Municipal Separate Storm Sewer System
National Pollutant Discharge
Elimination System

Joint Annual Report

Cycle 3 - Year 6

October 1, 2015 Thru September 30, 2016

Submitted by
Northern Palm Beach County
Improvement District
as Lead Permittee

prepared by
MOCK•ROOS

MS4 NPDES
A Joint Program of Palm Beach County Permittees

Palm Beach County MS4
Permit No. FLS000018-003

NPDES

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Report Certification

Engineer's Certification

I hereby certify, as a Professional Engineer in the State of Florida, that this Cycle 3, 6th Year, Joint Annual Report for the Florida Department of Environmental Protection National Pollutant Discharge Elimination System Municipal Separate Storm Sewer System Permit for Palm Beach County (Permit No. FLS000018-003) was assembled under by direct responsible charge. This certification is provided in accordance with Florida Board of professional Engineers Rule of Certification under Chapter 61G15-23.003.

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Alan D. Wertepny, P.E.

Project Manager, Mock•Roos

FL P.E. No. 32350

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Mock•Roos

5720 Corporate Way

West Palm Beach, FL 33407

Florida E.B. No. 48

(Reproductions are not valid unless signed, dated, and embossed with an Engineer's Seal)

Permittee Certifications

Certifications for the individual permittee annual reports are included in each individual annual report form, which are attached to this Joint Report as Appendices 1 through 40

1.0 Palm Beach County MS4 Program

1.1 Introduction

The Municipal Separate Storm Sewer System (MS4) National Pollutant Discharge Elimination System (NPDES) is a federal program designed to reduce stormwater pollutant discharges to receiving waters of the United States. In 1987, the United States Environmental Protection Agency (EPA) was required under Section 402 (p) of the Clean Water Act (N40CFR Part 112.26) to establish final regulations governing stormwater discharge permit application requirements. In 1990, the Federal Register indicated that Palm Beach County was to begin compliance with the program. In 1997, the first 5-year permit (No. FLS000018) was issued by EPA to Palm Beach County's permittees. In 2001, the Florida Department of Environmental Protection (Department) received delegation from EPA for the MS4 Programs. In November 2002, the Cycle 2 MS4 Permit was issued by the Department. The Cycle 3 permit was issued on March 2, 2011 and has an expiration date of March 1, 2016.

Northern Palm Beach County Improvement District (Northern) acts as lead permittee for the Palm Beach coalition of permittees. As the lead permittee, Northern has entered into Interlocal Agreements with each of the other permittees for the purposes of identifying duties and responsibilities of the parties and fulfilling the conditions of the Palm Beach County MS4 permit. Through these Interlocal Agreements, cost sharing for joint activities is provided by each of the permittees.

This joint annual report was reviewed by the permittees and approved by the Steering Committee.

1.2 Permittees

There are 40 permittees identified in the Cycle 3 MS4 permit. ***Table 1-1*** is a list of the designated MS4 NPDES stormwater management program contacts for each of the permittees.

1.3 Steering Committee

To coordinate the joint activities in Palm Beach County's MS4 Program, the permittees established an MS4 Steering Committee in 1991. The seven-member Steering Committee is comprised of two representatives of large municipalities, two representatives of smaller municipalities, one representative from the lead permittee, one representative of special districts, and one representative from Palm Beach County. A list of the MS4 Steering Committee and administrative personnel is provided in ***Table 1-2***. Minutes of all meetings and descriptions of programs overseen by the Steering Committee may be viewed on the Palm Beach County MS4 NPDES website at http://www.pbco-npdes.org.

During the reporting period, the Steering Committee met seven times. Permittee representation at the meetings averaged eighty percent. Major meeting agenda items included the following:

- 5th Year Annual Report
- 6th Year Program Schedule
- Budget Reports
- FDEP Sedimentation & Erosion Control Training
- Refresher Training Session
- Monitoring Program
- Public Education
- Waters of the U.S. Rule Updates
- FDEP Interview/Presentation
- Permit Re-Application for Cycle 4 Permit
- Impaired Water Cycle 3 Assessments for Loxahatchee River and Lake Worth Lagoon
- Loxahatchee River Reasonable Assurance Plan
- Draft of Cycle 4 Interlocal Agreement

Table 1-1
Permittee Contacts

Appendix No.	Permittee, Address	Name, Title, Telephone
1	Atlantis, City of 260 Orange Tree Drive Atlantis, FL 33462	Steven Mazuk Utilities/Public Works Director (561) 965-1744
2	Belle Glade, City of 110 Dr. Martin Luther King, Jr. Blvd. Belle Glade, FL 33430	Lomax Harrelle City Manager (561) 996-0100
3	Boca Raton, City of 201 West Palmetto Park Road Boca Raton, FL 33432	Daniel W. Grippo, P.E., CEM Municipal Services Director (561) 416-3385
4	Boynton Beach, City of 124 East Woolbright Road Boynton Beach, FL 33435	Angela A. Prymas, P.E. Stormwater Supervisor (561) 742-6421
5	Cloud Lake, Town of 100 Lang Road Cloud Lake, FL 33406-3222	Dorothy C. Gravelin Town Clerk (561) 686-2815
6	Delray Beach, City of 434 S. Swinton Avenue Delray Beach, FL 33444-2698	Jeffrey Needle Asst. Director of Environmental Services (561) 243-7320
7	FDOT – District Four 3400 West Commercial Boulevard Ft. Lauderdale, FL 33309-3421	Ivette Leiva NPDES Coordinator (954) 777-4644
8	FDOT – Turnpike Enterprise P. O. Box 9828 Ft. Lauderdale, FL 33310-9828	Troy Craig NPDES Coordinator (954) 934-1213
9	Glen Ridge, Town of 1501 Glen Road West Palm Beach, FL 33406	Michelle Suiter Town Manager (561) 697-8868
10	Greenacres, City of 5750 Melaleuca Greenacres, FL 33463	Carlos Cedeno Public Works Director (561) 642-2074
11	Gulf Stream, Town of 100 Sea Road Gulf Stream, FL 33483-7427	William Thrasher Town Manager (561) 276-5116
12	Haverhill, Town of 4585 Charlotte Street Haverhill, FL 33417-5911	Joseph Roche Director of Public Works (561) 689-0370
13	Highland Beach, Town of 3614 South Ocean Blvd. Highland Beach, FL 33487	Edward J. Soper Public Works Director (561) 243-2084

14	Hypoluxo, Town of 7580 S. Federal Highway Hypoluxo, FL 33462	Leonard G. Rubin, P.A. Town Attorney (561) 721-1683
15	Indian Trail Improvement District 13476 61st Street North West Palm Beach, FL 33412-1915	Greg Shafer Director of Stormwater (561) 793-0874
16	Juno Beach, Town of 340 Ocean Drive Juno Beach, FL 33408	Anthony R. Meriano Director of Public Works (561) 626-1122
17	Jupiter, Town of 210 Military Trail Jupiter, FL 33458	David J. Rotar Utility Services Manager (561) 741-2705
18	Jupiter Inlet Colony, Town of 1 Colony Road Jupiter Inlet Colony, FL 33469	John Pruitt Administrative Officer (561) 746-3787
19	Lake Clarke Shores, Town of 1701 Barbados Road West Palm Beach, FL 33406	Damon Gammons Utilities Superintendent (561) 642-7870
20	Lake Park, Town of 650 Old Dixie Highway Lake Park, FL 33403	David Hunt Public Works Director (561) 881-3345
21	Lake Worth, City of 7 North Dixie Highway Lake Worth, FL 33461	Jamie Brown Public Services Director (561) 586-1720
22	Lantana, Town of 500 Greynolds Circle Lantana, FL 33462	Jerry Darr Assistant Utilities Director (561) 540-5758
23	Manalapan, Town of 600 S. Ocean Blvd. Manalapan, FL 33462-3398	Lisa Petersen Town Clerk (561) 383-2541
24	Mangonia Park, Town of 1755 East Tiffany Drive Mangonia Park, FL 33407	Kenneth Metcalf Town Manager (561) 848-1235
25	Northern Palm Beach County Improvement District 359 Hiatt Drive Palm Beach Gardens, FL 33418	Jared Kneiss Program Administrator (561) 624-7830
26	North Palm Beach, Village of 501 U.S. Highway No. 1 North Palm Beach, FL 33408	Alice Everard Public Works Director (561) 691-3440

27	Ocean Ridge, Town of 6450 N. Ocean Blvd. Ocean Ridge, FL 33435	James Titcomb Town Manager (561) 732-2635
28	Palm Beach, Town of 260 S. County Road Palm Beach, FL 33480	Jeffrey M. Sanon Project Engineer (561) 227-7024
29	Palm Beach County 2300 North Jog Road, 4th Floor West Palm Beach, FL 33411	Bonnie Finneran Environmental Director (561) 233-2400
30	Palm Beach Gardens, City of 10500 North Military Trail Palm Beach Gardens, FL 33410	Todd Engle, P.E. City Engineer (561) 804-7012
31	Palm Beach Shores, Town of 247 Edwards Lane Palm Beach Shores, FL 33404-5718	Alan Welch Public Services Director (561) 844-3457
32	Palm Springs, Village of 226 Cypress Lane Palm Springs, FL 33461	Angela Thul Stormwater Coordinator (561) 434-5122
33	Riviera Beach, City of 2391 Avenue L Riviera Beach, FL 33404	Malcom Sommons Stormwater Coordinator (561) 845-4080
34	Royal Palm Beach, Village of 10996 Okeechobee Blvd. Royal Palm Beach, FL 33411	Paul L. Webster, P.E. Director of Public Works (561) 790-5122
35	South Bay, City of 335 S.W. Second Avenue South Bay, FL 33493	Edgar Kerr Director of Public Works (561) 996-6751
36	South Indian River WCD 15600 Jupiter Farms Road Jupiter, FL 33478	Michael Dillon General Manager (561) 747-0550
37	South Palm Beach, Town of 3577 S. Ocean Blvd. South Palm Beach, FL 33480	Bob Vitas Town Manager (561) 588-8889
38	Tequesta, Village of 136 Bridge Road Tequesta, FL 33469	Sam Heady Deputy Director of Utilities (561) 768-0493
39	Wellington, Village of 12300 Forest Hill Boulevard Wellington, FL 33414	Jim Barnes Village Manager (561) 791-4720
40	West Palm Beach, City of P. O. Box 3368 West Palm Beach, FL 33402	Poonam Kalkat Director of Public Utilities (561) 822-2220

Table 1-2 Palm Beach County MS4 Steering Committee	
Laurent Van Cott, P.E. Steering Committee Chair For Town of Mangonia Park Southern Design Group, Inc. Phone (561) 743-0501	Karen Brandon, P.E. Steering Committee Member For South Indian River Water Control District AECOM Phone (561) 684-3375
Jay Foy, P.E. Steering Committee Vice-Chair For City of Atlantis Stormwater J. Engineering, Inc. Phone (561) 242-0028	Bonnie Finneran Steering Committee Member Palm Beach County Phone (561) 233-2400
Donald B. Cooper Steering Committee Secretary City of Delray Beach Phone (561) 243-7322	Maurice Morel, P.E. Steering Committee Member City of Boca Raton Phone (561) 416-3402
Dan Beatty, P.E. Steering Committee Member North Palm Beach County Improvement District Phone (561) 624-7830	

Administration – Northern Palm Beach County Improvement District as Lead Permittee	
Alan Wertepny, P.E. Mock, Roos & Associates, Inc. Program Manager Phone (561) 683-3113, x-231	Betsy S. Burden, Esq. Caldwell Pacetti Edwards Schoech & Viator LLP Legal Counsel Phone (561) 655-0620
Anne Capelli Mock, Roos & Associates, Inc. Public Education Coordinator Phone (561) 683-3113, x-287	Laura Ham, CPA Northern Palm Beach County Improvement District Budget Manager Phone (561) 624-7830
Brian Einkauf Mock, Roos & Associates, Inc. Webmaster Phone (561) 683-3113, x-250	Jane Hayes Mock, Roos & Associates, Inc. Administrative Assistant Phone (561) 683-3113, x-264

2.0 Training Program

The Palm Beach County MS4 permit requires that permittees provide training on three topics. Annual follow-up (or "refresher") training is required for those that have received the initial training. The three topics are:

- Identification & reporting procedures for a suspected illicit discharge or dumping in the MS4 for all appropriate permittee personnel (including field crews, fleet maintenance staff, and inspectors) and contractors. (Part III.A.7.c)

- Spill prevention, containment & response procedures (including techniques for mitigating pollution from spills) for all appropriate permittee personnel (including field crews, firefighters, fleet maintenance staff, and inspectors. (Part III.A.7.d)

- Stormwater management and erosion and sedimentation control BMPs for construction sites for site plan reviewers, site operators, and site inspectors. Construction site inspectors must be certified through the Florida Stormwater, Erosion, and Sedimentation Control Inspector Training programs, or equivalent. (Part III.A.9.c)

The Palm Beach County MS4 permittees carry out a joint training program that is available to all permittee personnel, as well as contractors and private individuals.

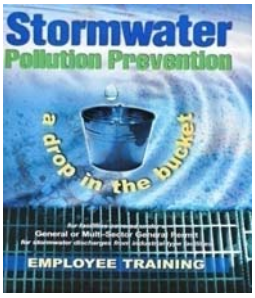
- EXCAL Visual Video Training: The illicit discharge and spill prevention training topics are covered by one or more EXCAL Visual (www.excalvisual.com) videos presented at a group training session, held at lease once each year, typically in March. Attendance logs are maintained for each training session. In addition, the library of videos is available to the permittees anytime for use at in-house training sessions.

  The permittees have purchased training videos from EXCAL Visual (www.excalvisual.com) to assist in meeting permit training requirements. These videos may not be reproduced, but additional copies may be purchased from the vendor.to assist in meeting these training requirements.

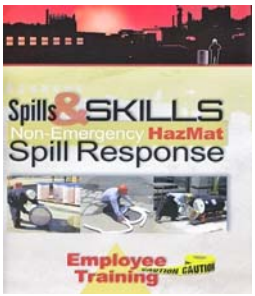
The videos include the following:

1. Rain Check: This video provides instruction on good housekeeping, spill response, materials management, vehicle fueling and washing and other BMPs outlined in EPA's "National Menu of BMPs."

2. A Drop in the Bucket: The video focuses on employee training that describes concepts and practices of stormwater pollution prevention. The video describes stormwater pollution and its negative effects on people, wildlife, and the environment. It includes good housekeeping, spill prevention, exposure minimization, maintenance and spill clean-up. It also provides an overview of the work practices that can be effective for stormwater pollution prevention.

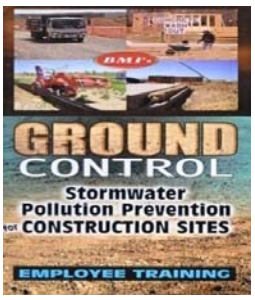


3. Spills & Skills: The video is designed to help train non-Hazardous Waste Operations and Emergency Response (HAZWOPER) employees on dealing with a hazardous material (or hazardous waste) spill, leak or release. What to do if you discover a hazmat release? How to determine if the release requires HAZWOPER-trained responders or not? If it is a hazmat emergency release (HAZWOPER event), what to do then? If it is non-HAZWOPER event (an "incidental release"), the discreet steps involved to clean it up. The "step-across" test. The clean-up supplies and equipment you should expect to find in the spill locker. Different styles of absorbent (loose, pads, pillows, socks) and how to use each. How to use all the equipment and supplies safely and effectively. How to manage the clean-up wastes. Post clean-up measures.



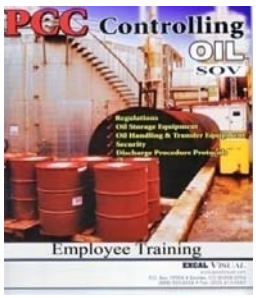
4. Storm Warnings: Storm Water Pollution Prevention - Describes Best Management Practices that are crucial for compliance with facility Stormwater Pollution Prevention Plans including: good housekeeping, exposure minimization, and soil-cleanup.

5. Ground Control: Stormwater Pollution Prevention for Construction Sites - The video focuses on BMPs that are widely used at most construction sites including: silt fences, stabilized entrances/exits, drop inlet protectors and others. The program illustrates how these BMPs work and how they can fail. Employees are encouraged to promptly report ay failing BMPs. By making all employees "look-outs" for BMP problems, this training program



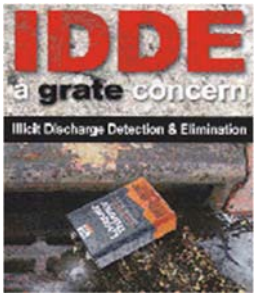
is an important part of the required BMP maintenance program.

6. Controlling Oil: Spill Prevention, Control & Countermeasure (SPCC) – This 20-minute video instructs employees on SPCC Plans, oil pollution regulations, effective oil storage and oil transfer procedures. It also instructs employees on "discharge procedure protocols" first response measures to take when a discharge is discovered. The video also addresses site security measures to take to protect oil handling facilities against vandalism and terrorism.

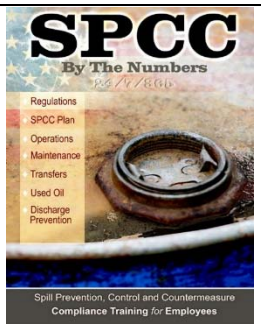


7. Storm Watch: Municipal Stormwater Pollution Prevention - The video focuses on municipal BMPs such as good housekeeping, spill response, materials storage and handling, landscape maintenance, and street maintenance. Employees working in maintenance and other departments can benefit from this training video. The video shows employees how to spot potential "illicit discharges."

8. Illicit Discharge Detection & Elimination (IDDE): Shows viewers how to spot a possible illicit discharge or signs of past discharges. It discusses direct and indirect discharges and shows viewers what to look for at curb inlets, drop inlets and outfalls. It shows examples of the tell-tale signs often left by past illicit discharges. It encourages employees to be vigilant in watching for signs of illicit discharges and to report their suspicions to the storm drainage staff, Public Works Department or Environmental Staff who can then initiate the process of tracking the source of the discharge and eliminating it.



9. Spill Prevention, Control and Countermeasure by the Numbers 24/7/365: The video is designed to familiarize employees and contractors with the fundamental rquirements as it applies at fixed facilities that store, use or handle oil in above ground containers (ASTs or portable containers such as 55 gallon drums). It shows employees and contractors at regulated facilities their role in the on-going process of oil spill prevention. It discusses the following topics:



- The scope of the oil pollution problem
- Oil pollution control laws and regulations and the SPCC rule
- General facility operations
- Oil storage equipment
- Operation and maintenance of spill prevention equipment
- Dsicharge procedure protocols

Training conducted in 2015/2016 included:

1. A PowerPoint presentation and videos (Ground Control and IDDE) covering the three required annual training topics (spill prevention and response, illicit discharge, and sediment and erosion control for construction sites) – March 16, 2016. Attendees for the training included 92 representatives from the Palm Beach County MS4 permittees.

2. Florida Stormwater, Erosion and Sedimentation Control Inspector Training Program – Palm Beach County MS4 permittees sponsored an FDEP course on May 27 & 28, 2016. The class, held at the Town of Jupiter Community Center, was taught by Cheryl Moore, a state certified instructor. A total of 101 individuals were in attendance, including 42 private individuals, 25 municipal construction site inspectors, 11 municipal site plan reviewers, and 23 municipal construction site operators.

3.0 Public Education Program

The Palm Beach County MS4 permittees have undertaken a jointly-funded program to meet the public education requirements of the MS4 permit. In so doing, all permittees participate in conducting the program. The premise of a joint program is that a unified message, repeated throughout the County, will have more of an impact than 40 separate messages. The Stormwater and Me (SAM) program, as it is called, kicked off in 2009.

Objective:

The objective of the public education program is to put relevant information in the hands of the residents of and visitors to the Palm Beach County geographic area so they can make better decisions with respect to pesticides, herbicides, fertilizers, illicit discharges, illegal dumping, and the disposal of household hazardous waste. The intent is that this will result in less of these items ending up in our stormwater systems and, in turn, our water bodies.

Topics:

As prescribed by the MS4 permit, the following topics are covered by the public education program:

- Encourage citizens to reduce their use of pesticides, herbicides, and fertilizers. [Part III.A.6.]
- Promote, publicize and facilitate public reporting of the presence of illicit discharges and improper disposal of materials into the MS4. [Part III.A.7.e.]
- Encourage the proper use and disposal of used motor vehicles fluids, leftover hazardous household products, and lead acid batteries. [Part III.A.7.f.]

Target Audience:

The target audience of the program is residents (children and adults) of and visitors to Palm Beach County, Florida.

Activities and Materials:

This reporting period, the SAM public outreach program included two 30-second Public Service Announcements (PSAs) dealing with pet waste pickup and keeping grass clippings off the streets that were aired on four commercial television networks (Discovery, Animal Planet, Weather Channel, HGTV), broadcast by a local cable television provider (Comcast) from December 2015 – March 2016 to broadcast zones within Palm Beach County. A total of 1,160 PSAs were aired via Comcast. The PSAs were also aired by local/municipal TV stations throughout the year.

As part of the Comcast PSA contract, an additional feature called a "taggable" was included. A 30-second promotional spot about not littering was "sponsored" by our SAM program, which simply means that at the end of the spot, our logo appeared, with a 10-second closing voice-over that told viewers: "The Palm Beach County Stormwater and Me website also has ideas on what you can do to help protect water quality in your neighborhood." These taggables appeared in the same Palm Beach County Comcast zones as our PSAs.

Finally, visitors to the Comcast.com website home page in select Palm Beach County zones were exposed to one PSA with a hot link that clicked directly through to our StormwaterAndMe.org website. Our ad repeatedly got exposure on Xfinity.com (Comcast's portal). The Comcast Xfinity zone was different each month, with rotation through the Delray Beach, Central Palm Beach County, and Palm Beach Gardens zones.

The County Extension brochure on Florida Friendly Yards (FYN) was mailed out to each customer of City of Boynton Beach Utilities (+/- 21,000 households) in January 2016, and the Town of Mangonia Park distributed an additional 500 brochures to their residents. To date, approximately 294,500 FYN Florida Yards and Neighborhoods brochures have been distributed. The Palm Beach County permittees arranged and paid for the printing of the brochure and delivered the materials.

During the 6th Year of Cycle 3 permit 750 newly designed inlet markers were purchased by a group of permittees. The new markers include the Stormwater and Me logo, as well as contact information for the program's website. 5,000 "Illicit Discharge Detected" door hangers were also designed and purchased for use by permittees. The door hangers are for use in an area where an illicit discharge has been identified. Permittees participating in these programs included Boynton Beach, Cloud Lake, Glen Ridge, Haverhill, Jupiter Inlet Colony, Lake Clarke Shores, Lake Worth, Mangonia Park, Palm Beach Gardens, Palm Springs and West Palm Beach.

The Palm Beach County Cooperative Extension Services provides a countywide FYN public education/outreach program to promote sound landscape practices which reduces adverse impacts from stormwater runoff. Through the MS4 NPDES Interlocal Agreement between Palm Beach County and Northern Palm Beach County Improvement District, the County Cooperative Extension continues its program, in part to fulfill the permit requirement that all permittees educate their residents on FYN Programs to reduce water, fertilizer, and pesticide and herbicide usage. During the 2015-2016 reporting period, the County Extension Service reports that it distributed 32,500 brochures, conducted 44 neighborhood presentations reaching 1,007 participants, produced 8 displays, aired 1 PSAs, conducted 4 school presentations reaching 71 participants, conducted 12 workshops reaching 391 participants, and conducted 11 special events reaching 1,871 participants. The County Extension Service has estimated that its outreach program reached 30% of the population in Palm Beach County. Costs for these programs total about $70,000.

