8**).

Table 8. Standardized least square mean of THg (µg/g) for a chick with a 7.1 cm bill (arithmetic mean concentration ± 1SD, n) in growing scapular feathers collected annually from great egret nestlings (2-3 weeks old) at colonies within Water Conservation Area 3A.

Year	JW1	L67/ L67UF	Cypress City/Cypress City UF	Alley North/Alley North UF	Vacation	Hidden	6Bridge	Jourle	Twest	Younteau
1994[1,2]	21 ± 6 (25 ± 8, 9)	16 ± 4 (NA)	NS	NS	NS	NS	NS	NS	NS	NS
1995[2]	14 ± 3 (N/A ± 8)	16 ± 6 (16 ± 6, 14)	NS	NS	NS	NS	NS	NS	NS	NS
1999	7 ± 1 (4 ± 2, 13)	NC (4 ± 2, 20)	NS	NS	NS	NS	NS	NS	NS	NS
2000	7 ± 1 (3 ± 2, 10)	NC (3 ± 1, 10)	NS	NS	NS	NS	NS	NS	NS	NS
2001	Failed to initiate nesting	NC (7 ± 3, 13)	NS	NS	NS	NS	NS	NS	NS	NS
2002	Colony abandoned	NC (2 ± 0.5, 6)	NS	NS	NS	NS	NS	NS	NS	NS
2003	Failed to initiate nesting	NC (5 ± 2, 3)	NC (6 ± 2, 15)	NS	NS	NS	NS	NS	NS	NS
2004	Failed to initiate nesting	4 ± 2 (1 ± 1, 10)	5 ± 2 (2 ± 1, 10)	NS	NS	NS	NS	NS	NS	NS
2005	NS	Failed to initiate nesting	NS	NC (4 ± 2, 3)	NS	NS	NS	NS	NS	NS
2006	NS	NC (5 ± 2, 6)	NS	NC (3 ± 2, 8)	NS	NS	NS	NS	NS	NS
2007	NS	NC (6.7 ± 3.7, 10)	NC (2.2 ± 1, 10)	NS	NS	NS	NS	NS	NS	NS
2008[3]	NS	NA	NC (0.2, 2)	NA	NS	NS	NS	NS	NS	NS
2009[3]	NS	NC (5 ± 1, 2)	NC (8 ± 3, 7)	NC (11 ± 4, 4)	NC (8 ± 3, 8)	NC (4 ± 2, 10)	NC (9 ± 3, 6)	NS	NS	NS
2010[3]	NS	NC (7.7 ± 0.7, 2)	NC (7 ± 5, 10)	NC 10)	NS	NC (4 ± 1.7, 10)	NS	NS	NS	NS
2011[3]	NS	NS	NS	NS	NC (12.0± 3.3, 5)	NC (3.6 ± 0.4, 10)	NS	NC (15.6± 1.2, 5)	NC (8.3± 0.8, 8)	NC (7.2± 1.3, 6)

[1]Concentrations standardized to a bill length of 5.6 centimeters (cm)

[2]Data from P. Frederick et al. (1997)

[3]Data from P. Frederick, University of Florida

NA – Data not available

NC – Not calculated where slope of regression was not significant (p > 0.05)

NS – Not sampled

Estimated mean age of sampled nestlings based on bill length was 16 days in 1994; 24 days in 1995; 15 days in 1999; 16 days in 2000; 15 days in 2001; 13 days in 2002 and 2003; 12–14 days in 2004; 12 days in 2005; 28–29 days in 2006; 19 days in 2007; 28 days in 2008; 33 days in 2009; 33 days in 2010 and 26–42 days in 2011.

OPTIMIZING THE MONITORING NETWORK

Non-EFA mercury monitoring networks are reviewed routinely to streamline costs, improve scientific findings, and adhere to compliance monitoring requirements. Specific changes to non-EFA monitoring during the reporting period are summarized below. Updates on the permit compliance monitoring for mercury in the STAs are covered in Appendix 3-1 of this volume.

DOWNSTREAM FISH MONITORING (PROGRAM HGFS):

- No changes or modifications in WY2011.

DOWNSTREAM GREAT EGRET FEATHER MONITORING (PROGRAM HGBM):

- No changes or modifications in CY2011.

MDN MONITORING:

- No changes or modifications in CY2010.

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Attachment G: Statements of Authenticity for Analytical and Sampling Programs

The project information is required by Specific Condition 12(e) of the Non-ECP permit (FDEP Permit Number 0237803) and is available upon request.

Attachment H:
Water Quality Data

This project information is required by Specific Conditions 12(b), 12(c), and 12(g) of the non-ECP permit (FDEP Permit Number No. 0237803) and is available upon request.

Attachment I: Hydrologic Data

This project information is required by Specific Conditions 12(g) of the non-ECP permit (FDEP Permit Number No. 0237803) and is available upon request.