The Palm Beach County Solid Waste Authority (SWA) continued to carry out a public education/outreach program to educate Palm Beach County residents and visitors about proper disposal of household hazardous waste (HHW).

Through the MS4 NPDES Interlocal Agreement between Palm Beach County and Northern Palm Beach County Improvement District, SWA continues its program, in part to fulfill the permit requirement that all permittees educate their residents on proper disposal of HHW. During the 2015-2016 reporting period, SWA reports that it distributed 106,650 brochures, conducted 2,170 events, collected 1,848 tons of HHW, conducted 177 neighborhood presentations reaching 6,202 participants, produced 139 displays, aired 3,991 PSAs, conducted 443 school presentations reaching 18,899 participants, conducted 6 workshops reaching 2,000 participants, and conducted 75 special events reaching 103,873 participants. SWA also hosts a public outreach website at http://www.swa.org/site/hhw/haz_waste_home/hazardous_waste_portal.htm. SWA has estimated that its outreach program reached 80% of the population in Palm Beach County. Costs for these programs total $1,772,445.

Methods for Distribution:

The television PSAs allow the greatest opportunity for the distribution of information. In addition, the website, brochures, and meetings allow for the presentation of more in-depth information.

Annual Schedule:

Public education efforts are emphasized during the months of January through March, when residential population in the County is at its highest.

Documentation:

The Public Education Coordinator maintains record information for all materials distributed.

Responsible Entities:

The program is coordinated by a Public Education Sub-committee of the Palm Beach County MS4 permittee group, on behalf of all permittees. HHW outreach is carried out by the Palm Beach County Solid Waste Authority (SWA) for all permittees under the inter-local agreement with Palm Beach County. The group supports the Fertilizer and Pesticide education carried out by the IFAS/County Extension office.

Resources Allocated:

The 2015-2016 allocation for the public education program (not including Palm Beach County SWA Programs) was $35,000.

Assessment Method:

The bottom line on the effectiveness of public education is if the receiving waters experience improved water quality. Therefore, the water quality monitoring is offered as a measure of the collective effectiveness of this and other MS4 permit programs.

Public Reporting of Illicit Discharge:

The StormwaterAndMe.org website contains information on stormwater pollution and illicit discharges. Included is a listing of contacts for each of the 40 permittees to report an illicit discharge or spill.

4.0 Total Maximum Daily Load (TMDL) Program

4.1 Description

The PBC MS4 Cycle 3 permit includes TMDL requirements and a schedule for developing an implementation plan to reduce the discharge of pollutants from each affected permittee's MS4 to the maximum extent practicable. Both the Department and EPA had identified impaired waterbody segments within Palm Beach County. However, as of the issuance date of this permit, only EPA had established TMDLs that required action.

4.2 Established and Adopted TMDLs

When the Cycle 3 MS4 permit was issued, EPA had established seven TMDLs in Palm Beach County. These TMDLs and associated information such as the Constituent (water quality parameter of concern) and Percent Reduction Goal are identified in ***Table 4-1.*** The potentially affected permittees are Belle Glade, FDOT, Indian Trail Improvement District, Pahokee, Palm Beach County, and South Bay. It should be noted that WBIDs 3212 D, E & G are entirely within Lake Okeechobee and include no area in any of the MS4 permittees' jurisdictions. WBIDs 3247, 3248, and 3251 have no discharge reduction targets. Consequently, none of these three WBIDs require additional stormwater management programs by the MS4s.

TMDLs established by EPA or adopted by FDEP after the 3rd cycle permit was issued on March 2, 2011 and verified by FDEP, will be addressed in the 4th permit cycle. These TMDLs and potentially affected permittees are identified in ***Table 4-2***.

FDEP has a draft (8/28/15) of TMDL Development Plan through 2022. Included on the list are seven water bodies in Palm Beach County. One water body, Boynton Canal (WBID 3256B) was delisted in the Lake Worth Lagoon Cycle 3 2016 listing. Three other water bodies are included in a Reasonable Assurance Plan being coordinated by FDEP for the Loxahatchee River (North Fork WBID 3226D, NW Fork 3226A and SW Fork 3226C). These activities removed all four from the TMDL schedule resulting in three remaining water bodies as shown in ***Table 4-3.***

Table 4-1
EPA TMDLs in Palm Beach County as of March 2, 2011

Agency	WBID	Segment Name	Basin	Constituent	TMDL	Percent Reduction	Date
EPA	3212 D, E, G	Lake Okeechobee	Lake Okeechobee	Iron	0.3 (MG/l)	51	02/23/2005
EPA	3233	L-8 Canal	Lake Okeechobee	Turbidity	32 (NTU)	52	03/29/2007
EPA	3238	West Palm Beach Canal	Lake Okeechobee	Turbidity & TSS	32 (NTU) 33 (MG/l)	66 0	03/29/2007
EPA	3244	East Beach	Lake Okeechobee	Turbidity & TSS	32 (NTU) 33 (MG/l)	12 0	03/29/2007
EPA	3247	715 Farms	Lake Okeechobee	Turbidity & TSS	32 (NTU) 33 (MG/l)	0 0	03/29/2007
EPA	3248	N. New River Canal	Lake Okeechobee	Turbidity & TSS	32 (NTU) 33 (MG/l)	0 0	03/29/2007
EPA	3251	S-3	Lake Okeechobee	Turbidity	32 (NTU)	0	03/29/2007

Table 4-2
TMDLs for Palm Beach County 4th Cycle Permit

Agency	WBID	Segment Name	Basin	Constituent	TMDL	Percent Reduction	Date	MS4s
EPA	3226	SW Fork Loxahatchee River	St. Lucie/ Loxahatchee	Fecal Coliform	<43 (counts/100 ml)	93	05/16/12	Jupiter, FDOT, PBC, SIRWCD, NPBCID
EPA	3262A	Lake Ida	Lake Worth Lagoon	Nutrients	TN=0.857 mg/l TP=0.062 mg/l	20 45	11/09/12	Delray, Boynton, FDOT, PBC
FDEP	3364A	E-1 Canal	Lake Worth Lagoon	Fecal Coliform	<400 (counts/100 ml)	94 0	08/31/11	FDOT, PBC

Table 4-3
TMDLs for Palm Beach County 5th Cycle Permit

WBID	Segment Name	Basin	Parameter	MS4s
3262A	Lake Ida	Lake Worth Lagoon	TP and Chlorophyll-a	Palm Beach County, Delray Beach, Boynton Beach, FDOT-District IV
3245C4	Pine Lake	Lake Worth Lagoon	Chlorophyll-a	Palm Beach County, FDOT – District IV, West Palm Beach
3262B1	E-1	Lake Worth Lagoon	Chlorophyll-a	Palm Beach County, FDOT-District IV

4.3 Prioritization Plan and Schedule

During Year 1 of this permit cycle the six permittees identified as stakeholders for the established TMDLs met to discuss an approach. As a result, a Prioritization Plan was submitted and approved by the Department in Year 2. The L-8 WBID 3233 was identified as the top priority WBID. During Year 2, additional information on the three WBIDs in the Prioritization Plan was obtained from the affected permittees. This additional information included the MS4 outfall/drainage systems and local agricultural drainage districts' canal systems, control structures, and contributing drainage areas. Review of the MS4s stormwater systems indicated that the MS4s within two of the WBIDs (3238 and 3244) discharge only into private canals, owned and operated by Special Districts that in turn discharge into the State impaired waters. The majority of the drainage contribution into these impaired waters is from agricultural landowners. Because these MS4s do not have any direct discharge into an impaired waterbody or indirectly through another MS4, the TMDLs for these two WBIDs are not relevant to the permittee MS4s. At the Palm Beach County June 20, 2012 Steering Committee meeting, the Department's representative, Eric Livingston, agreed. Consequently, the only WBID in this permit cycle that required further action was the L-8 Canal WBID 3233.

4.4 Monitoring and Assessment Plan

For WBID 3233, there is only one MS4 outfall discharging directly into the L-8 Canal. This outfall and its monitoring is the responsibility of Indian Trail Improvement District (Indian Trail). In an email dated December 28, 2011, Eric Livingston approved the Monitoring Plan for this outfall. It consisted of the following:

- Sampling at the discharge of the Indian Trail reservoir following or during a storm event, with a minimum of seven storms sampled
- Sampling conducted for a one-hour time period with a grab sample taken every 10 minutes; a stage recorder read at the time of sample collection and noted on the log sheet; rainfall records kept based on the rainfall station; turbidity reading from a portable turbidity meter
- Sampling completed in accordance with the Department's Standard Operating Procedures for surface water sampling and equipment calibration

4.5 Monitoring Results

Indian Trail conducted the storm even monitoring of its outfall into the L-8 Canal and results were included in its Year 2 Annual Report. Turbidity values ranged from 1.5 to 4 NTUs, well below the TMDL value of 32 NTUs. Since the TMDL is being met in the MS4's discharge, the existing stormwater management programs being implemented by the MS4 for this WBID more than adequately address this EPA TMDL.

4.6 Lake Okeechobee Basin Management Action Plan

In February 2013 (Year 3, Cycle 3) the Department held its first stakeholder meeting for the development of a Basin Management Action Plan (BMAP) for Lake Okeechobee and its tributaries. The goal of this BMAP is to reduce nutrient discharge of Total Phosphorus (TP) into Lake Okeechobee to an annual load of 140 metric tons and achieve an in-lake target phosphorus concentration of 40 parts per billion (ppb). Potential Palm Beach County permittees that could be stakeholders in this BMAP included Belle Glade, Florida Department of Transportation (District Four), Indian Trail Improvement District, Pahokee, Palm Beach County, and South Bay. However, within Palm Beach County, discharge into Lake Okeechobee is either via South Florida Water Management District (SFWMD) canals (the L-8 Canal, the West Palm Beach Canal, the Hillsboro Canal, and the North New River Canal) or via agricultural water control districts. None of the MS4 permittees have any direct discharge into Lake Okeechobee. As part of the Everglades Restoration Program, the SFWMD and the water control districts have initiated programs to reduce nutrient discharge into Lake Okeechobee. SFWMD has estimated that ninety percent of the runoff in Palm Beach County has been diverted away from Lake Okeechobee and into regional storage treatment areas. Through Works of the District permits issued to Palm Beach County water control districts in the Lake Okeechobee Basin, SFWMD continues to monitor its progress in meeting the TP reduction goal. Since most of the nutrient load (89%) into Lake Okeechobee is from the northern sub-watersheds, and SFWMD's Everglades Regulatory Source Control Program covers the southern sub-watershed, the first phase of the Lake Okeechobee BMAP was developed for the northern sub-watersheds. A final report was issued in December 2014. The only Palm Beach County MS4 that is not covered by SFWMD's Everglades Regulatory Source Control Program and Works of the District permit is Indian Trail Improvement District. Water quality sampling (TP) by Indian Trail indicated that its discharges were well below the TP TMDL of 40 ppb. Indian Trail's discharges are in the range of 25 ppb. Therefore, no additional stormwater management programs are required by Indian Trail.

5.0 Water Quality Monitoring Program

5.1 Description

The water quality monitoring requirement in the Cycle 3 MS4 NPDES permit is met through a joint program by all permittees. The monitoring program includes the following components:

- ambient water quality sampling
- water quality data analyses
- trend analyses
- annual pollutant loading calculations in Year 3
- program modifications as needed

The Palm Beach County MS4 NPDES permit monitoring program includes 32 ambient water quality monitoring sites which were selected after coordination among the South Florida Water Management District (SFWMD), Palm Beach County Environmental Resource Management (ERM), the Loxahatchee River District (LRD), and the Palm Beach County permittees.

5.2 Monitoring Sites

Table 5-1 identifies each monitoring site location and provides the site designation, watershed name, the entity conducting the sampling, and the site location northing and easting coordinates. Note that site designations are unique within an individual agency, but may be duplicated across agencies. Data for these sites are assigned a unique agency code and station identification in the State's database (DbHydro or STORET).

Figure 5-1 depicts the water quality monitoring site locations and shows the boundaries of the associated watersheds. Sites monitored by ERM are shown as circles, those monitored by the Loxahatchee River District (LRD) are shown as squares, and those monitored by SFWMD are shown as triangles. White symbols signify marine or tidal sites and yellow symbols designate freshwater sites.

The LRD monitors four marine sites and one freshwater. Palm Beach County ERM monitors ten marine sites, and thirteen freshwater sites. The SFWMD monitors four freshwater sites. All of Palm Beach County's water quality ambient monitoring data and LRD is in STORET.

The twenty-three sites monitored by ERM are sampled and initially analyzed in-situ by ERM staff using a multi-parameter water quality monitoring instrument. Water samples are collected, preserved and stored according to

the Department Standard Operating Procedures. Quality assurance/quality control measures include pre-cleaned equipment blanks, field cleaned equipment blanks, field spikes, and the collection of duplicate samples.

Further analysis of samples from all ERM sites is conducted by an independent laboratory under contract with ERM.

The water quality parameters and frequency being monitored by ERM, LRD, and SFWMD are listed in ***Table 5-2.***

Table 5-3 (3 pages) provides a list of the parameters and the Florida Surface Water Quality Standards (WQ Standards) as promulgated in Florida Administrative Code (F.A.C.) 62-302.530, 62-302.532, and 62-302.530 (47)(b). Numeric Nutrient Criteria for Palm Beach County estuaries/marine water bodies and freshwater lakes is shown on pages 2 and 3, respectively, in ***Table 5-3***.

The water quality sampling program in Palm Beach County is a cooperative effort designed to incorporate desirable elements of existing monitoring programs being administered by various agencies throughout the County. Attempts to coordinate sampling frequencies, parameters, and methodologies are ongoing, but not all sampling programs produce results that are compatible for a combined analysis. Data for a given parameter, location, and event may be unavailable due to the specific goals of that agency's monitoring program or procedural variations, including event frequency, sample depth, methodology, and instrumentation.

5.3 Water Quality Monitoring Results and Exceedances

The results of the monitoring conducted from October 2015 through September 2016 are provided in ***Table 5-4*** (32 pages). Sample values that were below the limits of detection (BDL or Non-detect) have been replaced whenever possible with ½ of the respective minimum detection limit (MDL) value for a more reasonable analysis. MDLs are determined by instrumentation and method of analysis. These substitutions have been highlighted in blue in the data tables. Exceedances of the WQ Standards are highlighted in yellow.

For Class I and Class III freshwater, exceedance limits for heavy metals (cadmium, copper, lead, and zinc) are based on a logarithmic function of the total hardness. In cases where a total hardness was not measured, an exceedance limit was not calculated. For marine waters, the limits for heavy metals are constant and do not depend on the total hardness. In marine waters, cadmium, copper, lead, and zinc exceed the surface WQ standards at values above 0.0088 mg/L, 0.0037 mg/L, 0.0085 mg/L, and 0.086 mg/L, respectively.

Exceedance limits for chlorophyll-a (corrected for pheophytin) are determined by the annual geometric mean of the samples taken at a given site. In freshwater systems (canals), the water quality standard is exceeded if the mean is greater than 20 ug/L. In marine systems (estuaries) and freshwater lakes, exceedance occurs when the geometric mean is greater than the values shown on ***Table 5-3*** for the specific segment of the waterbody.

Table 5-5 summarizes the number of exceedances (as described above) at each site. Each cell in the columns for Dissolved Oxygen, Turbidity, and Fecal Coliform shows the number of exceedances and the total number of samples taken at each site during the reporting period. For example, two dissolved oxygen samples out of twelve taken at Site 69 within the Loxahatchee River watershed were in exceedance of the WQ Standard.

Exceedances of the dissolved oxygen % saturation standard occurred in the C-17, C-18, and the Northwest Fork of the Loxahatchee River.

Exceedances of the fecal coliform standard occurred in the Class II Marine waters of the Loxahatchee River (North Fork, Northwest Fork, and Southwest Fork). The criterion for this natural Class II water body is extremely low ($\leq$ 43 cfu/100 ml) compared to all other classifications of water bodies ($\leq$ 400 cfu/ml). Potential sources of bacteria are being investigated by the Town of Jupiter and the Loxahatchee River District.

Exceedances of the turbidity standard occurred in the C-51W and C-15E Canals.

Exceedances of the chlorophyll-a standard occurred in the C-16, Southwest Fork of the Loxahatchee River, Lake Worth Lagoon North, and Lake Worth Lagoon Central. Chlorophyll-a is used as an indicator for excessive nutrient levels. For all four watersheds, the total nitrogen standards were being met. Two sites in the Lake Worth Lagoon Central showed exceedance of the applicable standard for total phosphorous. The suspected source is the historical high inflows and associated phosphorous concentration from SFWMD C-51 Canal (C51S155).

Exceedances of the Total Phosphorous standard occurred in the Lake Worth Lagoon Central. The suspected source is the historical high inflows and associated phosphorous concentration from SFWMD C-51 Canal (C51S155).

5.4 Trend Analyses

The Palm Beach County MS4 permit indicates that trend analyses are to be completed during the third permit year using the monitoring data that was collected in previous years. The Palm Beach County MS4 permittees have chosen to perform the trend analyses as an annual activity.

Tabular Data

The data set for the trend analyses includes approximately 22 water quality parameters (21 sampled parameters plus calculated TN) and all MS4 sampling events from January 1, 1999 through September 2016.

Minimum detection limits were provided by Palm Beach County ERM for values that were reported BDL within the data set. MDL values for sampling events from September 2004 to December 2004 were obtained directly from STORET where available, and substituted for sample readings that were BDL. MDL values for data after December

2004 have been provided directly by the data supplier. MDL values in excess of the WQ Standard were not counted as exceedances.

A statistical summary of each sampling site by watershed is presented in ***Table 5-6*** (19 pages). The statistical summary provides the following information.

Start: The earliest sample event date for the given site.

End: The latest sample event date for the given site.

Samples: The total number of sample events for the given site.

Count: The number of usable, numerical results for the given parameter.

Exceedances: The number of measured values exceeding the criterion of the WQ Standard or IWR as previously described.

Geometric Mean: Sample values are multiplied together then the nth root of the product is taken, where n is the number of samples

Mean: Average of the usable samples.

Max: The maximum value of the usable samples or "None" if no sample values were obtained.

Min: The minimum value of the usable samples or "None" if no sample values were obtained.

Standard Deviation: The standard deviation is based on the assumption that the data represents a sample of the population. This function uses an "n-1" denominator and will return "None" if there were less than two usable samples.

$$\sqrt{\frac{n\cdot\sum x^2-\left(\sum x\right)^2}{n\cdot(n-1)}}$$

n = number of samples
x = value
Σx^2 = The sum of the squares of the values
$(\Sigma x)^2$ = The square of the sum of the values

Based on the water quality sampling results and the potential adoption of TMDLs in Palm Beach County, the following parameters have been analyzed in greater detail:

Total Nitrogen (TN)

Total Phosphorus (TP)

Chlorophyll-a (Chl-a)

Table 5-7 summarizes the geometric mean values at each site for the period of record for TN, TP, and Chl-a. Historically, based on Chl-a, TN and/or TP exceedance of the nutrient criteria is occurring in the Lake Worth Lagoon North and Lake Worth Lagoon Central. This information highlights individual monitoring site that may be contributing to exceedances of water quality standards for a watershed and may require further evaluation. For example, Site 31E in the C-15 watershed has a historical geometric mean of 22 ug/l which may have been attributed to adjacent agricultural lands. Recently some of the adjacent lands have been replaced with residential development. The last two years of water quality data has yielded significantly lower chlorophyll-a values.

Graphical Data

Water quality trend graphs are presented for TN, TP, and Chl-a for the period of record in ***Figures 5-2, 5-3, and 5-4*** (10 pages each), respectively. The trend analyses are based on the annual geometric mean of all the monitoring site values within each watershed calculated on a calendar year (January 1 to December 31). The freshwater sites include data back to 1999, the marine sites use data from ERM that dates back to 2004.

Review of the trend graphs indicates the following:

Total Nitrogen trend graphs (***Figures 5-2***) indicate the concentrations are improving (decreasing) or stabilized for nine of the ten watersheds. Only the Lake Worth Lagoon Central watershed shows an increasing trend. However, the concentrations are well below the nitrogen numeric criteria of 0.66 mg/l.

Total Phosphorus trend graphs (***Figures 5-3***) indicate a general improvement (decrease) in values within the watersheds, except for three watersheds, C-51 (East and West) and the Loxahatchee River. There is no phosphorous numeric nutrient criteria for the C-51 watershed at this time.

Chlorophyll-a trend graphs (***Figures 5-4***) indicate that the C-18 watershed, the C-51 East watershed, and the Loxahatchee River watershed are showing improvement. The two watersheds showing an increasing trend above the standard is the Lake Worth Lagoon North and Central Watersheds.

Water Quality Improvements

FDEP's Watershed Assessment Program evaluates water bodies basin impairments using the last ten years of water quality data. Ten years of data is used to identify impaired water bodies for developing the Planning List. The most recent seven years of data is used for the Verified List of impaired waters. To provide the Palm Beach County MS4's with site specific and basin wide water quality trends, historical data charts (using a traffic light methodology – red for exceedance, green for no exceedance of the water quality criteria, and yellow where there is no numeric standard) were developed. Since nutrient impairments is a major concern in Palm Beach County water bodies, all three nutrient parameters were selected for this evaluation. FDEP has established State wide Chlorophyll-a numeric standard for all water bodies. However, for Total Phosphorus and Total Nitrogen there is no numeric criteria for the South Florida Region Canals, leaving 17 of the 32 monitoring sites with applicable numeric criteria. ***Tables 5-8*** through ***Tables 11*** provide the historic record of annual geometric mean exceedance for each site for these three nutrient based water quality parameters. The annual geometric mean calculations for each site is based on a calendar year, while the basin annual geometric mean is calculated using all the sample sites and data within the basin watershed.

The total nitrogen standards are being met in all ten watersheds. Individual sites not meeting standards include Site 13 in the Lake Worth Lagoon North and Sites 18C and 18D in the Lake Worth Lagoon Central.

The total phosphorus standards are being met for nine of the ten watersheds. Only Lake Worth Lagoon Central is not meeting the standard. Individual sites not meeting the standards include Sites 11 and 13 (Lake Worth Lagoon North) and Sites 18C, 18D and LWL- 11 (Lake Worth Lagoon Central).

The chlorophyll-a criterion is not being met in five watersheds, the C-15, Loxahatchee River (marine tidal areas), and the Lake Worth Lagoon (North, Central and South). From a basin perspective, only one (C-16) of these four basins is meeting the criterion.

5.5 Pollutant Loading Analyses

Refer to the Cycle 3, 3rd Year Joint Annual Report for the latest pollutant loading analyses.

5.6 Program Modifications

Generally, the water quality monitoring data and assessments (annual exceedances, historical statistical data, more recent data, trends) show an improvement in the water quality of the receiving water bodies. Consequently, the stormwater management programs implemented by the permittees, as required by the MS4 permit, appear to be effective.

On September 8, 2016, FDEP issued the 4th Cycle Permit to Palm Beach County MS4s. One significant change is the replacement of the Monitoring Program with an Assessment Program, to include:

- A water quality monitoring plan
- Pollutant loading analyses
- A description of how the above data will be used to evaluate trends in pollutant loading and identify areas within the MS4 for additional pollutant reduction measures.

East individual Palm Beach County permittee must report annually on the status and results of the Assessment Program, as it pertains to its MS4.

To assist the MS4s with their assessment programs, the Palm Beach County group's joint activities will include the following:

(1) Addition of 8 ambient water quality sampling sites (3 Broward County sites along the Hillsboro Canal, three South Florida Water Management District sites (one on the L-8 Canal at CULV10 and one on the North New River Canal/Hillsboro at S2), and two new locations (one on North New River Canal near SR 80 and the other on Hillsboro Canal near Main Street crossing in Belle Glade). Refer to ***Figure 5-8*** for the location of the proposed additional sites. The addition of these sites to the group program will results in at least one site for each of the MS4s that may be used as part of their assessment program.

(2) Additional detail in the 4th Cycle, Year 3, Pollutant Loading Analyses to include calculations for each permittee's loading contribution to a watershed

(3) Revisions to the group's trend analyses to present data in more useful format

All of the above revisions will be implemented with the 4th Cycle Permit.

Table 5-1
Water Quality Monitoring Site Locations

Watershed	Surface Water Classification	Site Designation	Agency	Marine/ Freshwater	Northing	Easting
C-15	III (Fresh)	31E	ERM	Freshwater	760549.91	916736.89
		31C	ERM	Freshwater	760879.83	943443.02
		C15S40	SFWMD	Freshwater	760236.00	959269.79
C-16	III (Fresh)	22	ERM	Freshwater	828280.34	957602.68
		24	ERM	Freshwater	820399.97	957270.70
		27B	ERM	Freshwater	802276.58	916052.08
		27A	ERM	Freshwater	802545.25	942880.04
		C16S41	SFWMD	Freshwater	802739.87	964316.28
C-17	III (Fresh)	12A	ERM	Freshwater	882520.57	953672.56
		C17S44	SFWMD	Freshwater	903830.19	955552.70
C-18	I (Fresh)	16	ERM	Freshwater	923477.26	902076.42
		15	ERM	Freshwater	901986.07	931378.31
		C18G92	SFWMD	Freshwater	937389.78	924697.78
		C18S46	SFWMD	Freshwater	946198.14	935782.17
C-51 W	III (Fresh)	38B	ERM	Freshwater	854963.27	867962.99
C-51 E	III (Fresh)	37B	ERM	Freshwater	853637.29	916592.84
		C51S155	SFWMD	Freshwater	841132.85	964349.43
Lox	III (Fresh)	69	LRD	Freshwater	947071.77	924822.40
	III (Marine)	30	LRD	Marine	961625.76	961625.76
		51	LRD	Marine	954939.97	948224.55
		62	LRD	Marine	938898.36	961525.58
	II	72	LRD	Marine	946223.78	954573.37
LWL-N	III (Marine)	LWL-1	ERM	Marine	913398.12	964095.22
		11	ERM	Marine	908969.28	962655.71
		13	ERM	Marine	900706.79	964049.58
		LWL-4	ERM	Marine	898346.67	970040.36
LWL-C	III (Marine)	LWL-8	ERM	Marine	856238.64	968284.93
		18C	ERM	Marine	839740.15	969747.03
		18D	ERM	Marine	835593.23	967942.19
		LWL-11	ERM	Marine	830580.53	967926.64
		LWL-13	ERM	Marine	819086.28	968516.09
LWL-S	III (Marine)	LWL-18	ERM	Marine	798402.11	965585.04

Table 5-2
Parameter Collection Schedule

Parameter	ERM		SFWMD	LRF
	Freshwater	Marine		
Alkalinity*	--	--	--	M
Arsenic	BM	Q	--	--
Cadmium	BM	Q	--	--
Chlorophyll-a (corrected)	BM	M	--	M
Copper	BM	Q	--	--
Dissolved Oxygen	BM	M	M	M
Fecal Coliform	--	--	--	M
Lead	BM	Q	--	--
Nitrogen, Ammonia	BM	M	M	M
Nitrogen, Nitrate-Nitrite	BM	M	M	M
Nitrogen, Total Kjeldahl	BM	M	M	M
pH	BM	M	M	M
Phosphorus, Orthophosphate	BM	M	M	M
Phosphorus, Total	BM	M	M	M
Salinity†	--	M	--	M
Specific Conductivity	BM	M	M	M
Temperature	BM	M	M	M
Total Hardness (as CaCO3)*	BM	--	--	--
Total Suspended Solids*	BM	--	M	M
Turbidity	BM	M	M	M
Zinc*	BM	Q	--	--

Notes: 1. Not all parameters are collected for every site.
2. Loxahatchee River District Sites 62, 69, and 72, are sampled monthly. Sites 30, 69, and 51 bi-monthly.
3. ERM – Palm Beach County Environmental Resource Management
4. District – South Florida Water Management District

M (Monthly)
Q (Quarterly)
BM (Bi-Monthly)
-- (Not Sampled)

Table 5-3

(Page 1 of 3)

State of Florida

Numerical Surface Water Quality Standards per Rule 62-302.530

Parameter	Units	Class I – Freshwater	Class II – Marine	Class III - Freshwater	Class III Marine-(Tidal)
PH		6.0 to 8.5	6.5 to 8.5	6.0 to 8.5	6.5 to 8.5
Dissolved Oxygen (saturation value)	%	$\geq$ 38	$\geq$ 42	$\geq$ 38	$\geq$ 42
Turbidity	NTU	$\leq$ 29 above background	$\leq$ 29 above background	$\leq$ 29 above background	$\leq$ 29 above background
Chlorophyll-a (corrected)*	ug/L	Annual geometric mean $\leq$ 20	Annual geometric mean $\leq$ 11	Annual geometric mean $\leq$ 20	Annual geometric mean $\leq$ 11
Fecal Coliform*	#/100 mL	$\leq$ 400 counts	$\leq$ 43 counts (4)	$\leq$ 400 counts (4)	$\leq$ 400 counts
Arsenic	mg/L	$\leq$ 0.01	$\leq$ 0.05	$\leq$ 0.05	$\leq$ 0.05
Cadmium	mg/L	$\leq [e^{(0.7409\ [InH]\ -4.719)}]\ 10^{-3}$	$\leq$ 0.0088	$\leq [e^{(0.7409\ [InH]\ -4.719)}]\ 10^{-3}$	$\leq$ 0.0088
Copper	mg/L	$\leq [e^{(0.8545\ [InH]\ -1.702)}]\ 10^{-3}$	$\leq$ 0.0037	$\leq [e^{(0.8545\ [InH]\ -1.702)}]\ 10^{-3}$	$\leq$0.0037
Lead	mg/L	$\leq [e^{(0.1273\ (InH)\ -4.705}]\ 10^{-3}$	$\leq$0.0085	$\leq [e^{(0.1273\ [InH]\ -4.705)}]\ 10^{-3}$	$\leq$ 0.0085
Specific Conductance	umho/cm	$\leq$ 1275		$\leq$ 1275	
Zinc	mg/L	$\leq [e^{(0.8473\ [InH]\ +\ 0.884)}]\ 10^{-3}$	$\leq$ 0.086	$\leq [e^{(0.8473\ [InH]\ +\ 0.884)}]\ 10^{-3}$	$\leq$ 0.086

Notes:

(1) InH means the natural logarithm of total hardness expressed as milligrams/L of $CaCO_3$. For metals criteria Involving equations with hardness, the hardness shall be set at 25 mg/L if actual hardness is < 25 mg/L and set at 400 mg/L if actual hardness is > 400 mg/L.

(2) This criterion is protective of human health not of aquatic life.

(3) DO saturation shall not be below the criteria in more than 10% of the measurements.

(4) This criterion applies to Sites 51, 62, and 72.

Table 5-3

(Page 2 of 3)

State of Florida

Numeric Interpretation of the Estuary

Specific Narrative Nutrient Criterion per Rule 62-302.532

Estuary	Total Phosphorus	Total Nitrogen	Chlorophyll-a	Applicable to Monitoring Sites
Middle Loxahatchee River	0.030 mg/L as AGM	0.80 mg/L as AGM	4.0 ug/L as AGM	51
Upper Loxahatchee River	0.075 mg/L as AGM	1.26 mg/L as AGM	5.5 ug/L as AGM	62
Loxahatchee River Southwest Fork	0.075 mg/L as AGM	1.26 mg/L as AGM	5.5 ug/L as AGM	72
ICWW South of Loxahatchee River	0.035 mg/L as AGM	0.66 mg/L as AGM	4.7 ug/L as AGM	30
Northern Lake Worth Lagoon	0.044 mg/L as AGM	0.54 mg/L as AGM	2.9 ug/L as AGM	LWL-1, LWL-4, 11, 13
Central Lake Worth Lagoon	0.049 mg/L as AGM	0.66 mg/L as AGM	10.2 ug/L	LWL-8, LWL-11, LWL-13, 18C, 18D
ICWW Palm Beach County (Southern Lake Worth Lagoon)	0.146 mg/L as AGM	1.17 mg/L as AGM	13.4 ug/L	LWL-18

Notes: For estuary segments with criteria expressed as annual geometric means (AGM), the values shall not be exceeded more than once in a three-year period. For all other estuary segments, the criteria shall not be exceeded in more than 10 percent of the measurements.

Table 5-3

(Page 3 of 3)

State of Florida
Numeric Interpretation of the Narrative Nutrient Lake and Stream Criteria per Rule 62-302.531

Long Term Geometric Mean Lake Color and Alkalinity	Annual Geometric Mean Chlorophyll-a	Minimum Calculated Numeric Interpretation		Maximum Calculated Numeric Interpretation	
		Annual Geometric Mean Total Phosphorus	Annual Geometric Mean Total Nitrogen	Annual Geometric Mean Total Phosphorus	Annual Geometric Mean Total Nitrogen
≤40 Platinum Cobalt units and > 20 mg/L $CaCO_3$	<20 ug/L	0.03 mg/l	1.05 mg/l	0.09 mg/l	1.91 mg/l
≥40 Platinum Cobalt units	<20 ug/L	0.05 mg/l	1.27 mg/l	0.16 mg/l	2.23 mg/l

Notes: For lakes, FDEP allows for an acceptable range of annual geometric means of TN and TP, up to the values shown in the "maximum calculated numeric interpretation" column, as long as the applicable chlorophyll-a criterion is achieved in that same year. These numeric interpretations for TN, TP, and chlorophyll-a cannot be exceeded more than once in any consecutive calendar three-year period.

State of Florida – Nutrient Criterion for South Florida Canals per Rule 62-302.530(47)(b) and 62-303.351
In no case shall nutrient concentrations of a body of water be altered so as to cause an imbalance in natural population of aquatic flora for fauna. Annual mean chlorophyll-a value less than or equal to 20 ug/l. This is applicable to sites 31E, 31C, C15S40, 22, 24, 27b, 27a, C16S41, 12A, C1744, 16, 15, 38b, 37b, C51S155, 69, C18G92, and C18S46.

State of Florida has established nutrient threshold (expressed as annual geometric means) for the Peninsula Region of 20 ug/l for chlorophyll-a, 0.12 mg/l for TP, and 1.54 mg/l for TN. These values cannot be exceeded more than once in a three-year period. This is applicable to the C-18 Basin and freshwater portions of the Loxahatchee River Sites 15, 16, C18G92, C18S46, and 69.

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C-15 Watershed Monitoring Events								
SITE 31E	**SAMPLE DATE**	**11/23/15**	**1/21/16**	**5/12/16**	**6/24/16**	**8/31/16**		**Geometric Mean**
PARAMETER	**UNITS**							
Alkalinity	mg/L			156	175	164		165
Arsenic	mg/L	0.0025	0.0098	0.0022	0.0020	0.0033		0.0032
Cadmium	mg/L	0.0003	0.0003	0.0002	0.0002	0.0002		0.0002
Chlorophyll-a (corrected)	ug/L	21.7	30.3	4.0	6	5.5		9.7
Copper	mg/L	0.0047	0.0066	0.0022	0.00642	0.0117		0.0055
Dissolved Oxygen	% Saturation	35.0	86.6	127.8	76.4	62.3		71.3
Fecal Coliform	cfu/100mL							
Lead	mg/L	0.0025	0.0025	0.0021	0.0021	0.0021		0.0023
Nitrogen, Ammonia	mg/L			0.003	0.014	0.233		0.020
Nitrogen, nitrate + nitrite	mg/L			0.010	0.203	0.513		0.103
Nitrogen, Total	mg/L			1.15	1.46	2.47		1.61
Nitrogen, Total Kjeldahl	mg/L			1.14	1.26	1.96		1.41
pH	None	7.77	7.95	7.77	7.61	7.51		7.72
Phosphorus, orthophosphate	mg/L	0.3900	0.180	0.050	0.299	0.510		0.222
Phosphorus, Total	mg/L			0.0953	0.475	0.616		0.303
Salinity	ppth							
Specific Conductivity	umho/cm	584	549	682	519	493.9		562.0
Temperature	deg C	24.2	19.7	26.0	31.5	28.1		25.6
Total Hardness	mg/L	202	205	175	176	170		185
Total Suspended Solids	mg/L	2.5	5.7	6.3	9.7	2.5		4.7
Turbidity	NTU	2.5	4.0	4.0	5.3	7.6		4.4
Zinc	mg/L	0.0050	0.0050	0.0117	0.0047	0.0069		0.0063

• Highlighted in "blue" are substituted values that were below the limits of detection. The value shown is the method detection limit provided with the data.
• Highlighted in "yellow" are sample values that exceed either the State Water Quality Standards for a specific parameter or Florida'a Impaired Waters Rule criteria for chlorophyll-a.

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Monitoring Data
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C-15 Watershed Monitoring Events								
SITE 31C	**SAMPLE DATE**	**11/23/15**	**1/21/16**	**5/12/16**	**6/24/16**	**8/31/16**		**Geometric Mean**
PARAMETER	**UNITS**							
Alkalinity	mg/L			146	177	170		164
Arsenic	mg/L	0.0025	0.0070	0.0022	0.0022	0.0026		0.0030
Cadmium	mg/L	0.0005	0.0005	0.0004	0.0004	0.0004		0.0004
Chlorophyll-a (corrected)	ug/L	8.4	21.5	15.5	4.45	3.4		8.4
Copper	mg/L	0.0013	0.0044	0.0021	0.00183	0.0031		0.0023
Dissolved Oxygen	% Saturation	33.1	61.9	121.0	120.4	72.5		73.6
Fecal Coliform	cfu/100mL							
Lead	mg/L	0.0025	0.0025	0.0021	0.0021	0.0021		0.0023
Nitrogen, Ammonia	mg/L	0.250	0.010	0.021	0.021	0.181		0.046
Nitrogen, nitrate + nitrite	mg/L	0.130	0.220	0.130	0.0285	0.165		0.112
Nitrogen, Total	mg/L	0.98	1.05	0.90	1.09	1.52		1.09
Nitrogen, Total Kjeldahl	mg/L	0.85	0.83	0.769	1.06	1.35		0.95
pH	None	7.41	7.77	7.78	7.55	7.48		7.60
Phosphorus, orthophosphate	mg/L	0.0970	0.140	0.050	0.0789	0.142		0.095
Phosphorus, Total	mg/L	0.130	0.180	0.192	0.212	0.115		0.161
Salinity	ppth							
Specific Conductivity	umho/cm	524	513	490	519	510		511
Temperature	deg C	25.7	21.4	25.5	32.0	28.5		26.4
Total Hardness	mg/L	197	194	161	170	175		178.86
Total Suspended Solids	mg/L	2.5	3.0	4.0	3.7	7.3		3.8
Turbidity	NTU	1.2	1.8	2.9	4.6	6.4		2.8
Zinc	mg/L	0.0050	0.0050	0.0046	0.0065	0.0041		0.0050

• Highlighted in "blue" are substituted values that were below the limits of detection. The value shown is the method detection limit provided with the data.
• Highlighted in "yellow" are sample values that exceed either the State Water Quality Standards for a specific parameter or Florida'a Impaired Waters Rule criteria for chlorophyll-a.

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Monitoring Data
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C-15 Watershed Monitoring Events								
SITE C15S40	**SAMPLE DATE**							
PARAMETER	**UNITS**							
Alkalinity	mg/L							
Arsenic	mg/L							
Cadmium	mg/L							
Chlorophyll-a (corrected)	ug/L							
Copper	mg/L							
Dissolved Oxygen	% Saturation							
Fecal Coliform	cfu/100mL							
Lead	mg/L							
Nitrogen, Ammonia	mg/L							
Nitrogen, nitrate + nitrite	mg/L							
Nitrogen, Total	mg/L							
Nitrogen, Total Kjeldahl	mg/L							
pH	None							
Phosphorus, orthophosphate	mg/L							
Phosphorus, Total	mg/L							
Salinity	ppth							
Specific Conductivity	umho/cm							
Temperature	deg C							
Total Hardness	mg/L							
Total Suspended Solids	mg/L							
Turbidity	NTU							
Zinc	mg/L							

• Highlighted in "blue" are substituted values that were below the limits of detection. The value shown is the method detection limit provided with the data.
• Highlighted in "yellow" are sample values that exceed either the State Water Quality Standards for a specific parameter or Florida'a Impaired Waters Rule criteria for chlorophyll-a.

• Site was discontinued by South Florida Water Management District from October 2015-December 2016. Site to be continued in 2017.

Table 5-4
Monitoring Data
Reporting Period October 2015 - September 2016

C-16 Watershed Monitoring Events								
SITE 22	**SAMPLE DATE**	**11/19/15**	**12/17/15**	**4/27/16**	**6/22/16**	**8/24/16**		**Geometric Mean**
PARAMETER	**UNITS**							
Alkalinity	mg/L			147	149	120		138
Arsenic	mg/L	0.0025	0.0025	0.00231	0.00257	0.0021		0.0024
Cadmium	mg/L	0.0003	0.0003	0.0002	0.0002	0.0002		0.0002
Chlorophyll-a (corrected)	ug/L	16.5	15.2	8.01	6.2	26.7		12.7
Copper	mg/L	0.0013	0.0013	0.00246	0.00233	0.00114		0.0016
Dissolved Oxygen	% Saturation	94.4	78.3	123.4	149.5	122.7		110.8
Fecal Coliform	cfu/100mL							
Lead	mg/L	0.0025	0.0025	0.0021	0.0021	0.0021		0.0023
Nitrogen, Ammonia	mg/L	0.010	0.040					0.020
Nitrogen, nitrate + nitrite	mg/L	0.130	0.320	0.130	0.029	0.029		0.0848
Nitrogen, Total	mg/L	0.75	0.97	1.03	1.00	1.11		0.96
Nitrogen, Total Kjeldahl	mg/L	0.62	0.65	0.899	0.97	1.08		0.82
pH	None	8.3	8.0	8.4	8.61	8.25		8.31
Phosphorus, orthophosphate	mg/L	0.0250	0.038	0.05	0.005	0.006		0.017
Phosphorus, Total	mg/L	0.052	0.065	0.083	0.055	0.047		0.059
Salinity	ppth							
Specific Conductivity	umho/cm	459	472	438	385.5	451.8		440.2
Temperature	deg C	26.0	25.2	27.6	30.3	33.40		28.3
Total Hardness	mg/L	189	177	156	139	139		159
Total Suspended Solids	mg/L	2.5	4.3	4.4	7.5	8.7		5.0
Turbidity	NTU	2.1	2.4	0.07	6.6	6.0		1.69
Zinc	mg/L	0.0050	0.0050	0.0147	0.0057	0.0025		0.0055

• Highlighted in "blue" are substituted values that were below the limits of detection. The value shown is the method detection limit provided with the data.
• Highlighted in "yellow" are sample values that exceed either the State Water Quality Standards for a specific parameter or Florida'a Impaired Waters Rule criteria for chlorophyll-a.

Table 5-4
Monitoring Data
Reporting Period October 2015 - September 2016

C-16 Watershed Monitoring Events								
SITE 24	**SAMPLE DATE**	**11/20/15**	**12/17/15**	**5/12/16**	**6/22/16**	**8/24/16**		**Geometric Mean**
PARAMETER	**UNITS**							
Alkalinity	mg/L			113	131	88		109
Arsenic	mg/L	0.0025	0.0025	0.002235	0.00263	0.002235		0.0024
Cadmium	mg/L	0.0003	0.0003	0.0002	0.0002	0.0002		0.0002
Chlorophyll-a (corrected)	ug/L	42.0	49.0	15.1	6.0	20.4		20.7
Copper	mg/L	0.0013	0.0033	0.0014	0.0019	0.0009		0.0016
Dissolved Oxygen	% Saturation	99.4	127.1	144.0	117.0	137.6		124.0
Fecal Coliform	cfu/100mL							
Lead	mg/L	0.0025	0.0025	0.0021	0.0021	0.0021		0.0023
Nitrogen, Ammonia	mg/L			0.021	0.021	0.021		0.021
Nitrogen, nitrate + nitrite	mg/L	0.0125	0.049	0.13	0.0285	0.0285		0.0365
Nitrogen, Total	mg/L	0.84	0.84	0.98	0.55	1.14		0.85
Nitrogen, Total Kjeldahl	mg/L	0.83	0.79	0.85	0.523	1.11		0.80
pH	None	8.3	8.6	8.4	8.31	8.49		8.41
Phosphorus, orthophosphate	mg/L	0.0120	0.009	0.05	0.005	0.005		0.010
Phosphorus, Total	mg/L	0.059	0.057	0.0281	0.050	0.086		0.053
Salinity	ppth							
Specific Conductivity	umho/cm	444	431	436	368.5	370.9		408.7
Temperature	deg C	26.1	25.8	25.2	29.9	33.1		27.9
Total Hardness	mg/L	167	168	133	127	111		139
Total Suspended Solids	mg/L	6.5	8.3	5	1.7	9.7		5.4
Turbidity	NTU	3.70	4.70	2.90	1.60	6.00		3.44
Zinc	mg/L	0.0050	0.0050	0.0034	0.0036	0.0037		0.0041

• Highlighted in "blue" are substituted values that were below the limits of detection. The value shown is 1/2 of the detection limit.

• Highlighted in "yellow" are sample values that exceed either the State Water Quality Standards for a specific parameter or Florida'a Impaired Waters Rule criteria for chlorophyll-a.

• The annual geometric mean for Chlorophyll-a was above the criteria of 20 ug/l

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Monitoring Data
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C-16 Watershed Monitoring Events								
SITE 27B	**SAMPLE DATE**	**11/23/15**	**1/21/16**	**6/24/16**	**8/31/16**			**Geometric Mean**
PARAMETER	**UNITS**							
Alkalinity	mg/L			219	188			203
Arsenic	mg/L	0.0025	0.0080	0.0018	0.0050			0.0036
Cadmium	mg/L	0.0003	0.0003	0.0002	0.0002			0.0002
Chlorophyll-a (corrected)	ug/L	25.2	15.3	5.3	1.5			7.5
Copper	mg/L	0.0047	0.0057	0.0035	0.0035			0.0043
Dissolved Oxygen	% Saturation	68.1	77.30	123.0	53.3			76.6
Fecal Coliform	cfu/100mL							
Lead	mg/L	0.0025	0.0025	0.0021	0.0021			0.0023
Nitrogen, Ammonia	mg/L	0.140	0.140	0.021	0.317			0.107
Nitrogen, nitrate + nitrite	mg/L	0.100	0.170	0.029	0.241			0.1040
Nitrogen, Total	mg/L	1.40	1.15	0.92	2.11			1.33
Nitrogen, Total Kjeldahl	mg/L	1.3	0.98	0.896	1.87			1.21
pH	None	7.91	7.88	7.83	7.57			7.80
Phosphorus, orthophosphate	mg/L	0.4100	0.0620	0.2090	0.416			0.217
Phosphorus, Total	mg/L	0.460	0.130	0.366	0.516			0.326
Salinity	ppth							
Specific Conductivity	umho/cm	613	518	567	560			563.5
Temperature	deg C	24.8	19.0	32.4	27.9			25.5
Total Hardness	mg/L	216	216	205	196			208
Total Suspended Solids	mg/L	5.5	15.1	5.0	9			7.8
Turbidity	NTU	2.8	4.6	6.2	8.4			5.09
Zinc	mg/L	0.0200	0.0050	0.0056	0.0048			0.0072

• Highlighted in "blue" are substituted values that were below the limits of detection. The value shown is the method detection limit provided with the data.
• Highlighted in "yellow" are sample values that exceed either the State Water Quality Standards for a specific parameter or Florida'a Impaired Waters Rule criteria for chlorophyll-a.

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Monitoring Data
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C-16 Watershed Monitoring Events								
SITE 27A	**SAMPLE DATE**	**11/20/15**	**1/21/16**	**5/12/16**	**6/24/16**	**8/31/16**		**Geometric Mean**
PARAMETER	**UNITS**							
Alkalinity	mg/L			136	191	166		163
Arsenic	mg/L	0.0025	0.0078	0.002235	0.002235	0.00334		0.0032
Cadmium	mg/L	0.0003	0.0003	0.0002	0.0002	0.0002		0.0002
Chlorophyll-a (corrected)	ug/L	17.0	16.7	12.9	6	1.6		8.1
Copper	mg/L	0.0013	0.0058	0.0024	0.0022	0.0026		0.0025
Dissolved Oxygen	% Saturation	99.1	94.2	135.3	78.1	46.1		85.4
Fecal Coliform	cfu/100mL							
Lead	mg/L	0.0025	0.0025	0.0021	0.0021	0.0021		0.0023
Nitrogen, Ammonia	mg/L	0.010	0.010	0.021	0.021	0.103		0.021
Nitrogen, nitrate + nitrite	mg/L	0.210	0.290	0.130	0.0285	0.097		0.1169
Nitrogen, Total	mg/L	0.84	1.79	1.12	1.18	1.36		1.22
Nitrogen, Total Kjeldahl	mg/L	0.63	1.50	0.99	1.15	1.26		1.06
pH	None	8.19	8.28	8.23	7.98	7.78		8.09
Phosphorus, orthophosphate	mg/L	0.0390	0.1500	0.0500	0.0045	0.1000		0.042
Phosphorus, Total	mg/L	0.062	0.190	0.248	0.174	0.096		0.137
Salinity	ppth							
Specific Conductivity	umho/cm	432	475	557	542	509		500.9
Temperature	deg C	26.5	18.7	25.8	30.5	28.4		25.6
Total Hardness	mg/L	166	202	152	183	177		175
Total Suspended Solids	mg/L	11.2	1.3	3.3	3.7	5.7		4.0
Turbidity	NTU	0.9	1.4	2.7	2.8	4.9		2.17
Zinc	mg/L	0.0050	0.0050	0.0037	0.0055	0.0034		0.0045

• Highlighted in "blue" are substituted values that were below the limits of detection. The value shown is the method detection limit provided with the data.
• Highlighted in "yellow" are sample values that exceed either the State Water Quality Standards for a specific parameter or Florida'a Impaired Waters Rule criteria for chlorophyll-a.

Table 5-4
Monitoring Data
Reporting Period October 2015 - September 2016

C-16 Watershed Monitoring Events								
SITE C16S41	**SAMPLE DATE**							
PARAMETER	**UNITS**							
Alkalinity	mg/L							
Arsenic	mg/L							
Cadmium	mg/L							
Chlorophyll-a (corrected)	ug/L							
Copper	mg/L							
Dissolved Oxygen	% Saturation							
Fecal Coliform	cfu/100mL							
Lead	mg/L							
Nitrogen, Ammonia	mg/L							
Nitrogen, nitrate + nitrite	mg/L							
Nitrogen, Total	mg/L							
Nitrogen, Total Kjeldahl	mg/L							
pH	None							
Phosphorus, orthophosphate	mg/L							
Phosphorus, Total	mg/L							
Salinity	ppth							
Specific Conductivity	umho/cm							
Temperature	deg C							
Total Hardness	mg/L							
Total Suspended Solids	mg/L							
Turbidity	NTU							
Zinc	mg/L							

• Highlighted in "blue" are substituted values that were below the limits of detection. The value shown is the method detection limit provided with the data.
• Highlighted in "yellow" are sample values that exceed either the State Water Quality Standards for a specific parameter or Florida'a Impaired Waters Rule criteria for chlorophyll-a.

• Site was discontinued by South Florida Water Management District from December 2015 - December 2016. Site to be continued in 2017.

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Monitoring Data
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C-17 Watershed Monitoring Events								
SITE 12A	**SAMPLE DATE**	**11/19/15**	**12/16/15**	**4/27/16**	**6/22/16**	**8/24/16**		**Geometric Mean**
PARAMETER	**UNITS**							
Alkalinity	mg/L			158	151	148		152
Arsenic	mg/L	0.0025	0.0025	0.0021	0.0022	0.0022		0.0023
Cadmium	mg/L	0.0003	0.0003	0.0002	0.0002	0.0002		0.0002
Chlorophyll-a (corrected)	ug/L	38.6	34.0	16.0	6	1.8		11.8
Copper	mg/L	0.0013	0.0029	0.0022	0.00236	0.0013		0.0019
Dissolved Oxygen	% Saturation	83.3	108.9	74.3	88.4	36.2		73.6
Fecal Coliform	cfu/100mL							
Lead	mg/L	0.0025	0.0025	0.0021	0.0021	0.0021		0.0023
Nitrogen, Ammonia	mg/L	0.068	0.110	0.021	0.021	0.021		0.037
Nitrogen, nitrate + nitrite	mg/L	0.130	0.029	0.020	0.068	0.110		0.0558
Nitrogen, Total	mg/L	1.05	1.13	1.12	0.71	0.96		0.98
Nitrogen, Total Kjeldahl	mg/L	0.92	1.10	1.10	0.64	0.85		0.91
pH	None	8.19	8.17	7.71	8.07	7.71		7.97
Phosphorus, orthophosphate	mg/L	0.0068	0.009	0.050	0.005	0.007		0.010
Phosphorus, Total	mg/L	0.069	0.062	0.052	0.057	0.090		0.065
Salinity	ppth							
Specific Conductivity	umho/cm	431	462	437.9	404.3	448		436.2
Temperature	deg C	26.2	26.4	27.3	30.2	31.1		28.2
Total Hardness	mg/L	175	176	152	143	155		160
Total Suspended Solids	mg/L	4.40	5.00	6.00	7.0	4.2		
Turbidity	NTU	4.4	3.9	0.60	4.9	4.0		
Zinc	mg/L	0.0050	0.0050	0.0182	0.0049	0.0039		0.0061

• Highlighted in "blue" are substituted values that were below the limits of detection. The value shown is the method detection limit provided with the data.

• Highlighted in "yellow" are sample values that exceed either the State Water Quality Standards for a specific parameter or Florida'a Impaired Waters Rule criteria for chlorophyll-a.

• The minimum amount of Dissolved Oxygen (saturation value) for a Class III- Freshwater Body is 38%

Table 5-4
Monitoring Data
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C-17 Watershed Monitoring Events								
SITE C17S44	**SAMPLE DATE**	**10/1/15**	**11/5/15**					**Geometric Mean**
PARAMETER	**UNITS**							
Alkalinity	mg/L							
Arsenic	mg/L							
Cadmium	mg/L							
Chlorophyll-a (corrected)	ug/L							
Copper	mg/L							
Dissolved Oxygen	% Saturation							
Lead	mg/L							
Nitrogen, Ammonia	mg/L	0.108	0.089					0.098
Nitrogen, nitrate + nitrite	mg/L	0.095	0.076					0.0850
Nitrogen, Total	mg/L	0.872	0.895					0.88
Nitrogen, Total Kjeldahl	mg/L							
pH	None	7.6	7.7					7.65
Phosphorus, orthophosphate	mg/L	0.014	0.010					0.012
Phosphorus, Total	mg/L	0.045	0.044					0.044
Salinity	ppth							
Specific Conductivity	umho/cm	459	473					465.9
Temperature	deg C	29.3	27.4					28.3
Total Hardness	mg/L							
Total Suspended Solids	mg/L	3.0	3.0					3.0
Turbidity	NTU	1.3	0.9					1.08
Zinc	mg/L							

• Highlighted in "blue" are substituted values that were below the limits of detection. The value shown is the method detection limit provided with the data.
• Highlighted in "yellow" are sample values that exceed either the State Water Quality Standards for a specific parameter or Florida'a Impaired Waters Rule criteria for chlorophyll-a.

• Site was discontinued by South Florida Water Management District from December 2015 - December 2016. Site to be continued in 2017.

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Monitoring Data
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C-18 Watershed Monitoring Events								
SITE 16	**SAMPLE DATE**	**11/19/15**	**12/16/15**	**4/27/16**	**6/22/16**	**8/24/16**		**Geometric Mean**
PARAMETER	**UNITS**							
Alkalinity	mg/L			117	68.2	144		105
Arsenic	mg/L	0.0025	0.0025	0.0016	0.0022	0.0022		0.0022
Cadmium	mg/L	0.0003	0.0003	0.0002	0.0002	0.0002		0.0002
Chlorophyll-a (corrected)	ug/L	15.2	7.8	5.3	6	1.5		5.6
Copper	mg/L	0.0013	0.0013	0.0010	0.0010	0.0019		0.0012
Dissolved Oxygen	% Saturation	46.2	49.5	50.3	43.2	23.2		41.0
Fecal Coliform	cfu/100mL							
Lead	mg/L	0.0028	0.0025	0.0021	0.0021	0.0021		0.0023
Nitrogen, Ammonia	mg/L	0.330	0.082					0.164
Nitrogen, nitrate + nitrite	mg/L	0.050	0.013	0.142	0.0285	0.033		0.0383
Nitrogen, Total	mg/L	1.02	1.11	1.15	0.80	0.72		0.94
Nitrogen, Total Kjeldahl	mg/L	0.97	1.10	1.01	0.775	0.683		0.89
pH	None	7.65	7.71	7.30	7.56	7.31		7.50
Phosphorus, orthophosphate	mg/L	0.0057	0.028	0.05	0.0045	0.014		0.014
Phosphorus, Total	mg/L	0.035	0.053	0.096	0.00781	0.003		0.021
Salinity	ppth							
Specific Conductivity	umho/cm	463	204	301.1	196.9	376.9		291.7
Temperature	deg C	25.3	25.4	25.9	28.4	29.7		26.9
Total Hardness	mg/L	203	76.8	116	734	146		181
Total Suspended Solids	mg/L	2.5	3.4	2	2	1.7		2.3
Turbidity	NTU	2.1	1.9	0.5	1.3	2		1.39
Zinc	mg/L	0.0050	0.0050	0.0157	0.0045	0.0476		0.0097

• Highlighted in "blue" are substituted values that were below the limits of detection. The value shown is the method detection limit provided with the data.

• Highlighted in "yellow" are sample values that exceed either the State Water Quality Standards for a specific parameter or Florida'a Impaired Waters Rule criteria for chlorophyll-a.

• The minimum amount of Dissolved Oxygen (saturation value) for a Class I- Freshwater Body is 38%

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C-18 Watershed Monitoring Events								
SITE 15	**SAMPLE DATE**	**11/19/15**	**12/16/15**					**Geometric Mean**
PARAMETER	**UNITS**							
Alkalinity	mg/L							
Arsenic	mg/L	0.0025	0.0025					0.0025
Cadmium	mg/L	0.0003	0.0003					0.0003
Chlorophyll-a (corrected)	ug/L	2.6600	2.0600					2.3
Copper	mg/L	46.20	49.50					47.82
Dissolved Oxygen	% Saturation	38.5000	47.9000					42.9
Fecal Coliform	cfu/100mL							
Lead	mg/L	0.0025	0.0025					0.0025
Nitrogen, Ammonia	mg/L	0.0100	0.0380					0.019
Nitrogen, nitrate + nitrite	mg/L	0.0125	0.0125					0.0125
Nitrogen, Total	mg/L							
Nitrogen, Total Kjeldahl	mg/L	0.6400	0.7000					0.67
pH	None	7.76	8.01					7.88
Phosphorus, orthophosphate	mg/L	0.0071	0.0110					0.009
Phosphorus, Total	mg/L	0.0085	0.0059					0.007
Salinity	ppth							
Specific Conductivity	umho/cm	350	326					337.8
Temperature	deg C	25.70	24.50					25.1
Total Hardness	mg/L	111.0	107.0					109
Total Suspended Solids	mg/L	2.5000	2.0000					2.2
Turbidity	NTU	0.4200	0.4600					0.44
Zinc	mg/L	0.0050	0.0050					0.0050

• Highlighted in "blue" are substituted values that were below the limits of detection. The value shown is the method detection limit provided with the data.

• Highlighted in "yellow" are sample values that exceed either the State Water Quality Standards for a specific parameter or Florida'a Impaired Waters Rule criteria for chlorophyll-a.

Table 5-4
Monitoring Data
Reporting Period October 2015 - September 2016

Loxahatchee River Watershed Monitoring Events (Fresh)								
SITE C18G92 (92)	**SAMPLE DATE**	**11/9/15**	**1/20/16**	**3/14/16**	**5/9/16**	**7/18/16**	**9/13/16**	**Geometric Mean**
PARAMETER	**UNITS**							
Alkalinity	mg/L	174	102	125	134	134	106	127
Arsenic	mg/L							
Cadmium	mg/L							
Chlorophyll-a (corrected)	ug/L	9.5	4.1	5.7	4.3	10.9	7.3	6.5
Copper	mg/L							
Dissolved Oxygen	% Saturation	23.90	70.30	48.90	71.30	64.70	45.0	50.7
Lead	mg/L							
Nitrogen, Ammonia	mg/L	0.130	0.050	0.080	0.050	0.030	0.080	0.063
Nitrogen, nitrate + nitrite	mg/L	0.114	0.072	0.006	0.014	0.019	0.043	0.0287
Nitrogen, Total	mg/L	1.514	0.772	0.906	0.814	0.900	1.043	0.97
Nitrogen, Total Kjeldahl	mg/L	1.40	0.70	0.9	0.8	0.9	1	0.93
pH	None	7.14	6.82	7.38	6.67	6.92	7.07	7.00
Phosphorus, orthophosphate	mg/L	0.057	0.005	0.005	0.006	0.006	0.005	0.008
Phosphorus, Total	mg/L	0.062	0.027	0.028	0.030	0.024	0.025	0.031
Salinity	ppth	0.3	0.2	0.2	0.2	0.2	0.2	0.21
Specific Conductivity	umho/cm	568	343	363.9	390	402	346	395.8
Temperature	deg C	28.1	17.6	25.2	26.4	32.2	30.1	26.1
Total Hardness	mg/L							
Total Suspended Solids	mg/L	2.9	2.1	1.3	3.7	2.2	1.4	2.1
Turbidity	NTU	1.3	1.3	1.8	2.3	1.5	1.3	1.55
Zinc	mg/L							

• Highlighted in "blue" are substituted values that were below the limits of detection. The value shown is the method detection limit provided with the data.

• Highlighted in "yellow" are sample values that exceed either the State Water Quality Standards for a specific parameter or Florida'a Impaired Waters Rule criteria for chlorophyll-a.

• The minimum amount of Dissolved Oxygen (saturation value) for a Class I- Freshwater Body is 38%

• Site was discontinued by South Florida Water Management District from December 2015-December 2016; Site 92 from Loxahatchee River Drainage District was substituted. Site to be continued in 2017

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Monitoring Data
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Loxahatchee River Watershed Monitoring Events (Fresh)								
SITE C18S46 (81)	**SAMPLE DATE**	**11/9/15**	**1/20/16**	**3/14/16**	**5/9/16**	**7/18/16**	**9/13/16**	**Geometric Mean**
PARAMETER	**UNITS**							
Alkalinity	mg/L	138	101	112	101	177	121	122
Arsenic	mg/L							
Cadmium	mg/L							
Chlorophyll-a (corrected)	ug/L	5.8	6.5	12.3	3.5	13.3	12.6	8.0
Copper	mg/L							
Dissolved Oxygen	% Saturation	65.40	80.00	75.50	71.10	67.70	25.0	60.2
Lead	mg/L							
Nitrogen, Ammonia	mg/L	0.110	0.050	0.060	0.060	0.030	0.040	0.054
Nitrogen, nitrate + nitrite	mg/L	0.155	0.043	0.056	0.020	0.005	0.058	0.0360
Nitrogen, Total	mg/L	1.255	0.743	1.056	0.820	0.800	0.858	0.91
Nitrogen, Total Kjeldahl	mg/L	1.10	0.70	1	0.8	0.8	0.8	0.86
pH	None	7.41	6.96	7.93	6.93	6.97	7.21	7.23
Phosphorus, orthophosphate	mg/L	0.037	0.005	0.005	0.005	0.006	0.005	0.007
Phosphorus, Total	mg/L	0.023	0.022	0.039	0.027	0.026	0.034	0.028
Salinity	ppth	0.2	0.2	0.2	0.2	0.2	0.1	0.18
Specific Conductivity	umho/cm	453	310	304.7	606	353	392	391.3
Temperature	deg C	27.5	18.7	25.9	26..7	30.7	29.8	26.1
Total Hardness	mg/L							
Total Suspended Solids	mg/L	0.3	1.3	2.6	1.3	1.6	1.4	1.2
Turbidity	NTU	0.7	1.0	2.3	1.3	1.3	1.6	1.28
Zinc	mg/L							

• Highlighted in "blue" are substituted values that were below the limits of detection. The value shown is the method detection limit provided with the data.

• Highlighted in "yellow" are sample values that exceed either the State Water Quality Standards for a specific parameter or Florida'a Impaired Waters Rule criteria for chlorophyll-a.

• Site was discontinued by South Florida Water Management District from December 2015-December 2016. Site 81 from Loxahatchee River Drainage District was substituted. Site to be continued in 2017.

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Monitoring Data
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C-51 W Watershed Monitoring Events								
SITE 38B	**SAMPLE DATE**	**11/19/15**	**12/16/15**	**4/27/16**	**6/22/16**	**8/24/16**		**Geometric Mean**
PARAMETER	**UNITS**							
Alkalinity	mg/L			120	168	146		143
Arsenic	mg/L	0.0025	0.0025	0.0022	0.0022	0.0022		0.0023
Cadmium	mg/L	0.0003	0.0003	0.0002	0.0002	0.0002		0.0002
Chlorophyll-a (corrected)	ug/L	6.9	8.4	6.0	6.0	52.0		10.2
Copper	mg/L	0.0013	0.0013	0.0018	0.0018	0.0011		0.0014
Dissolved Oxygen	% Saturation	83.8	92.8	58.4	70.0	57.4		71.2
Fecal Coliform	cfu/100mL							
Lead	mg/L	0.0025	0.0025	0.0021	0.0021	0.0021		0.0023
Nitrogen, Ammonia	mg/L			0.031	0.041	0.085		0.048
Nitrogen, nitrate + nitrite	mg/L	0.32	0.35	0.330	0.094	0.096		0.2016
Nitrogen, Total	mg/L	1.07	1.55	1.36	1.69	1.29		1.37
Nitrogen, Total Kjeldahl	mg/L	0.75	1.20	1.03	1.6	1.19		1.12
pH	None	8.05	8.01	7.53	7.75	7.51		7.77
Phosphorus, orthophosphate	mg/L	0.074	0.054	0.194	0.047	0.028		0.063
Phosphorus, Total	mg/L	0.1200	0.1200	0.1590	0.0189	0.0796		0.081
Salinity	ppth							
Specific Conductivity	umho/cm	458	570	456	747	966		612.1
Temperature	deg C	27.0	27.1	27.0	29.8	29.7		28.1
Total Hardness	mg/L	172	168	139	186	195		171
Total Suspended Solids	mg/L	5.6	32	5.6	32.0	14.7		13.6
Turbidity	NTU	13.0	25.7	0.8	51.0	16.0		11.69
Zinc	mg/L	0.0050	0.0050	0.0208	0.0096	0.0031		0.0069

• Highlighted in "blue" are substituted values that were below the limits of detection. The value shown is 1/2 of the detection limit.

• Highlighted in "yellow" are sample values that exceed either the State Water Quality Standards for a specific parameter or Florida'a Impaired Waters Rule criteria for chlorophyll-a.

• Turbidity was above 29 NTU's

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Monitoring Data
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C-51 E Watershed Monitoring Events								
SITE 37B	**SAMPLE DATE**	**11/19/15**	**12/17/15**	**4/27/16**	**6/22/16**	**8/24/16**		**Geometric Mean**
PARAMETER	**UNITS**							
Alkalinity	mg/L			144.0	192	192		174
Arsenic	mg/L	0.0025	0.0025	0.0029	0.002235	0.0017		0.0023
Cadmium	mg/L	0.0003	0.0003	0.0002	0.0002	0.0002		0.0002
Chlorophyll-a (corrected)	ug/L	4.3	4.2	6.0	5.78	1.5		3.9
Copper	mg/L	0.0013	0.0013	0.0023	0.0021	0.0012		0.0015
Dissolved Oxygen	% Saturation	75.4	53.4	74.8	85.9	48.8		66.1
Fecal Coliform	cfu/100mL							
Lead	mg/L	0.0025	0.0025	0.0021	0.0021	0.0021		0.0023
Nitrogen, Ammonia	mg/L	0.054	0.140	0.036	0.021	0.037		0.046
Nitrogen, nitrate + nitrite	mg/L	0.320	0.320	0.046	0.0285	0.103		0.1065
Nitrogen, Total	mg/L	1.09	1.17	0.98	1.07	0.82		1.02
Nitrogen, Total Kjeldahl	mg/L	0.77	0.85	0.94	1.04	0.72		0.85
pH	None	7.99	7.79	7.76	7.74	7.38		7.73
Phosphorus, orthophosphate	mg/L	0.0610	0.047	0.193	0.0045	0.008		0.028
Phosphorus, Total	mg/L	0.0910	0.0630	0.1540	0.0475	0.1820		0.095
Salinity	ppth							
Specific Conductivity	umho/cm	507	655	514	577	890		614.5
Temperature	deg C	26.9	25.2	27.9	29.9	30.3		28.0
Total Hardness	mg/L	181	238	158	193	236		199
Total Suspended Solids	mg/L	2.5	2.2	3.6	26.0	6.3		5.0
Turbidity	NTU	6.6	3.8	1.3	87	6.0		7.02
Zinc	mg/L	0.0050	0.0050	0.0250	0.0089	0.0020		0.0065

• Highlighted in "blue" are substituted values that were below the limits of detection. The value shown is 1/2 of the detection limit.
• Highlighted in "yellow" are sample values that exceed either the State Water Quality Standards for a specific parameter or Florida'a Impaired Waters Rule criteria for chlorophyll-a.
• **Turbidity was above 29 NTU's**

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C-51 E Watershed Monitoring Events								
SITE C51S155	**SAMPLE DATE**	**10/1/15**	**11/5/15**					**Geometric Mean**
PARAMETER	**UNITS**							
Alkalinity	mg/L							
Arsenic	mg/L							
Cadmium	mg/L							
Chlorophyll-a (corrected)	ug/L							
Copper	mg/L							
Dissolved Oxygen	% Saturation							
Fecal Coliform	cfu/100mL							
Lead	mg/L							
Nitrogen, Ammonia	mg/L	0.120	0.031					0.061
Nitrogen, nitrate + nitrite	mg/L	0.197	0.301					0.2435
Nitrogen, Total	mg/L	1.12	1.16					1.14
Nitrogen, Total Kjeldahl	mg/L							
pH	None	7.4	7.5					7.45
Phosphorus, orthophosphate	mg/L	0.013	0.036					0.022
Phosphorus, Total	mg/L	0.0610	0.0660					0.063
Salinity	ppth							
Specific Conductivity	umho/cm	628	587					607.2
Temperature	deg C	29.4	25.8					27.5
Total Hardness	mg/L							
Total Suspended Solids	mg/L	6.0	3.0					4.2
Turbidity	NTU	4.4	4.2					4.30
Zinc	mg/L							

• Highlighted in "blue" are substituted values that were below the limits of detection. The value shown is the method detection limit provided with the data.
• Highlighted in "yellow" are sample values that exceed either the State Water Quality Standards for a specific parameter or Florida'a Impaired Waters Rule criteria for chlorophyll-a.

• Site was discontinued by South Florida Water Management District from December 2015-December 2016. Site to be continued in 2017.

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Monitoring Data
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Loxahatchee River Watershed Monitoring Events								
SITE 69 (Lox)	**SAMPLE DATE**	**10/12/15**	**11/9/15**	**12/14/15**	**1/20/16**	**2/8/16**	**3/14/16**	**4/11/16**
PARAMETER	**UNITS**							
Alkalinity	mg/L	163	182	104	129	126	143	109
Arsenic	mg/L							
Cadmium	mg/L							
Chlorophyll-a (corrected)	ug/L	2.1	1.4	2.6	1.9	2.9	2.1	2.5
Copper	mg/L							
Dissolved Oxygen	% Saturation	20.7	19.5	48.9	64.0	58.1	51.4	53.70
Fecal Coliform	cfu/100mL	5	3	60	18	77	18	4
Lead	mg/L							
Nitrogen, Ammonia	mg/L	0.130	0.150	0.120	0.050	0.140	0.080	0.050
Nitrogen, nitrate + nitrite	mg/L	0.141	0.140	0.081	0.110	0.103	0.105	0.050
Nitrogen, Total	mg/L	1.24	1.04	1.00	0.81	1.00	1.11	0.65
Nitrogen, Total Kjeldahl	mg/L	1.1	0.9	0.9	0.7	0.9	1	0.7
pH	None	7.3	7.3	6.7	7.0	7.1	7.4	6.3
Phosphorus, orthophosphate	mg/L	0.022	0.074	0.014	0.008	0.014	0.009	0.011
Phosphorus, Total	mg/L	0.039	0.051	0.037	0.024	0.054	0.030	0.028
Salinity	ppth	0.30	0.30	0.20	0.20	0.20	0.20	0.20
Specific Conductivity	umho/cm	512	612	330	421	435	423.3	369
Temperature	deg C	27.1	27.3	23.8	17.3	18.2	23.9	24.6
Total Hardness	mg/L							
Total Suspended Solids	mg/L	1.1	2.1	1.3	1.5	1.7	1.3	1.0
Turbidity	NTU	1.6	1.5	1.5	1.4	3.3	1.9	2.1
Zinc	mg/L							

SITE 69 (Lox)	**SAMPLE DATE**	**5/9/16**	**6/13/16**	**7/18/16**	**8/15/16**	**9/13/16**		**Geometric Mean**
PARAMETER	**UNITS**							
Alkalinity	mg/L	148	129	151	159	116		136
Arsenic	mg/L							
Cadmium	mg/L							
Chlorophyll-a (corrected)	ug/L	1.3	3.9	3.9	3.2	3.6		2.5
Copper	mg/L							
Dissolved Oxygen	% Saturation	58.5	54.2	41.3	42.5	38.1		43.3
Fecal Coliform	cfu/100mL	12	14	13	24	33		15
Lead	mg/L							
Nitrogen, Ammonia	mg/L	0.060	0.040	0.030	0.040	0.090		0.071
Nitrogen, nitrate + nitrite	mg/L	0.028	0.048	0.051	0.057	0.075		0.07
Nitrogen, Total	mg/L	0.73	0.80	0.80	1.10	0.88		0.91
Nitrogen, Total Kjeldahl	mg/L	0.70	0.80	0.70	1.00	0.80		0.8
pH	None	6.7	7.1	6.9	7.3	7.1		7.0
Phosphorus, orthophosphate	mg/L	0.013	0.010	0.013	0.011	0.009		0.014
Phosphorus, Total	mg/L	0.027	0.027	0.033	0.027	0.037		0.033
Salinity	ppth	0.2	0.2	0.2	0.2	0.2		0.21
Specific Conductivity	umho/cm	446	403	477	409	382		430
Temperature	deg C	25.2	28.9	31.1	30.0	29.8		25.2
Total Hardness	mg/L							
Total Suspended Solids	mg/L	1.4	1.6	1.7	1.8	1.3		1.5
Turbidity	NTU	1.6	1.6	1.6	1.8	2.1		1.8
Zinc	mg/L							

• Highlighted in "blue" are substituted values that were below the limits of detection. The value shown is the method detection limit provided with the data.
• Highlighted in "yellow" are sample values that exceed either the State Water Quality Standards for a specific parameter or Florida'a Impaired Waters Rule criteria for chlorophyll-a.

• The minimum amount of Dissolved Oxygen (% saturation) for a Class III- Freshwater Body is 38%

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Loxahatchee River Watershed Monitoring Events (Marine)								
SITE 30	**SAMPLE DATE**	**11/16/15**	**1/12/16**	**3/15/16**	**5/17/16**	**7/12/16**	**9/20/16**	**Geometric Mean**
PARAMETER	**UNITS**							
Alkalinity	mg/L	126	122	126	126	123	118	123
Arsenic	mg/L	0.0021	0.0045	0.0046	0.0025	0.0047	0.0038	0.0035
Cadmium	mg/L							
Chlorophyll-a (corrected)	ug/L	2.1	4.5	4.6	2.5	4.7	3.8	3.5
Copper	mg/L							
Dissolved Oxygen	% Saturation	79.5	83.5	80.5	71.0	81.1	75.5	78.4
Fecal Coliform	cfu/100mL	7	25	16	1	5	15	7.71
Lead	mg/L							
Nitrogen, Ammonia	mg/L	0.050	0.050	0.050	0.025	0.025	0.025	0.035
Nitrogen, nitrate + nitrite	mg/L	0.023	0.027	0.005	0.008	0.005	0.010	0.0104
Nitrogen, Total	mg/L	0.20	0.53	0.30	0.20	0.20	0.21	0.25
Nitrogen, Total Kjeldahl	mg/L	0.20	0.50	0.30	0.20	0.20	0.20	0.25
pH	None	7.82	7.84	7.74	7.54	7.78	7.79	7.75
Phosphorus, orthophosphate	mg/L	0.012	0.006	0.005	0.007	0.010	0.0120	0.008
Phosphorus, Total	mg/L	0.027	0.021	0.016	0.022	0.031	0.019	0.022
Salinity	ppth	33.80	31.30	32.90	34.50	32.00	33.70	33.01
Specific Conductivity	umho/cm	51381	47871	50119	52332	48861	51184	50267.8
Temperature	deg C	25.0	21.6	24.4	29.1	32.3	29.6	26.8
Total Hardness	mg/L							
Total Suspended Solids	mg/L	6.9	6.7	4.8	5.9	3.5	3.3	5.0
Turbidity	NTU	3.3	3.7	3.0	2.4	2.6	2.5	2.88
Zinc	mg/L							

• Highlighted in "blue" are substituted values that were below the limits of detection. The value shown is the method detection limit provided with the data.
• Highlighted in "yellow" are sample values that exceed either the State Water Quality Standards for a specific parameter or Florida'a Impaired Waters Rule criteria for chlorophyll-a.

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Monitoring Data
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Loxahatchee River Watershed Monitoring Events (Marine)								
SITE 51	**SAMPLE DATE**	**11/17/15**	**1/11/16**	**3/21/16**	**5/16/16**	**7/11/16**	**9/19/16**	**Geometric Mean**
PARAMETER	**UNITS**							
Alkalinity	mg/L	125	119	114	125	123	120	121
Arsenic	mg/L							
Cadmium	mg/L							
Chlorophyll-a (corrected)	ug/L	2.6	2.2	2.9	2.9	4.9	2.8	3.0
Copper	mg/L							
Dissolved Oxygen	% Saturation	86.3	83.7	83.1	83.3	91.7	91.5	86.5
Fecal Coliform	cfu/100mL	7	26	88	4	8	3	10.74
Lead	mg/L							
Nitrogen, Ammonia	mg/L	0.060	0.050	0.050	0.030	0.030	0.030	0.040
Nitrogen, nitrate + nitrite	mg/L	0.015	0.017	0.018	0.005	0.005	0.005	0.0091
Nitrogen, Total	mg/L	0.20	0.32	0.32	0.20	0.30	0.20	0.25
Nitrogen, Total Kjeldahl	mg/L	0.20	0.30	0.30	0.20	0.30	0.20	0.24
pH	None	7.87	7.86	7.69	7.64	7.87	7.83	7.79
Phosphorus, orthophosphate	mg/L	0.012	0.006	0.005	0.005	0.005	0.007	0.006
Phosphorus, Total	mg/L	0.028	0.017	0.029	0.025	0.029	0.015	0.023
Salinity	ppth	33.10	31.60	27.80	32.10	30.00	34.60	31.46
Specific Conductivity	umho/cm	50305	48315	43100	48999	46085	52375	48103.2
Temperature	deg C	25.1	22.8	23.0	29.8	30.6	29.8	26.6
Total Hardness	mg/L							
Total Suspended Solids	mg/L	7.2	6.4	5.0	6.6	4.5	3.5	5.4
Turbidity	NTU	4.1	2.6	2.4	3.6	4.3	2.6	3.18
Zinc	mg/L							

• Highlighted in "blue" are substituted values that were below the limits of detection. The value shown is 1/2 of the detection limit.

• Highlighted in "yellow" are sample values that exceed either the State Water Quality Standards for a specific parameter or Florida'a Impaired Waters Rule criteria for chlorophyll-a.

• The maximum amount of Fecal Coliform for a Class II- Marine Waterbody is 43 cfu/100mL

Table 5-4
Monitoring Data
Reporting Period October 2015 - September 2016

Loxahatchee River Watershed Monitoring Events (Marine)								
SITE 62 (Lox)	**SAMPLE DATE**	**10/12/15**	**11/9/15**	**12/14/15**	**1/20/16**	**2/8/16**	**3/14/16**	**4/11/16**
PARAMETER	**UNITS**							
Alkalinity	mg/L	130	166	101	126	100	143	106
Arsenic	mg/L							
Cadmium	mg/L							
Chlorophyll-a (corrected)	ug/L	6.30	4.60	3.60	1.50	1.00	5.00	4.10
Copper	mg/L							
Dissolved Oxygen	% Saturation	56.0	58.9	64.4	69.5	69.6	72	73.3
Fecal Coliform	cfu/100mL	58	56	101	106	189	67	56
Lead	mg/L							
Nitrogen, Ammonia	mg/L	0.060	0.080	0.070	0.050	0.050	0.070	0.050
Nitrogen, nitrate + nitrite	mg/L	0.065	0.069	0.124	0.125	0.077	0.005	0.048
Nitrogen, Total	mg/L	0.87	0.67	1.00	0.73	0.78	0.70	0.55
Nitrogen, Total Kjeldahl	mg/L	0.8	0.6	0.9	0.6	0.7	0.7	0.6
pH	None	7.2	7.4	7.2	7.3	7.2	7.5	7.4
Phosphorus, orthophosphate	mg/L	0.032	0.104	0.034	0.025	0.029	0.021	0.022
Phosphorus, Total	mg/L	0.048	0.054	0.063	0.041	0.049	0.044	0.043
Salinity	ppth	13.70	13.80	2.80	6.00	6.60	7.30	8.90
Specific Conductivity	umho/cm	22709	22879	5145	10618	11630	12660	15228
Temperature	deg C	28.1	28.1	24.1	17.7	18.9	24.8	23.6
Total Hardness	mg/L							
Total Suspended Solids	mg/L	2.5	4.1	3.6	2.1	2.5	3.3	2.7
Turbidity	NTU	1.7	2.5	2.7	1.9	2.1	2.6	2.3
Zinc	mg/L							

SITE 62 (Lox)	**SAMPLE DATE**	**5/9/16**	**6/13/16**	**7/18/16**	**8/15/16**	**9/13/16**		**Geometric Mean**
PARAMETER	**UNITS**							
Alkalinity	mg/L	133	118	143	118	118		124
Arsenic	mg/L							
Cadmium	mg/L							
Chlorophyll-a (corrected)	ug/L	3.5	20.8	8.6	10.9	6.2		4.8
Copper	mg/L							
Dissolved Oxygen	% Saturation	89.4	57.6	80.7	66.6	53.1		66.9
Fecal Coliform	cfu/100mL	16	54	45	192	408		81
Lead	mg/L							
Nitrogen, Ammonia	mg/L	0.030	0.050	0.030	0.030	0.030		0.047
Nitrogen, nitrate + nitrite	mg/L	0.005	0.052	0.005	0.032	0.074		0.04
Nitrogen, Total	mg/L	0.40	0.90	0.60	1.00	0.77		0.72
Nitrogen, Total Kjeldahl	mg/L	0.40	0.80	0.60	1.00	0.70		0.7
pH	None	7.62	7.34	7.55	7.43	7.39		7.4
Phosphorus, orthophosphate	mg/L	0.012	0.027	0.022	0.029	0.025		0.028
Phosphorus, Total	mg/L	0.033	0.061	0.058	0.058	0.061		0.050
Salinity	ppth	25.6	1.9	8.1	1.7	1.3		5.70
Specific Conductivity	umho/cm	40040	3470	13948	3092	2348		9908
Temperature	deg C	26.3	29.3	32.4	31.2	29.2		25.7
Total Hardness	mg/L							
Total Suspended Solids	mg/L	6.2	5.4	3.4	3.4	3.1		3.4
Turbidity	NTU	4.4	3.9	2.9	3.1	3.8		2.7
Zinc	mg/L							

• Highlighted in "blue" are substituted values that were below the limits of detection. The value shown is the method detection limit provided with the data.
• Highlighted in "yellow" are sample values that exceed either the State Water Quality Standards for a specific parameter or Florida'a Impaired Waters Rule criteria for chlorophyll-a.

• The maximum amount of Fecal Coliform for a Class II- Marine Water Body is 43 counts/L

Table 5-4
Monitoring Data
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Loxahatchee River Watershed Monitoring Events (Marine)								
SITE 72	**SAMPLE DATE**	**10/12/15**	**11/17/15**	**12/14/15**	**1/11/16**	**2/8/16**	**3/21/16**	**4/11/16**
PARAMETER	**UNITS**							
Alkalinity	mg/L	126	134	126	131	90	127	121
Arsenic	mg/L							
Cadmium	mg/L							
Chlorophyll-a (corrected)	ug/L	11.8	4.5	3.2	1.9	1.1	3.8	12.2
Copper	mg/L							
Dissolved Oxygen	% Saturation	60.7	76.6	61.5	69.1	84	61.9	96.0
Fecal Coliform	cfu/100mL	32	38	212	129	108	208	48
Lead	mg/L							
Nitrogen, Ammonia	mg/L	0.100	0.400	0.360	0.100	0.080	0.300	0.050
Nitrogen, nitrate + nitrite	mg/L	0.019	0.058	0.113	0.057	0.031	0.036	0.005
Nitrogen, Total	mg/L	0.62	0.56	0.90	0.56	0.73	0.74	0.70
Nitrogen, Total Kjeldahl	mg/L	0.6	0.5	0.8	0.5	0.7	0.7	0.7
pH	None	7.5	7.6	7.4	7.7	7.8	7.4	7.7
Phosphorus, orthophosphate	mg/L	0.007	0.031	0.040	0.019	0.013	0.008	0.005
Phosphorus, Total	mg/L	0.029	0.056	0.640	0.030	0.027	0.041	0.030
Salinity	ppth	27.60	28.50	19.10	27.90	27.70	22.60	28.50
Specific Conductivity	umho/cm	42825	44026	30784	43221	42971	35800	44047
Temperature	deg C	29.0	24.9	24.6	22.2	20.8	22.7	23.4
Total Hardness	mg/L							
Total Suspended Solids	mg/L	4.5	8.9	4.8	3.1	3.4	2.9	16.1
Turbidity	NTU	2.8	4.8	3.6	1.9	2.4	2.3	6.5
Zinc	mg/L							

SITE 72	**SAMPLE DATE**	**5/16/16**	**6/13/16**	**7/11/16**	**8/15/16**	**9/19/16**		**Geometric Mean**
PARAMETER	**UNITS**							
Alkalinity	mg/L	158	139	133	145	126		129
Arsenic	mg/L							
Cadmium	mg/L							
Chlorophyll-a (corrected)	ug/L	12.7	26.7	11.8	29.4	8.0		7.1
Copper	mg/L							
Dissolved Oxygen	% Saturation	100.1	89.7	82.6	111.8	76.0		79.3
Fecal Coliform	cfu/100mL	36	224	133	210	76		116
Lead	mg/L							
Nitrogen, Ammonia	mg/L	0.230	0.030	0.030	0.030	0.030		0.091
Nitrogen, nitrate + nitrite	mg/L	0.031	0.005	0.035	0.018	0.01		0.02
Nitrogen, Total	mg/L	0.631	0.9	0.8	0.9	0.51		0.70
Nitrogen, Total Kjeldahl	mg/L	0.6	0.9	0.8	0.9	0.5		0.7
pH	None	7.7	7.6	7.6	7.8	7.7		7.6
Phosphorus, orthophosphate	mg/L	0.01	0.009	0.012	0.009	0.008		0.012
Phosphorus, Total	mg/L	0.034	0.048	0.057	0.057	0.029		0.048
Salinity	ppth	30.40	14.80	18.40	18.30	26.80		23.63
Specific Conductivity	umho/cm	46683	24400	29719	29615	41717		37238
Temperature	deg C	30	31.5	31.4	32	29.8		26.6
Total Hardness	mg/L							
Total Suspended Solids	mg/L	13.1	5.5	3.5	9.6	3.4		5.5
Turbidity	NTU	5.2	3.6	3.9	5.0	2.8		3.5
Zinc	mg/L							

• Highlighted in "blue" are substituted values that were below the limits of detection. The value shown is 1/2 of the detection limit.
• Highlighted in "yellow" are sample values that exceed either the State Water Quality Standards for a specific parameter or Florida'a Impaired Waters Rule criteria for chlorophyll-a.

• The annual geometric mean for Chlorophyll-a was above the criteria of 5.5 ug/l.

• The maximum amount of Fecal Coliform for the Loxahatchee River Southwest Fork is 43 cfu/100mL.

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Monitoring Data
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Lake Worth Lagoon North Watershed Monitoring Events (Marine)								
SITE LWL-1	**SAMPLE DATE**	**2/18/16**	**6/17/16**	**8/18/16**	**9/15/16**			**Geometric Mean**
PARAMETER	**UNITS**							
Alkalinity	mg/L							
Arsenic	mg/L							
Cadmium	mg/L							
Chlorophyll-a (corrected)	ug/L							
Copper	mg/L							
Dissolved Oxygen	% Saturation	96.96	91.64	101.1	98.6			97.0
Fecal Coliform	cfu/100mL							
Lead	mg/L							
Nitrogen, Ammonia	mg/L	0.017	0.012	0.013	0.014			0.014
Nitrogen, nitrate + nitrite	mg/L	0.120	0.003	0.003	0.003			0.0066
Nitrogen, Total	mg/L	0.331	0.330	0.310	0.338			0.33
Nitrogen, Total Kjeldahl	mg/L							
pH	None	7.9	7.9	8	7.8			7.90
Phosphorus, orthophosphate	mg/L	0.006	0.002	0.011	0.012			0.006
Phosphorus, Total	mg/L	0.025	0.026	0.039	0.035			0.031
Salinity	ppth							
Specific Conductivity	umho/cm	43685	44682	47843	45755			45465.3
Temperature	deg C	20.9	31	32.5	30.8			28.4
Total Hardness	mg/L							
Total Suspended Solids	mg/L	1.5	1.5	9.0	6.0			3.3
Turbidity	NTU	1.7	1.3	1.8	1.1			1.45
Zinc	mg/L							

• Highlighted in "blue" are substituted values that were below the limits of detection. The value shown is the method detection limit provided with the data.

• Highlighted in "yellow" are sample values that exceed either the State Water Quality Standards for a specific parameter or Florida'a Impaired Waters Rule criteria for chlorophyll-a.

Table 5-4
Monitoring Data
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Lake Worth Lagoon North Watershed Monitoring Events (Marine)								
SITE 11	**SAMPLE DATE**	**10/9/15**	**12/22/15**	**4/21/16**	**7/20/16**	**8/11/16**	**9/27/16**	**Geometric Mean**
PARAMETER	**UNITS**							
Alkalinity	mg/L							
Arsenic	mg/L							
Cadmium	mg/L							
Chlorophyll-a (corrected)	ug/L	20.5	4.8	2.0	6.0	6.2	16.9	7.1
Copper	mg/L							
Dissolved Oxygen	% Saturation	74.8	100.9	99.1	105.6	90.8	88.9	92.8
Fecal Coliform	cfu/100mL							
Lead	mg/L							
Nitrogen, Ammonia	mg/L	0.010	0.010	0.007	0.007	0.007	0.007	0.008
Nitrogen, nitrate + nitrite	mg/L	0.013	0.055	0.435	0.029	0.021	0.025	0.0406
Nitrogen, Total	mg/L	0.36	0.33	0.59	0.13	0.13	0.13	0.23
Nitrogen, Total Kjeldahl	mg/L	0.35	0.27	0.15	0.11	0.11	0.11	0.16
pH	None	7.78	8.08	7.84	8.04	7.97	7.55	7.87
Phosphorus, orthophosphate	mg/L	0.068	0.055	0.130	0.005	0.005	0.007	0.020
Phosphorus, Total	mg/L	0.072	0.052	0.032	0.067	0.029	0.027	0.043
Salinity	ppth	28.58	28.62	31.56	32.77	30.04	27.84	29.85
Specific Conductivity	umho/cm	44639	44312	48414	50321	46491	43444	46207.1
Temperature	deg C	28.8	24.0	25.6	31.8	30.2	30.3	28.3
Total Hardness	mg/L							
Total Suspended Solids	mg/L							
Turbidity	NTU	2.4	1.2	5.3	2.5	1.8	4.3	2.58
Zinc	mg/L							

• Highlighted in "blue" are substituted values that were below the limits of detection. The value shown is 1/2 of the detection limit.
• Highlighted in "yellow" are sample values that exceed either the State Water Quality Standards for a specific parameter or Florida'a Impaired Waters Rule criteria for chlorophyll-a.

• The annual geometric mean for Chlorophyll-a was above the criteria of 2.9 ug/l.

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Lake Worth Lagoon North Watershed Monitoring Events (Marine)								
SITE 13	**SAMPLE DATE**	**10/9/15**	**12/22/15**	**4/21/16**	**7/20/16**	**8/11/16**	**9/27/16**	**Geometric Mean**
PARAMETER	**UNITS**							
Alkalinity	mg/L							
Arsenic	mg/L							
Cadmium	mg/L							
Chlorophyll-a (corrected)	ug/L	11.6	3.9	2.0	6.0	1.5		3.8
Copper	mg/L							
Dissolved Oxygen	% Saturation	84.1	88.2	99.2	96.9	72.8	71.1	84.7
Fecal Coliform	cfu/100mL							
Lead	mg/L							
Nitrogen, Ammonia	mg/L	0.010	0.037	0.007	0.021	0.021	0.021	0.017
Nitrogen, nitrate + nitrite	mg/L	0.030	0.061	0.435	0.029	0.034	0.047	0.0575
Nitrogen, Total	mg/L	0.41	0.58	0.78	0.13	0.18	0.60	0.37
Nitrogen, Total Kjeldahl	mg/L	0.38	0.52	0.34	0.11	0.14	0.55	0.29
pH	None	7.8	8.1	7.9	8.0	7.8	7.5	7.83
Phosphorus, orthophosphate	mg/L	0.055	0.051	0.130	0.004	0.004	0.004	0.017
Phosphorus, Total	mg/L	0.058	0.051	0.029	0.033	0.032	0.079	0.044
Salinity	ppth	23.28	47.10	29.08	31.74	29.32	25.94	30.27
Specific Conductivity	umho/cm	37021	42030	45025	46778	45510	40794	42726.9
Temperature	deg C	29.7	24.2	26.4	32.0	30.3	30.3	28.7
Total Hardness	mg/L							
Total Suspended Solids	mg/L							
Turbidity	NTU	2.1	2.6	6.7	2.5	2.5	4.0	3.12
Zinc	mg/L							

• Highlighted in "blue" are substituted values that were below the limits of detection. The value shown is 1/2 of the detection limit.
• Highlighted in "yellow" are sample values that exceed either the State Water Quality Standards for a specific parameter or Florida'a Impaired Waters Rule criteria for chlorophyll-a.

• Chlorophyll-a was above the criteria of 2.9 ug/l annual geometric mean.

Table 5-4
Monitoring Data
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Lake Worth Lagoon North Watershed Monitoring Events (Marine)								
SITE LWL-4	**SAMPLE DATE**	**2/18/16**	**6/17/16**	**8/18/16**	**9/15/16**			**Geometric Mean**
PARAMETER	**UNITS**							
Alkalinity	mg/L							
Arsenic	mg/L							
Cadmium	mg/L							
Chlorophyll-a (corrected)	ug/L							
Copper	mg/L							
Dissolved Oxygen	% Saturation	96.32	91.23	97.7	97.8			95.7
Fecal Coliform	cfu/100mL							
Lead	mg/L							
Nitrogen, Ammonia	mg/L	0.012	0.014	0.013	0.014			0.013
Nitrogen, nitrate + nitrite	mg/L	0.010	0.003	0.003	0.003			0.0035
Nitrogen, Total	mg/L	0.289	0.477	0.245	0.282			0.31
Nitrogen, Total Kjeldahl	mg/L							
pH	None	8	8	8	7.9			7.97
Phosphorus, orthophosphate	mg/L	0.003	0.001	0.002	0.002			0.002
Phosphorus, Total	mg/L	0.015	0.031	0.022	0.03			0.024
Salinity	ppth							
Specific Conductivity	umho/cm	47078	45931	50300	48970			48040.3
Temperature	deg C	21.8	29.2	31.6	30			27.9
Total Hardness	mg/L							
Total Suspended Solids	mg/L	3	6	14	13			7.6
Turbidity	NTU	1.9	3.7	2.8	2.7			2.70
Zinc	mg/L							

• Highlighted in "blue" are substituted values that were below the limits of detection. The value shown is the method detection limit provided with the data.
• Highlighted in "yellow" are sample values that exceed either the State Water Quality Standards for a specific parameter or Florida'a Impaired Waters Rule criteria for chlorophyll-a.

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Monitoring Data
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Lake Worth Lagoon Central Watershed Monitoring Events (Marine)								
SITE LWL-8	**SAMPLE DATE**	**10/29/15**	**11/12/16**	**2/17/16**	**3/22/16**	**6/15/16**	**7/28/16**	**8/17/16**
PARAMETER	**UNITS**							
Alkalinity	mg/L							
Arsenic	mg/L							
Cadmium	mg/L							
Chlorophyll-a (corrected)	ug/L							
Copper	mg/L							
Dissolved Oxygen	% Saturation							
Fecal Coliform	cfu/100mL							
Lead	mg/L							
Nitrogen, Ammonia	mg/L	0.032	0.025	0.066	0.048	0.01	0.015	0.064
Nitrogen, nitrate + nitrite	mg/L	0.097	0.016	0.114	0.04	0.0025	0.006	0.028
Nitrogen, Total	mg/L	0.497	0.365	0.771	0.374	0.663	0.526	0.65
Nitrogen, Total Kjeldahl	mg/L							
pH	None	8.1	8.2	8.2	7.8	7.9	7.9	7.8
Phosphorus, orthophosphate	mg/L	0.015	0.005	0.018	0.016	0.016	0.009	0.015
Phosphorus, Total	mg/L	0.043	0.04	0.043	0.047	0.054	0.051	0.059
Salinity	ppth							
Specific Conductivity	umho/cm	46794	48907	30322	46285	25300	36032	29577
Temperature	deg C	26.8	29.2	20.9	23.1	31.6	31.8	32.6
Total Hardness	mg/L							
Total Suspended Solids	mg/L	9	9	7	14	9	7	13
Turbidity	NTU	6.4	7	5.4	6.5	5.7	5.7	9.4
Zinc	mg/L							

SITE LWL-8	**SAMPLE DATE**	**9/14/16**						**Geometric Mean**
PARAMETER	**UNITS**							
Alkalinity	mg/L							
Arsenic	mg/L							
Cadmium	mg/L							
Chlorophyll-a (corrected)	ug/L							
Copper	mg/L							
Dissolved Oxygen	% Saturation							
Fecal Coliform	cfu/100mL							
Lead	mg/L							
Nitrogen, Ammonia	mg/L	0.07						0.034
Nitrogen, nitrate + nitrite	mg/L	0.08						0.03
Nitrogen, Total	mg/L	0.70						0.55
Nitrogen, Total Kjeldahl	mg/L							
pH	None	7.70						7.9
Phosphorus, orthophosphate	mg/L	0.02						0.013
Phosphorus, Total	mg/L	0.06						0.049
Salinity	ppth							
Specific Conductivity	umho/cm	30538.0						35710
Temperature	deg C	30.4						28.0
Total Hardness	mg/L							
Total Suspended Solids	mg/L	10.0						9.5
Turbidity	NTU	8.5						6.7
Zinc	mg/L							

• Highlighted in "blue" are substituted values that were below the limits of detection. The value shown is the method detection limit provided with the data.
• Highlighted in "yellow" are sample values that exceed either the State Water Quality Standards for a specific parameter or Florida'a Impaired Waters Rule criteria for chlorophyll-a.

Table 5-4
Monitoring Data
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Lake Worth Lagoon Central Watershed Monitoring Events (Marine)								
SITE 18C	**SAMPLE DATE**	**10/9/15**	**12/22/15**	**5/5/16**	**7/20/16**	**8/11/16**		**Geometric Mean**
PARAMETER	**UNITS**							
Alkalinity	mg/L							
Arsenic	mg/L							
Cadmium	mg/L							
Chlorophyll-a (corrected)	ug/L	19.30	4.11	6.60	6.00	8.00		7.6
Copper	mg/L							
Dissolved Oxygen	% Saturation							
Fecal Coliform	cfu/100mL							
Lead	mg/L							
Nitrogen, Ammonia	mg/L	0.010	0.0085	0.038	0.021	0.021		0.017
Nitrogen, nitrate + nitrite	mg/L	0.059	0.140	0.0285	0.029	0.057		0.0520
Nitrogen, Total	mg/L	0.48	0.78	0.82	0.26	0.24		0.45
Nitrogen, Total Kjeldahl	mg/L	0.42	0.64	0.80	0.23	0.18		0.39
pH	None							
Phosphorus, orthophosphate	mg/L	0.045	0.059	0.005	0.022	0.012		0.020
Phosphorus, Total	mg/L	0.049	0.073	0.159	0.084	0.058		0.077
Salinity	ppth							
Specific Conductivity	umho/cm							
Temperature	deg C							
Total Hardness	mg/L							
Total Suspended Solids	mg/L							
Turbidity	NTU	7.2	15.2	32.0	31.0	14.0		17.23
Zinc	mg/L							

• Highlighted in "blue" are substituted values that were below the limits of detection. The value shown is 1/2 of the detection limit.
• Highlighted in "yellow" are sample values that exceed either the State Water Quality Standards for a specific parameter or Florida'a Impaired Waters Rule criteria for chlorophyll-a.

The annual geometric mean for Total Phosphorus was above the criteria of 0.049 mg/l.

Table 5-4
Monitoring Data
Reporting Period October 2015 - September 2016

Lake Worth Lagoon Central Watershed Monitoring Events (Marine)								
SITE 18D	**SAMPLE DATE**	**10/9/15**	**12/22/15**	**5/5/16**	**7/20/16**	**8/11/16**		**Geometric Mean**
PARAMETER	**UNITS**							
Alkalinity	mg/L							
Arsenic	mg/L							
Cadmium	mg/L							
Chlorophyll-a (corrected)	ug/L	12.7	8.1	8.0	6.0	8.0		8.3
Copper	mg/L							
Dissolved Oxygen	% Saturation	96.2	99.7	99.2	119.2	94.7		101.4
Fecal Coliform	cfu/100mL							
Lead	mg/L							
Nitrogen, Ammonia	mg/L	0.010	0.059	0.021	0.021	0.021		0.022
Nitrogen, nitrate + nitrite	mg/L	0.032	0.083	0.0285	0.029	0.022		0.0343
Nitrogen, Total	mg/L	0.44	0.50	0.46	0.13	0.17		0.30
Nitrogen, Total Kjeldahl	mg/L	0.41	0.42	0.44	0.11	0.15		0.26
pH	None	7.94	8.17	7.87	7.79	7.81		7.91
Phosphorus, orthophosphate	mg/L	0.055	0.059	0.500	0.008	0.005		0.036
Phosphorus, Total	mg/L	0.059	0.077	0.126	0.046	0.043		0.065
Salinity	ppth	22.90	26.70	29.47	26.22	18.83		24.54
Specific Conductivity	umho/cm	36488	41610	45510	41303	30550		38733.7
Temperature	deg C	30.7	24.1	25.3	33.4	30.2		28.5
Total Hardness	mg/L							
Total Suspended Solids	mg/L							
Turbidity	NTU	5.2	14.2	16.0	7.5	5.2		8.56
Zinc	mg/L							

• Highlighted in "blue" are substituted values that were below the limits of detection. The value shown is 1/2 of the detection limit.
• Highlighted in "yellow" are sample values that exceed either the State Water Quality Standards for a specific parameter or Florida'a Impaired Waters Rule criteria for chlorophyll-a.

The annual geometric mean for Total Phosphorus was above the criteria of 0.049 mg/l.

Table 5-4
Monitoring Data
Reporting Period October 2015 - September 2016

Lake Worth Lagoon Central Watershed Monitoring Events (Marine)								
SITE LWL-11	**SAMPLE DATE**	**10/29/15**	**11/12/15**	**2/17/16**	**3/22/16**	**6/15/16**	**7/28/16**	**8/17/16**
PARAMETER	**UNITS**							
Alkalinity	mg/L							
Arsenic	mg/L							
Cadmium	mg/L							
Chlorophyll-a (corrected)	ug/L							
Copper	mg/L							
Dissolved Oxygen	% Saturation							
Fecal Coliform	cfu/100mL							
Lead	mg/L							
Nitrogen, Ammonia	mg/L	0.054	0.021	0.033	0.057	0.009	0.011	0.016
Nitrogen, nitrate + nitrite	mg/L	0.057	0.047	0.083	0.025	0.003	0.003	0.003
Nitrogen, Total	mg/L	0.54	0.37	0.73	0.48	0.54	0.56	0.61
Nitrogen, Total Kjeldahl	mg/L							
pH	None	8.1	8.1	8.2	7.8	8.1	8.0	8.0
Phosphorus, orthophosphate	mg/L	0.014	0.011	0.008	0.012	0.014	0.001	0.001
Phosphorus, Total	mg/L	0.034	0.035	0.042	0.052	0.049	0.049	0.035
Salinity	ppth							
Specific Conductivity	umho/cm	45420	49023	38716	43978	45280	48420	38942
Temperature	deg C	27.1	29.6	21.6	23.0	32.7	31.9	31.5
Total Hardness	mg/L							
Total Suspended Solids	mg/L	8.0	5.0	6.0	15.0	4.0	10.0	8.0
Turbidity	NTU	4.3	2.4	5.5	9.2	4.4	4.1	4.7
Zinc	mg/L							

SITE LWL-11	**SAMPLE DATE**	**9/14/16**						**Geometric Mean**
PARAMETER	**UNITS**							
Alkalinity	mg/L							
Arsenic	mg/L							
Cadmium	mg/L							
Chlorophyll-a (corrected)	mg/m3							
Copper	mg/L							
Dissolved Oxygen	mg/L							
Fecal Coliform	cfu/100mL							
Lead	mg/L							
Nitrogen, Ammonia	mg/L	0.013						0.021
Nitrogen, nitrate + nitrite	mg/L	0.0025						0.01
Nitrogen, Total	mg/L	0.505						0.53
Nitrogen, Total Kjeldahl	mg/L							
pH	None	7.7						8.0
Phosphorus, orthophosphate	mg/L	0.003						0.005
Phosphorus, Total	mg/L	0.05						0.043
Salinity	ppth							
Specific Conductivity	umho/cm	44742						44168
Temperature	deg C	30.2						28.2
Total Hardness	mg/L							
Total Suspended Solids	mg/L	26.0						8.6
Turbidity	NTU	9.5						5.0
Zinc	mg/L							

• Highlighted in "blue" are substituted values that were below the limits of detection. The value shown is the method detection limit provided with the data.
• Highlighted in "yellow" are sample values that exceed either the State Water Quality Standards for a specific parameter or Florida'a Impaired Waters Rule criteria for chlorophyll-a.

Table 5-4
Monitoring Data
Reporting Period October 2015 - September 2016

Lake Worth Lagoon Central Watershed Monitoring Events (Marine)								
SITE LWL-13	**SAMPLE DATE**	**11/09/15**	**03/21/16**	**06/14/16**	**07/26/16**	**09/13/16**		**Geometric Mean**
PARAMETER	**UNITS**							
Alkalinity	mg/L							
Arsenic	mg/L							
Cadmium	mg/L							
Chlorophyll-a (corrected)	ug/L							
Copper	mg/L							
Dissolved Oxygen	% Saturation							
Fecal Coliform	cfu/100mL							
Lead	mg/L							
Nitrogen, Ammonia	mg/L	0.009	0.022	0.007	0.01	0.016		0.012
Nitrogen, nitrate + nitrite	mg/L	0.009	0.0025	0.0025	0.0025	0.0025		0.0032
Nitrogen, Total	mg/L	0.277	0.347	0.396	0.285	0.333		0.32
Nitrogen, Total Kjeldahl	mg/L							
pH	None	8.1	8	8	8	7.9		8.00
Phosphorus, orthophosphate	mg/L	0.004	0.002	0.003	0.002	0.001		0.002
Phosphorus, Total	mg/L	0.029	0.028	0.036	0.02	0.023		0.027
Salinity	ppth							
Specific Conductivity	umho/cm	51920	47891	44310	48260	44540		47302.7
Temperature	deg C	29.1	24.5	29.7	30.3	29.9		28.6
Total Hardness	mg/L							
Total Suspended Solids	mg/L	6	7	4	8	6		6.0
Turbidity	NTU	4.3	4.9	2.4	2	2.2		2.95
Zinc	mg/L							

• Highlighted in "blue" are substituted values that were below the limits of detection. The value shown is the method detection limit provided with the data.
• Highlighted in "yellow" are sample values that exceed either the State Water Quality Standards for a specific parameter or Florida'a Impaired Waters Rule criteria for chlorophyll-a.

Table 5-4
Monitoring Data
Reporting Period October 2015 - September 2016

Lake Worth Lagoon South Watershed Monitoring Events (Marine)								
SITE LWL-18	**SAMPLE DATE**	**11/9/15**	**3/21/16**	**6/14/16**	**7/26/16**	**9/13/16**		**Geometric Mean**
PARAMETER	**UNITS**							
Alkalinity	mg/L							
Arsenic	mg/L							
Cadmium	mg/L							
Chlorophyll-a (corrected)	ug/L							
Copper	mg/L							
Dissolved Oxygen	% Saturation	86.81	89.02	131.93	101.14	85.16		97.4
Fecal Coliform	cfu/100mL							
Lead	mg/L							
Nitrogen, Ammonia	mg/L	0.045	0.024	0.009	0.011	0.016		0.018
Nitrogen, nitrate + nitrite	mg/L	0.062	0.012	0.003	0.003	0.003		0.0065
Nitrogen, Total	mg/L	0.418	0.408	0.666	0.392	0.483		0.46
Nitrogen, Total Kjeldahl	mg/L	0.36	0.40	0.66	0.39	0.48		0.45
pH	None	8	7.9	7.9	7.9	7.7		7.88
Phosphorus, orthophosphate	mg/L	0.017	0.008	0.030	0.012	0.006		0.012
Phosphorus, Total	mg/L	0.042	0.049	0.089	0.047	0.040		0.051
Salinity	ppth							
Specific Conductivity	umho/cm	50600	47850	31078	47755	43029		43436.3
Temperature	deg C	29.2	25.0	31.2	32.1	30.2		29.4
Total Hardness	mg/L							
Total Suspended Solids	mg/L	6.0	13.0	6.0	12.0	6.0		8.0
Turbidity	NTU	4.5	9.4	4.8	3.2	4.6		4.96
Zinc	mg/L							

• Highlighted in "blue" are substituted values that were below the limits of detection. The value shown is the method detection limit provided with the data.
• Highlighted in "yellow" are sample values that exceed either the State Water Quality Standards for a specific parameter or Florida'a Impaired Waters Rule criteria for chlorophyll-a.

TABLE 5-5
Summary of Exceedances per Site by Parameter
October 1, 2015 - September 30, 2016

Watershed	Site	Dissolved Oxygen	Turbidity	Fecal Coliform	Chlorophyll-a* (Annual Geometric Mean)	Total Phosphorus (Annual Geometric Mean)
C-15	31E					
	31C					
	C15S40					
C-16	22					
	24				20.7	
	27B					
	27A					
	C16S41					
C-17	12A	1/5				
	C17S44					
C-18	16	1/5				
	15					
	C18G92					
	C18S46					
C-51 W	38B		1/5			
C-51 E	37B		1/5			
	C51S155					
Loxahatchee River	69	2/12				
	30					
	51			2/12		
	62			11/12		
	72			9/12	7.1	
Lake Worth Lagoon North	LWL-1					
	11				7.1	
	13				3.8	
	LWL-4					
Lake Worth Lagoon Central	LWL-8					
	18C				1/5	0.077
	18D				1/5	0.065
	LWL-11					
	LWL-13					
Lake Worth Lagoon South Watershed	LWL-18					

Table 5-6

Monitoring Data Summary - C-15 Watershed
January 1999 - September 2016

SITE 31E		03/24/99 - 08/31/16			Samples 83		
		Count	Geometric Mean	Median	Max	Min	Standard Deviation
Alkalinity	mg/L	25	165	163	210	123	22
Arsenic	mg/L	66	0.0024	0.0025	0.0098	0.0005	0.0014
Cadmium	mg/L	80	0.0006	0.0004	0.0050	0.0002	0.0017
Chlorophyll-a (corrected)	ug/L	71	22.2	24.0	120.0	2.5	23.8
Copper	mg/L	79	0.0051	0.0050	0.0200	0.0013	0.0035
Dissolved Oxygen	% Saturation	80	7.5	6.7	127.8	1.7	22.9
Fecal Coliform	cfu/100mL	33	67	50	5000	1	875
Lead	mg/L	69	0.0020	0.0024	0.0050	0.0005	0.0014
Nitrogen, Ammonia	mg/L	76	0.049	0.045	0.820	0.003	0.131
Nitrogen, nitrate + nitrite	mg/L	71	0.049	0.050	0.785	0.001	0.186
Nitrogen, Total	mg/L	71	1.61	1.57	3.87	0.83	0.65
Nitrogen, Total Kjeldahl	mg/L	74	1.51	1.52	3.84	0.65	0.64
pH	None	80	7.5	7.6	8.3	6.3	0.4
Phosphorus, orthophosphate	mg/L	76	0.130	0.144	1.330	0.003	0.222
Phosphorus, Total	mg/L	72	0.253	0.255	1.490	0.060	0.266
Salinity	ppth	0	None	None	None	None	None
Specific Conductivity	umho/cm	81	549	556	833	227	110
Temperature	deg C	81	25.3	26.0	32.0	16.7	3.9
Total Hardness	mg/L	78	199	196	390	118	37
Total Suspended Solids	mg/L	78	6.4	7.1	18.0	1.0	3.6
Turbidity	NTU	79	4.5	4.7	15.9	0.2	2.8
Zinc	mg/L	80	0.0057	0.0050	0.0140	0.0025	0.0029

SITE 31C		01/28/99 - 08/31/16			Samples 84		
		Count	Geometric Mean	Median	Max	Min	Standard Deviation
Alkalinity	mg/L	22	150	151	177	123	14
Arsenic	mg/L	64	0.0026	0.0025	0.0250	0.0005	0.0031
Cadmium	mg/L	81	0.0006	0.0005	0.0050	0.0002	0.0018
Chlorophyll-a (corrected)	ug/L	70	16.1	18.5	93.0	0.1	17.8
Copper	mg/L	81	0.0043	0.0046	0.0140	0.0013	0.0033
Dissolved Oxygen	% Saturation	81	8.7	7.6	121.0	3.1	25.4
Fecal Coliform	cfu/100mL	33	69	70	5000	3	886
Lead	mg/L	69	0.0021	0.0024	0.0070	0.0005	0.0015
Nitrogen, Ammonia	mg/L	78	0.041	0.040	0.456	0.001	0.081
Nitrogen, nitrate + nitrite	mg/L	71	0.073	0.080	1.300	0.006	0.194
Nitrogen, Total	mg/L	71	1.27	1.21	3.09	0.62	0.57
Nitrogen, Total Kjeldahl	mg/L	81	1.11	1.07	3.07	0.11	0.54
pH	None	82	7.5	7.5	8.1	6.3	0.4
Phosphorus, orthophosphate	mg/L	79	0.043	0.049	0.440	0.003	0.081
Phosphorus, Total	mg/L	74	0.126	0.120	0.560	0.020	0.098
Salinity	ppth	0	None	None	None	None	None
Specific Conductivity	umho/cm	83	539	510	11188	391	1174
Temperature	deg C	81	25.9	25.8	32.0	19.2	3.3
Total Hardness	mg/L	81	180	185	260	16	26
Total Suspended Solids	mg/L	77	4.1	4.0	15.7	1.0	3.3
Turbidity	NTU	79	2.7	2.8	13.3	0.1	2.0
Zinc	mg/L	81	0.0055	0.0050	0.0297	0.0025	0.0038

Table 5-6

Monitoring Data Summary - C-15 Watershed
January 1999 - September 2016

SITE C15S40		06/15/00 - 07/23/15			Samples 115		
		Count	Geometric Mean	Median	Max	Min	Standard Deviation
Alkalinity	mg/L	90	148	152	207	32	19
Arsenic	mg/L	26	0.0021	0.0025	0.0046	0.0005	0.0009
Cadmium	mg/L	38	0.0007	0.0007	0.0050	0.0002	0.0020
Chlorophyll-a (corrected)	ug/L	32	12.5	18.0	50.9	1.7	13.6
Copper	mg/L	38	0.0050	0.0051	0.0200	0.0013	0.0039
Dissolved Oxygen	% Saturation	106	7.1	7.0	133.1	2.0	19.4
Fecal Coliform	DHu/100mL	25	85	110	420	1	100
Lead	mg/L	38	0.0020	0.0025	0.0260	0.0003	0.0042
Nitrogen, Ammonia	mg/L	104	0.018	0.014	0.305	0.003	0.054
Nitrogen, nitrate + nitrite	mg/L	110	0.019	0.013	0.470	0.001	0.105
Nitrogen, Total	mg/L	109	1.02	1.00	4.23	0.57	0.41
Nitrogen, Total KjelDHhl	mg/L	113	0.95	0.93	4.18	0.56	0.38
pH	None	113	7.7	7.8	8.6	6.7	0.4
Phosphorus, orthophosphate	mg/L	113	0.052	0.072	0.344	0.001	0.071
Phosphorus, Total	mg/L	100	0.110	0.109	0.702	0.039	0.093
Salinity	ppth	0	None	None	None	None	None
Specific Conductivity	umho/cm	115	491	495	787	392	48
Temperature	deg C	115	25.0	26.0	32.5	15.0	4.1
Total Hardness	mg/L	46	177	178	230	138	18
Total Suspended Solids	mg/L	111	2.8	2.8	43.7	1.0	4.7
Turbidity	NTU	115	2.4	2.6	17.8	0.1	2.3
Zinc	mg/L	38	0.0065	0.0051	0.0492	0.0038	0.0073

Table 5-6
Monitoring Data Summary - C-16 Watershed
January 1999 - September 2016

SITE 22		01/29/04 - 08/24/16			Samples 66		
		Count	Geometric Mean	Median	Max	Min	Standard Deviation
Alkalinity	mg/L	25	142	141	185	110	16
Arsenic	mg/L	65	0.0024	0.0025	0.0300	0.0005	0.0035
Cadmium	mg/L	65	0.0004	0.0003	0.0026	0.0002	0.0006
Chlorophyll-a (corrected)	ug/L	64	12.0	15.1	62.7	0.8	13.0
Copper	mg/L	65	0.0031	0.0030	0.0180	0.0010	0.0039
Dissolved Oxygen	% Saturation	63	11.5	8.6	149.5	4.4	37.5
Fecal Coliform	cfu/100mL	16	42	39	600	2	210
Lead	mg/L	53	0.0016	0.0016	0.0029	0.0005	0.0007
Nitrogen, Ammonia	mg/L	60	0.025	0.030	1.010	0.002	0.129
Nitrogen, nitrate + nitrite	mg/L	59	0.062	0.051	1.990	0.006	0.291
Nitrogen, Total	mg/L	58	1.04	1.00	3.07	0.53	0.41
Nitrogen, Total Kjeldahl	mg/L	65	0.88	0.88	2.19	0.27	0.30
pH	None	63	7.9	8.0	8.7	6.5	0.4
Phosphorus, orthophosphate	mg/L	64	0.013	0.023	0.086	0.001	0.021
Phosphorus, Total	mg/L	65	0.060	0.059	0.840	0.010	0.107
Salinity	ppth	0	None	None	None	None	None
Specific Conductivity	umho/cm	63	498	502	1008	7	143
Temperature	deg C	64	25.4	25.6	36.3	17.1	4.3
Total Hardness	mg/L	65	181	183	239	139	22
Total Suspended Solids	mg/L	64	3.9	4.3	33.8	1.0	4.4
Turbidity	NTU	63	2.3	2.5	6.6	0.1	1.4
Zinc	mg/L	65	0.0049	0.0050	0.0600	0.0013	0.0077

SITE 24		01/25/99 - 08/24/16			Samples 82		
		Count	Geometric Mean	Median	Max	Min	Standard Deviation
Alkalinity	mg/L	19	113	150	177	3	38
Arsenic	mg/L	60	0.0025	0.0025	0.0063	0.0005	0.0010
CFdmium	mg/L	75	0.0005	0.0003	0.0050	0.0002	0.0017
Chlorophyll-a (corrected)	ug/L	70	13.6	14.6	49.0	2.0	11.2
Copper	mg/L	75	0.0034	0.0036	0.0113	0.0007	0.0030
Dissolved Oxygen	% Saturation	79	11.2	8.9	144.0	4.7	37.2
FeCFl Coliform	cfu/100mL	30	67	95	2300	1	491
Lead	mg/L	68	0.0021	0.0025	0.0050	0.0007	0.0013
Nitrogen, Ammonia	mg/L	74	0.025	0.030	0.096	0.007	0.020
Nitrogen, nitrate + nitrite	mg/L	72	0.040	0.035	0.940	0.001	0.149
Nitrogen, Total	mg/L	72	0.99	0.99	2.67	0.11	0.44
Nitrogen, Total Kjeldahl	mg/L	73	0.89	0.90	2.61	0.09	0.42
pH	None	79	8.0	8.0	8.8	7.1	0.4
Phosphorus, orthophosphate	mg/L	75	0.012	0.015	0.230	0.001	0.033
Phosphorus, Total	mg/L	77	0.064	0.057	3.053	0.020	0.343
Salinity	ppth	0	None	None	None	None	None
Specific Conductivity	umho/cm	80	524	487	4220	348	432
Temperature	deg C	79	24.8	25.8	33.1	2.8	4.9
Total Hardness	mg/L	73	177	179	233	111	25
Total Suspended Solids	mg/L	77	4.5	5.0	16.5	1.0	3.3
Turbidity	NTU	79	3.2	3.2	11.4	0.6	1.9
Zinc	mg/L	75	0.0056	0.0050	0.0360	0.0013	0.0053

Table 5-6
Monitoring Data Summary - C-16 Watershed
January 1999 - September 2016

SITE 27B		01/28/99 - 08/31/16			Samples 74		
		Count	Geometric Mean	Median	Max	Min	Standard Deviation
Alkalinity	mg/L	21	176	170	222	121	28
Arsenic	mg/L	55	0.0026	0.0025	0.0120	0.0005	0.0018
Cadmium	mg/L	72	0.0006	0.0004	0.0050	0.0002	0.0019
Chlorophyll-a (corrected)	ug/L	60	14.9	18.9	76.4	1.5	15.6
Copper	mg/L	72	0.0045	0.0044	0.0214	0.0007	0.0039
Dissolved Oxygen	% Saturation	72	6.8	6.2	139.7	1.4	26.2
Fecal Coliform	cfu/100mL	29	139	100	6000	7	1526
Lead	mg/L	66	0.0022	0.0025	0.0067	0.0005	0.0015
Nitrogen, Ammonia	mg/L	70	0.050	0.049	0.740	0.007	0.099
Nitrogen, nitrate + nitrite	mg/L	65	0.077	0.070	0.785	0.006	0.162
Nitrogen, Total	mg/L	64	1.50	1.55	3.42	0.75	0.51
Nitrogen, Total Kjeldahl	mg/L	70	1.35	1.40	3.37	0.68	0.51
pH	None	72	7.5	7.5	8.4	6.7	0.3
Phosphorus, orthophosphate	mg/L	68	0.067	0.067	0.680	0.001	0.161
Phosphorus, Total	mg/L	70	0.169	0.166	0.770	0.030	0.180
Salinity	ppth	0	None	None	None	None	None
Specific Conductivity	umho/cm	73	551	560	10481	8	1171
Temperature	deg C	73	25.3	26.6	32.4	16.5	4.0
Total Hardness	mg/L	72	197	201	288	113	36
Total Suspended Solids	mg/L	70	5.7	6.3	20.0	1.0	4.0
Turbidity	NTU	72	3.2	3.2	11.4	0.6	2.0
Zinc	mg/L	71	0.0058	0.0050	0.0360	0.0013	0.0055

SITE 27A		01/28/99 - 11/20/16			Samples 83		
		Count	Geometric Mean	Median	Max	Min	Standard Deviation
Alkalinity	mg/L	24	153	151	191	128	14
Arsenic	mg/L	64	0.0025	0.0025	0.0078	0.0005	0.0012
Cadmium	mg/L	81	0.0006	0.0005	0.0050	0.0002	0.0018
Chlorophyll-a (corrected)	ug/L	68	14.8	16.9	66.0	1.6	15.3
Copper	mg/L	81	0.0047	0.0048	0.0200	0.0013	0.0032
Dissolved Oxygen	% Saturation	79	9.5	7.5	135.3	2.6	28.5
Fecal Coliform	cfu/100mL	32	52	54	1200	4	255
Lead	mg/L	75	0.0022	0.0025	0.0150	0.0005	0.0022
Nitrogen, Ammonia	mg/L	78	0.034	0.040	2.060	0.002	0.233
Nitrogen, nitrate + nitrite	mg/L	74	0.051	0.050	0.750	0.006	0.139
Nitrogen, Total	mg/L	74	1.21	1.21	4.32	0.15	0.58
Nitrogen, Total Kjeldahl	mg/L	80	1.11	1.20	3.96	0.08	0.53
pH	None	80	7.8	7.9	8.6	6.5	0.4
Phosphorus, orthophosphate	mg/L	72	0.036	0.039	0.440	0.001	0.097
Phosphorus, Total	mg/L	77	0.130	0.132	1.580	0.037	0.211
Salinity	ppth	0	None	None	None	None	None
Specific Conductivity	umho/cm	81	521	512	939	219	118
Temperature	deg C	79	25.4	25.6	32.6	18.5	3.9
Total Hardness	mg/L	81	183	183	258	117	25
Total Suspended Solids	mg/L	72	4.1	5.1	38.0	1.0	5.1
TurBWdity	NTU	80	3.2	3.4	71.5	0.1	8.3
Zinc	mg/L	79	0.0058	0.0050	0.0690	0.0013	0.0093

Table 5-6
Monitoring Data Summary - C-16 Watershed
January 1999 - September 2016

SITE C16S41		01/28/99 - 07/23/15			Samples 120		
		Count	Geometric Mean	Median	Max	Min	Standard Deviation
Alkalinity	mg/L	90	147	147	210	119	15
Arsenic	mg/L	26	0.0020	0.0025	0.0036	0.0005	0.0007
Cadmium	mg/L	43	0.0009	0.0008	0.0050	0.0002	0.0022
Chlorophyll-a (corrected)	ug/L	32	8.2	8.5	50.0	2.0	10.4
Copper	mg/L	43	0.0040	0.0039	0.0200	0.0007	None
Dissolved Oxygen	% Saturation	112	7.1	6.9	110.0	2.7	18.1
Fecal Coliform	cfu/100mL	28	104	92	2600	10	663
Lead	mg/L	43	0.0022	0.0025	0.0261	0.0003	0.0040
Nitrogen, Ammonia	mg/L	113	0.025	0.033	2.760	0.001	0.259
Nitrogen, nitrate + nitrite	mg/L	115	0.038	0.050	13.000	0.001	1.210
Nitrogen, Total	mg/L	114	1.06	1.01	13.71	0.53	1.30
Nitrogen, Total Kjeldahl	mg/L	118	0.93	0.88	5.81	0.40	0.51
pH	None	118	7.7	7.8	8.5	6.2	0.4
Phosphorus, orthophosphate	mg/L	118	0.020	0.030	0.209	0.001	0.047
Phosphorus, Total	mg/L	106	0.073	0.065	0.318	0.025	0.056
Salinity	ppth	0	None	None	None	None	None
Specific Conductivity	umho/cm	120	446	477	946	5	126
Temperature	deg C	120	25.1	25.9	56.8	13.1	5.0
Total Hardness	mg/L	50	177	179	224	137	20
Total Suspended Solids	mg/L	115	3.0	3.0	24.9	1.0	3.5
Turbidity	NTU	120	2.4	2.5	10.7	0.1	1.7
Zinc	mg/L	43	0.0065	0.0050	0.1180	0.0032	0.0172

Table 5-6
Monitoring Data Summary - C-17 Watershed
January 1999 - September 2016

SITE 12A		01/19/99 - 08/24/16			Samples 87		
		Count	Geometric Mean	Median	Max	Min	Standard Deviation
Alkalinity	mg/L	28	146	148	185	87	19
Arsenic	mg/L	69	0.0026	0.0025	0.0068	0.0005	0.0014
Cadmium	mg/L	86	0.0006	0.0005	0.0050	0.0002	0.0017
Chlorophyll-a (corrected)	ug/L	73	13.7	16.0	74.8	1.2	11.9
Copper	mg/L	86	0.0038	0.0035	0.0500	0.0013	0.0059
Dissolved Oxygen	% Saturation	82	8.1	6.4	641.0	0.8	73.3
Fecal Coliform	CKu/100mL	35	138	110	4000	23	660
Lead	mg/L	80	0.0019	0.0024	0.0076	0.0004	0.0016
Nitrogen, Ammonia	mg/L	85	0.065	0.052	2.260	0.008	0.258
Nitrogen, nitrate + nitrite	mg/L	78	0.082	0.104	1.590	0.006	0.194
Nitrogen, Total	mg/L	79	1.52	1.15	9.08	0.43	2.39
Nitrogen, Total Kjeldahl	mg/L	85	1.08	1.09	3.10	0.38	0.43
pH	None	85	7.5	7.6	8.6	6.2	0.5
Phosphorus, orthophosphate	mg/L	75	0.009	0.011	0.058	0.001	0.014
Phosphorus, Total	mg/L	81	0.051	0.065	0.340	0.003	0.043
Salinity	ppth	0	None	None	None	None	None
Specific Conductivity	umho/cm	85	448	465	831	231	77
Temperature	deg C	85	25.1	25.8	31.7	16.3	3.7
Total Hardness	mg/L	81	162	172	216	86	26
Total Suspended Solids	mg/L	78	4.5	4.9	15.5	1.0	3.1
Turbidity	NTU	78	3.4	3.8	6.3	0.3	1.3
Zinc	mg/L	86	0.0066	0.0053	0.0614	0.0013	0.0077

SITE C17S44		01/19/99 - 11/05/15			Samples 149		
		Count	Geometric Mean	Median	Max	Min	Standard Deviation
Alkalinity	mg/L	78	158	163	192	112	19
Arsenic	mg/L	14	0.0017	0.0019	0.0049	0.0005	0.0011
Cadmium	mg/L	31	0.0014	0.0008	0.0050	0.0002	0.0022
Chlorophyll-a (corrected)	ug/L	23	9.2	9.1	40.0	1.7	9.7
Copper	mg/L	31	0.0042	0.0050	0.0500	0.0007	0.0089
Dissolved Oxygen	% Saturation	129	6.2	6.4	12.9	0.7	1.9
Fecal Coliform	cfu/100mL	31	96	100	730	5	215
Lead	mg/L	31	0.0021	0.0019	0.0250	0.0003	0.0045
Nitrogen, Ammonia	mg/L	145	0.035	0.040	1.500	0.003	0.135
Nitrogen, nitrate + nitrite	mg/L	146	0.038	0.050	0.374	0.001	0.094
Nitrogen, Total	mg/L	142	0.83	0.92	1.51	0.02	0.26
Nitrogen, Total Kjeldahl	mg/L	126	0.86	0.87	1.33	0.20	0.16
pH	None	147	7.6	7.7	8.3	6.6	0.3
Phosphorus, orthophosphate	mg/L	145	0.007	0.006	0.095	0.001	0.018
Phosphorus, Total	mg/L	138	0.041	0.047	0.126	0.002	0.021
Salinity	ppth	0	None	None	None	None	None
Specific Conductivity	umho/cm	149	460	462	728	313	54
Temperature	deg C	149	25.5	26.1	90.0	15.7	6.5
Total Hardness	mg/L	40	174	185	233	90	30
Total Suspended Solids	mg/L	145	2.8	3.0	26.0	0.1	3.3
Turbidity	NTU	148	2.7	2.7	18.1	0.9	1.7
Zinc	mg/L	31	0.0080	0.0100	0.0954	0.0032	0.0161

Table 5-6
Monitoring Data Summary - C-18 Watershed
January 1999 - September 2016

SITE 16		01/19/99 - 08/24/16			Samples 80		
		Count	Geometric Mean	Median	Max	Min	Standard Deviation
Alkalinity	mg/L	29	119	138	216	31	52
Arsenic	mg/L	67	0.0020	0.0025	0.0050	0.0005	0.0009
Cadmium	mg/L	84	0.0005	0.0004	0.0050	0.0002	0.0017
Chlorophyll-a (corrected)	ug/L	70	4.0	3.8	43.0	0.6	7.2
Copper	mg/L	82	0.0022	0.0017	0.0100	0.0005	0.0034
Dissolved Oxygen	% Saturation	74	4.8	4.4	147.1	0.3	22.9
Fecal Coliform	cfu/100mL	34	33	20	1400	2	249
Lead	mg/L	82	0.0021	0.0025	0.0125	0.0005	0.0019
Nitrogen, Ammonia	mg/L	78	0.040	0.040	0.330	0.008	0.063
Nitrogen, nitrate + nitrite	mg/L	76	0.041	0.050	1.210	0.006	0.171
Nitrogen, Total	mg/L	76	1.00	1.02	2.35	0.21	0.44
Nitrogen, Total Kjeldahl	mg/L	83	0.93	0.95	2.30	0.16	0.43
pH	None	77	7.3	7.3	9.7	6.0	0.5
Phosphorus, orthophosphate	mg/L	77	0.008	0.009	0.560	0.001	0.064
Phosphorus, Total	mg/L	78	0.034	0.036	0.283	0.001	0.048
Salinity	ppth	0	None	None	None	None	None
Specific Conductivity	umho/cm	77	347	384	737	105	135
Temperature	deg C	77	24.5	25.3	33.4	15.8	3.7
Total Hardness	mg/L	75	132	150	734	30	88
Total Suspended Solids	mg/L	80	2.2	2.0	29.7	1.0	4.1
Turbidity	NTU	81	1.7	1.7	10.2	0.5	1.4
Zinc	mg/L	83	0.0062	0.0050	0.0500	0.0012	0.0118

SITE 15		01/19/99 - 12/16/15			Samples 82		
		Count	Geometric Mean	Median	Max	Min	Standard Deviation
Alkalinity	mg/L	25	111	99	244	41	66
Arsenic	mg/L	64	0.0020	0.0025	0.0068	0.0005	0.0011
Cadmium	mg/L	81	0.0006	0.0005	0.0050	0.0002	0.0018
Chlorophyll-a (corrected)	ug/L	68	2.3	2.3	19.0	0.1	2.6
Copper	mg/L	80	0.0030	0.0018	49.5000	0.0005	7.5217
Dissolved Oxygen	% Saturation	71	3.3	3.6	53.2	0.5	11.5
Fecal Coliform	cfu/100mL	34	48	35	1100	1	230
Lead	mg/L	81	0.0020	0.0025	0.0060	0.0005	0.0014
Nitrogen, Ammonia	mg/L	78	0.044	0.040	8.167	0.007	0.920
Nitrogen, nitrate + nitrite	mg/L	73	0.027	0.025	0.480	0.006	0.092
Nitrogen, Total	mg/L	70	0.96	0.94	4.51	0.34	0.57
Nitrogen, Total Kjeldahl	mg/L	74	0.90	0.90	4.50	0.29	0.55
pH	None	74	7.2	7.3	8.4	2.8	0.7
Phosphorus, orthophosphate	mg/L	73	0.006	0.003	0.071	0.001	0.014
Phosphorus, Total	mg/L	74	0.019	0.020	0.337	0.001	0.050
Salinity	ppth	0	None	None	None	None	None
Specific Conductivity	umho/cm	74	317	355	632	91	129
Temperature	deg C	74	23.4	23.7	30.9	15.8	3.8
Total Hardness	mg/L	68	107	106	260	38	57
Total Suspended Solids	mg/L	77	1.7	1.8	15.0	0.5	2.1
Turbidity	NTU	78	0.8	0.7	18.3	0.1	2.1
Zinc	mg/L	81	0.0055	0.0050	0.0300	0.0013	0.0043

Table 5-6
Monitoring Data Summary - C-18 Watershed
January 1999 - September 2016

SITE C18G92		01/19/99 - 09/13/16			Samples 150		
		Count	Geometric Mean	Median	Max	Min	Standard Deviation
Alkalinity	mg/L	94	138.66	136.50	268.00	61.00	50.42
Arsenic	mg/L	16	0.00	0.00	0.00	0.00	0.00
Cadmium	mg/L	33	0.00	0.00	0.01	0.00	0.00
Chlorophyll-a (corrected)	ug/L	29	3.75	4.10	15.30	1.00	3.20
Copper	mg/L	33	0.00	0.00	0.01	0.00	0.00
Dissolved Oxygen	% Saturation	131	6.49	6.11	71.30	2.70	10.80
Fecal Coliform	cfu/100mL	37	14.82	12.00	730.00	1.00	149.95
Lead	mg/L	32	0.00	0.00	0.02	0.00	0.00
Nitrogen, Ammonia	mg/L	146	0.03	0.03	1.50	0.00	0.13
Nitrogen, nitrate + nitrite	mg/L	145	0.02	0.03	0.52	0.00	0.05
Nitrogen, Total	mg/L	148	0.81	0.89	1.65	0.00	0.21
Nitrogen, Total Kjeldahl	mg/L	135	0.86	0.87	1.40	0.22	0.17
pH	None	148	7.45	7.50	8.20	6.24	0.35
Phosphorus, orthophosphate	mg/L	149	0.00	0.00	0.50	0.00	0.04
Phosphorus, Total	mg/L	137	0.02	0.02	23.00	0.00	1.96
Salinity	ppth	6	0.21	0.20	0.30	0.20	0.04
Specific Conductivity	umho/cm	150	406.88	406.50	905.00	148.00	161.12
Temperature	deg C	150	26.48	26.55	3001.00	15.80	242.94
Total Hardness	mg/L	40	158.36	171.90	298.00	60.00	60.54
Total Suspended Solids	mg/L	146	1.24	1.50	153.00	0.00	12.56
Turbidity	NTU	149	1.56	1.50	4.90	0.40	0.74
Zinc	mg/L	33	0.01	0.01	0.16	0.00	0.03

SITE C18S46		01/19/99 - 09/13/16			Samples 150		
		Count	Geometric Mean	Median	Max	Min	Standard Deviation
Alkalinity	mg/L	93	136.347	139	247	59	45.545
Arsenic	mg/L	16	0.001	0.001065	0.0024	0.00047	0.001
Cadmium	mg/L	33	0.001	0.0008	0.005	0.00018	0.002
Chlorophyll-a (correEDed)	ug/L	28	4.309	4.7	13.3	1	3.625
Copper	mg/L	33	0.003	0.00332	0.01	0.00034	0.004
Dissolved Oxygen	% Saturation	131	6.613	6.55	80	2.3	12.886
Fecal Coliform	cfu/100mL	38	62.238	55	1600	3	376.501
Lead	mg/L	33	0.002	0.0013	0.0236	0.00033	0.004
Nitrogen, Ammonia	mg/L	144	0.024	0.03	0.14	0.0025	0.027
Nitrogen, nitrate + nitrite	mg/L	147	0.017	0.023	0.244	0.002	0.040
Nitrogen, Total	mg/L	148	0.762	0.838	1.271	0.0025	0.193
Nitrogen, Total Kjeldahl	mg/L	134	0.810	0.82	1.22	0.26	0.149
pH	None	136	7.621	7.7	8.3	6.54	0.380
Phosphorus, orthophosphate	mg/L	147	0.003	0.002	0.082	0.001	0.013
Phosphorus, Total	mg/L	136	0.021	0.021	0.21	0.002	0.023
Salinity	ppth	6	None	None	0.2	0.1	0.041
Specific Conductivity	umho/cm	150	402.063	400.5	1588	151	222.641
Temperature	deg C	149	25.254	26.18	33.2	15.8	3.957
Total Hardness	mg/L	42	156.297	173.3	311	60	60.350
Total Suspended Solids	mg/L	133	1.599	1.5	6	0.3	0.923
Turbidity	NTU	150	1.418	1.35	8.7	0.3	0.951
Zinc	mg/L	33	0.007	0.008	0.0429	0.00176	0.007

• Sites C18G92 and C18S46 were substitued by Sites 81 and 92 for the September 2015- October 2016 permit cycle

Table 5-6

Monitoring Data Summary - C-51 W and C-51 E Watershed
January 1999 - September 2016

SITE 38B		01/21/99 - 08/24/16			Samples 87		
		Count	Geometric Mean	Median	Max	Min	Standard Deviation
Alkalinity	mg/L	27	136	130	291	62	56
Arsenic	mg/L	69	0.0024	0.0025	0.0160	0.0005	0.0025
Cadmium	mg/L	86	0.0005	0.0004	0.0050	0.0002	0.0017
Chlorophyll-a (corrected)	ug/L	74	6.8	7.2	70.7	1.0	11.7
Copper	mg/L	84	0.0027	0.0023	0.0100	0.0005	0.0032
Dissolved Oxygen	% Saturation	77	6.8	6.9	137.8	0.4	21.5
Fecal Coliform	cfu/100mL	34	66	80	1090	2	211
Lead	mg/L	86	0.0021	0.0025	0.0152	0.0003	0.0020
Nitrogen, Ammonia	mg/L	83	0.066	0.070	0.830	0.008	0.166
Nitrogen, nitrate + nitrite	mg/L	77	0.176	0.210	0.907	0.006	0.226
Nitrogen, Total	mg/L	77	1.68	1.56	4.05	0.72	0.75
Nitrogen, Total Kjeldahl	mg/L	85	1.42	1.31	4.00	0.53	0.76
pH	None	80	7.6	7.6	14.0	6.6	0.8
Phosphorus, orthophosphate	mg/L	80	0.036	0.048	0.194	0.002	0.042
Phosphorus, Total	mg/L	75	0.098	0.100	0.880	0.019	0.114
Salinity	ppth	0	None	None	None	None	None
Specific Conductivity	umho/cm	80	703	733	1834	2	412
Temperature	deg C	80	24.7	25.2	33.4	16.7	4.2
Total Hardness	mg/L	82	208	200	412	70	84
Total Suspended Solids	mg/L	83	9.4	10.4	53.4	1.0	11.0
Turbidity	NTU	83	9.5	10.8	69.9	0.6	13.7
Zinc	mg/L	84	0.0060	0.0050	0.0372	0.0013	0.0063

SITE 37B		01/21/99 - 08/24/16			Samples 85		
		Count	Geometric Mean	Median	Max	Min	Standard Deviation
Alkalinity	mg/L	29	158	165	238	103	36
Arsenic	mg/L	68	0.0022	0.0025	0.0070	0.0002	0.0010
Cadmium	mg/L	84	0.0005	0.0003	0.0050	0.0002	0.0017
Chlorophyll-a (corrected)	ug/L	72	4.2	4.3	22.3	0.4	4.6
Copper	mg/L	84	0.0027	0.0025	0.0100	0.0005	0.0030
Dissolved Oxygen	% Saturation	75	6.1	5.8	97.1	1.9	18.2
Fecal Coliform	cfu/100mL	32	48	44	300	10	88
Lead	mg/L	84	0.0021	0.0025	0.0155	0.0005	0.0019
Nitrogen, Ammonia	mg/L	84	0.063	0.064	0.332	0.008	0.059
Nitrogen, nitrate + nitrite	mg/L	77	0.170	0.199	1.320	0.010	0.220
Nitrogen, Total	mg/L	77	1.25	1.21	6.89	0.20	0.85
Nitrogen, Total Kjeldahl	mg/L	83	1.05	0.94	6.70	0.13	0.80
pH	None	78	7.4	7.5	8.0	2.8	0.6
Phosphorus, orthophosphate	mg/L	80	0.026	0.036	0.193	0.001	0.037
Phosphorus, Total	mg/L	73	0.075	0.080	1.540	0.016	0.197
Salinity	ppth	0	None	None	None	None	None
Specific Conductivity	umho/cm	78	671	691	1198	163	175
Temperature	deg C	78	25.2	26.1	32.2	16.8	3.8
Total Hardness	mg/L	81	213	216	305	124	40
Total Suspended Solids	mg/L	83	4.7	5.3	43.3	1.0	7.8
Turbidity	NTU	82	5.2	5.6	87.0	0.4	13.9
Zinc	mg/L	83	0.0060	0.0050	0.1100	0.0013	0.0125

Table 5-6

Monitoring Data Summary - C-51 W and C-51 E Watershed
January 1999 - September 2016

SITE C51S155		01/21/99 - 11/05/15			Samples 145		
		Count	Geometric Mean	Median	Max	Min	Standard Deviation
Alkalinity	mg/L	86	161	163	216	100	24
Arsenic	mg/L	14	0.0014	0.0016	0.0029	0.0005	0.0008
Cadmium	mg/L	30	0.0015	0.0008	0.0050	0.0002	0.0022
Chlorophyll-a (corrected)	ug/L	31	1.7	3.3	45.0	0.0	8.6
Copper	mg/L	29	0.0051	0.0064	0.0230	0.0017	0.0047
Dissolved Oxygen	% Saturation	122	5.6	6.0	14.0	2.1	1.8
Fecal Coliform	cfu/100mL	29	148	150	2000	2	388
Lead	mg/L	30	0.0022	0.0039	0.0152	0.0005	0.0030
Nitrogen, Ammonia	mg/L	140	0.045	0.058	0.520	0.003	0.069
Nitrogen, nitrate + nitrite	mg/L	138	0.105	0.189	20.900	0.003	1.771
Nitrogen, Total	mg/L	139	1.13	1.13	21.79	0.15	1.80
Nitrogen, Total Kjeldahl	mg/L	127	0.96	0.94	3.87	0.41	0.37
pH	None	142	7.6	7.6	8.5	6.2	0.3
Phosphorus, orthophosphate	mg/L	143	0.023	0.032	0.279	0.001	0.043
Phosphorus, Total	mg/L	132	0.064	0.066	0.200	0.003	0.034
Salinity	ppth	1	0.3300	0.3300	0.3300	0.3300	None
Specific Conductivity	umho/cm	144	570	597	1681	6	181
Temperature	ECg C	144	25.2	25.9	56.3	15.3	4.7
Total Hardness	mg/L	40	172	199	337	1	53
Total SuspenECd Solids	mg/L	141	3.6	4.0	47.0	1.0	6.4
Turbidity	NTU	145	4.9	4.4	59.4	1.1	9.0
Zinc	mg/L	30	0.0079	0.0100	0.0310	0.0032	0.0056

Table 5-6
Monitoring Data Summary - Loxahatchee River Watershed
January 1999 - September 2016

SITE 69 (Lox)		11/20/03 - 09/13/16			Samples 127		
		Count	Geometric Mean	Median	Max	Min	Standard Deviation
Alkalinity	mg/L	117	149	151	245	74	37
Arsenic	mg/L	0	None	None	None	None	None
Cadmium	mg/L	0	None	None	None	None	None
Chlorophyll-a (corrected)	ug/L	115	1.4	2.9	19.5	0.0	4.2
Copper	mg/L	0	None	None	None	None	None
Dissolved Oxygen	% Saturation	122	8.1	5.0	65.2	1.9	19.1
Fecal Coliform	cfu/100mL	117	29	24	13800	3	1277
Lead	mg/L	0	None	None	None	None	None
Nitrogen, Ammonia	mg/L	113	0.085	0.090	0.471	0.025	0.060
Nitrogen, nitrate + nitrite	mg/L	117	0.059	0.059	0.216	0.007	0.043
Nitrogen, Total	mg/L	117	1.01	0.97	38.00	0.58	3.43
Nitrogen, Total Kjeldahl	mg/L	105	0.88	0.90	2.52	0.54	0.29
pH	None	123	7.3	7.3	8.1	6.3	0.3
Phosphorus, orthophosphate	mg/L	117	0.009	0.010	0.074	0.001	0.011
Phosphorus, Total	mg/L	117	0.036	0.034	0.147	0.003	0.022
Salinity	ppth	89	0.31	0.22	11.40	0.10	1.91
Specific Conductivity	umho/cm	87	617	481	19200	218	3302
Temperature	deg C	123	24.7	24.4	31.2	17.0	3.7
Total Hardness	mg/L	0	None	None	None	None	None
Total Suspended Solids	mg/L	117	2.2	2.3	10.0	0.5	1.6
Turbidity	NTU	80	3.1	3.2	7.2	1.5	1.1
Zinc	mg/L	8	0.0080	0.0100	0.0100	0.0050	0.0024

SITE 30		05/10/00 - 09/20/16			Samples 81		
		Count	Geometric Mean	Median	Max	Min	Standard Deviation
Alkalinity	mg/L	73	122	124	137	79	9
Arsenic	mg/L	6	0.0035	0.0042	0.0047	0.0021	0.0011
Cadmium	mg/L	8	0.0027	0.0050	0.0080	0.0008	0.0027
Chlorophyll-a (corrected)	ug/L	69	2.2	4.4	36.3	0.0	4.9
Copper	mg/L	7	0.0116	0.0100	0.0900	0.0017	0.0319
Dissolved Oxygen	% Saturation	81	10.1	6.0	91.3	1.9	31.6
Fecal Coliform	cfu/100mL	79	13	15	616	1	99
Lead	mg/L	7	0.0040	0.0050	0.1020	0.0011	0.0375
Nitrogen, Ammonia	mg/L	59	0.049	0.040	0.300	0.010	0.088
Nitrogen, nitrate + nitrite	mg/L	81	0.011	0.010	0.146	0.003	0.028
Nitrogen, Total	mg/L	80	0.29	0.32	2.04	0.02	0.43
Nitrogen, Total Kjeldahl	mg/L	72	0.35	0.33	2.02	0.10	0.41
pH	None	81	7.8	7.8	8.3	7.1	0.2
Phosphorus, orthophosphate	mg/L	73	0.005	0.005	0.035	0.001	0.008
Phosphorus, Total	mg/L	81	0.026	0.024	0.130	0.010	0.018
Salinity	ppth	58	29.86	31.95	37.90	15.60	5.17
Specific Conductivity	umho/cm	69	34553	48000	56789	281	12843
Temperature	deg C	81	25.6	26.1	32.3	17.7	3.6
Total Hardness	mg/L	0	None	None	None	None	None
Total Suspended Solids	mg/L	81	5.1	5.0	14.0	2.0	2.9
Turbidity	NTU	81	2.8	2.7	7.6	1.1	1.3
Zinc	mg/L	8	0.0182	0.0100	0.1210	0.0016	0.0470

Table 5-6
Monitoring Data Summary - Loxahatchee River Watershed
January 1999 - September 2016

SITE 51		05/11/00 - 09/19/16			Samples 81		
		Count	Geometric Mean	Median	Max	Min	Standard Deviation
Alkalinity	mg/L	72	120	123	163	70	15
Arsenic	mg/L	0	None	None	None	None	None
Cadmium	mg/L	8	0.0033	0.0050	0.0440	0.0008	0.0146
Chlorophyll-a (corrected)	ug/L	70	2.3	4.0	62.0	0.0	7.9
Copper	mg/L	7	0.0088	0.0050	0.0700	0.0014	0.0296
Dissolved Oxygen	% Saturation	81	10.9	6.7	97.0	3.9	33.2
Fecal Coliform	cfu/100mL	79	14	14	420	1	64
Lead	mg/L	7	0.0034	0.0050	0.0340	0.0011	0.0119
Nitrogen, Ammonia	mg/L	48	0.029	0.030	0.140	0.002	0.029
Nitrogen, nitrate + nitrite	mg/L	80	0.008	0.007	0.068	0.002	0.016
Nitrogen, Total	mg/L	77	0.35	0.32	2.29	0.10	0.47
Nitrogen, Total Kjeldahl	mg/L	71	0.35	0.33	2.23	0.10	0.46
pH	None	81	7.8	7.9	8.4	6.7	0.2
Phosphorus, orthophosphate	mg/L	77	0.006	0.006	0.177	0.001	0.021
Phosphorus, Total	mg/L	80	0.026	0.025	0.222	0.006	0.026
Salinity	ppth	62	23.98	30.90	37.50	0.60	9.04
Specific Conductivity	umho/cm	63	37542	47302	56271	1118	13082
Temperature	deg C	81	24.6	25.0	31.1	15.9	3.8
Total Hardness	mg/L	0	None	None	None	None	None
Total Suspended Solids	mg/L	80	5.3	5.3	43.5	0.8	6.7
Turbidity	NTU	80	3.1	3.2	7.2	1.5	1.1
Zinc	mg/L	8	0.0080	0.0100	0.0100	0.0050	0.0024

SITE 62 (Lox)		05/31/00 - 09/13/16			Samples 128		
		Count	Geometric Mean	Median	Max	Min	Standard Deviation
Alkalinity	mg/L	120	133	134	226	64	27
Arsenic	mg/L	0	None	None	None	None	None
Cadmium	mg/L	8	0.0027	0.0050	0.0080	0.0008	0.0027
Chlorophyll-a (corrected)	ug/L	111	2.6	5.5	61.9	0.0	6.7
Copper	mg/L	7	0.0071	0.0100	0.0500	0.0017	0.0184
Dissolved Oxygen	% Saturation	127	14.2	6.7	91.5	1.6	31.4
Fecal Coliform	cfu/100mL	128	60	64	2300	1	247
Lead	mg/L	7	0.0030	0.0050	0.0130	0.0011	0.0042
Nitrogen, Ammonia	mg/L	118	0.055	0.050	0.650	0.010	0.086
Nitrogen, nitrate + nitrite	mg/L	128	0.032	0.046	0.156	0.003	0.039
Nitrogen, Total	mg/L	128	0.82	0.78	3.93	0.24	0.60
Nitrogen, Total Kjeldahl	mg/L	122	0.75	0.70	3.93	0.20	0.61
pH	None	128	7.7	7.5	73.8	7.0	5.9
Phosphorus, orthophosphate	mg/L	126	0.020	0.024	0.121	0.002	0.017
Phosphorus, Total	mg/L	128	0.046	0.047	0.480	0.006	0.045
Salinity	ppth	113	6.72	8.90	35.70	0.20	9.81
Specific Conductivity	umho/cm	98	13044	18280	53860	439	16000
Temperature	deg C	128	24.7	24.7	32.8	16.1	4.0
Total Hardness	mg/L	0	None	None	None	None	None
Total Suspended Solids	mg/L	116	4.0	3.8	23.2	1.0	3.3
Turbidity	NTU	128	2.8	2.6	22.0	1.2	2.2
Zinc	mg/L	8	0.0124	0.0100	0.0480	0.0050	0.0185

Table 5-6
Monitoring Data Summary - Loxahatchee River Watershed
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SITE 72		05/11/00 - 09/19/16			Samples 135		
		Count	Geometric Mean	Median	Max	Min	Standard Deviation
Alkalinity	mg/L	126	125	129	178	28	19
Arsenic	mg/L	0	None	None	None	None	None
Cadmium	mg/L	8	0.0035	0.0050	0.0720	0.0008	0.0244
Chlorophyll-a (corrected)	ug/L	129	4.6	8.7	97.9	0.0	12.8
Copper	mg/L	7	0.0076	0.0100	0.0600	0.0010	0.0246
Dissolved Oxygen	% Saturation	135	12.0	6.5	128.1	2.3	33.4
Fecal Coliform	cfu/100mL	133	74	76	1336	1	221
Lead	mg/L	7	0.0044	0.0050	0.0640	0.0011	0.0229
Nitrogen, Ammonia	mg/L	123	0.084	0.090	3.000	0.015	0.276
Nitrogen, nitrate + nitrite	mg/L	134	0.018	0.023	0.172	0.000	0.030
Nitrogen, Total	mg/L	134	0.59	0.63	2.88	0.10	0.40
Nitrogen, Total Kjeldahl	mg/L	122	0.56	0.60	2.85	0.10	0.40
pH	None	135	7.7	7.8	8.2	7.2	0.2
Phosphorus, orthophosphate	mg/L	132	0.008	0.008	0.062	0.001	0.010
Phosphorus, Total	mg/L	134	0.037	0.036	0.640	0.006	0.054
Salinity	ppth	114	18.99	27.86	37.10	0.04	9.63
Specific Conductivity	umho/cm	99	28568	41966	55828	500	14982
Temperature	deg C	135	25.8	27.1	32.5	16.0	3.7
Total Hardness	mg/L	0	None	None	None	None	None
Total Suspended Solids	mg/L	133	4.8	4.5	22.4	0.5	4.2
Turbidity	NTU	134	3.0	3.2	8.7	0.3	1.3
Zinc	mg/L	8	0.0164	0.0100	0.2780	0.0050	0.0941

Table 5-6
Monitoring Data Summary - Lake Worth Lagoon North Watershed
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LWL-1		01/26/99 - 09/15/16			Samples 116		
		Count	Geometric Mean	Median	Max	Min	Standard Deviation
Alkalinity	mg/L	0	None	None	None	None	None
Arsenic	mg/L	7	0.0039	0.0025	0.0089	0.0023	0.0029
Cadmium	mg/L	7	0.0009	0.0006	0.0025	0.0002	0
DAlorophyll-a (corrected)	ug/L	85	5.3	5.0	19.7	1.8	3.6
Copper	mg/L	31	0.0029	0.0030	0.0048	0.0017	0.0008
Dissolved Oxygen	mg/L	103	7.6	6.9	101.1	4.1	17.5
Fecal Coliform	cfu/100mL	2	14	26	47	4	30
Lead	mg/L	7	0.0031	0.0025	0.0246	0.0013	0.0085
Nitrogen, Ammonia	mg/L	107	0.011	0.010	0.260	0.001	0.031
Nitrogen, nitrate + nitrite	mg/L	87	0.006	0.004	0.120	0.003	0.021
Nitrogen, Total	mg/L	84	0.36	0.36	0.96	0.00	0.18
Nitrogen, Total Kjeldahl	mg/L	96	0.36	0.35	0.92	0.09	0.17
pH	None	115	7.9	7.9	8.9	7.2	0.2
Phosphorus, orthophosphate	mg/L	100	0.007	0.008	0.066	0.001	0.010
Phosphorus, Total	mg/L	98	0.034	0.033	0.120	0.004	0.017
Salinity	ppth	76	30.62	31.55	36.10	21.10	3.26
Specific Conductivity	umho/cm	115	45299	47775	67154	4184	7027
Temperature	deg C	115	25.6	25.6	32.8	14.6	4.5
Total Hardness	mg/L	0	None	None	None	None	None
Total Suspended Solids	mg/L	82	4.0	4.0	33.0	1.5	6.3
Turbidity	NTU	113	1.9	2.0	6.0	0.5	0.8
Zinc	mg/L	6	0.0041	0.0042	0.0050	0.0034	0.0009

SITE 11		01/26/99 - 09/27/16			Samples 141		
		Count	Geometric Mean	Median	Max	Min	Standard Deviation
Alkalinity	mg/L	1	130	130	130	130	None
Arsenic	mg/L	11	0.0281	0.0071	2.5000	0.0028	1.1648
Cadmium	mg/L	24	0.0025	0.0029	0.2500	0.0001	0.0835
Chlorophyll-a (corrected)	ug/L	124	3.3	3.2	29.9	0.1	4.6
Copper	mg/L	22	0.0162	0.0099	6.2500	0.0017	1.5079
Dissolved Oxygen	mg/L	130	6.9	6.4	111.0	3.4	18.0
Fecal Coliform	DZu/100mL	39	16	15	170	2	38
Lead	mg/L	23	0.0090	0.0050	2.5000	0.0002	0.8568
Nitrogen, Ammonia	mg/L	135	0.042	0.040	0.250	0.007	0.045
Nitrogen, nitrate + nitrite	mg/L	114	0.054	0.050	1.200	0.007	0.179
Nitrogen, Total	mg/L	112	0.47	0.54	1.87	0.06	0.33
Nitrogen, Total Kjeldahl	mg/L	132	0.39	0.41	1.86	0.04	0.30
pH	None	133	7.8	7.9	8.2	6.6	0.3
Phosphorus, orthophosphate	mg/L	129	0.013	0.023	0.650	0.001	0.061
Phosphorus, Total	mg/L	135	0.037	0.040	1.110	0.003	0.102
Salinity	ppth	117	30.35	31.38	35.92	9.54	4.21
Specific Conductivity	umho/cm	133	42244	48763	54441	425	9050
Temperature	deg C	121	25.5	25.6	31.8	16.5	3.7
Total Hardness	mg/L	0	None	None	None	None	None
Total Suspended Solids	mg/L	15	16.7	25.0	59.0	1.0	16.3
Turbidity	NTU	136	1.7	2.0	12.4	0.1	1.5
Zinc	mg/L	19	0.0319	0.0100	5.0000	0.0034	1.8660

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SITE 13		05/11/00 - 09/27/16			Samples 135		
		Count	Geometric Mean	Median	Max	Min	Standard Deviation
Alkalinity	mg/L	1	140	140	140	140	None
Arsenic	mg/L	13	0.0174	0.0034	2.5000	0.0026	1.0943
Cadmium	mg/L	20	0.0020	0.0008	0.2500	0.0001	0.0909
Chlorophyll-a (corrected)	ug/L	123	4.0	3.9	24.1	0.1	4.6
Copper	mg/L	18	0.0154	0.0056	12.9000	0.0017	3.1986
Dissolved Oxygen	mg/L	125	6.8	6.2	109.5	3.1	17.6
Fecal Coliform	cfu/100mL	36	53	51	3200	6	533
Lead	mg/L	19	0.0080	0.0050	2.5000	0.0002	0.9351
Nitrogen, Ammonia	mg/L	130	0.053	0.051	13.000	0.007	1.136
Nitrogen, nitrate + nitrite	mg/L	118	0.059	0.050	1.517	0.003	0.232
Nitrogen, Total	mg/L	119	0.55	0.58	2.14	0.06	0.38
Nitrogen, Total Kjeldahl	mg/L	132	0.48	0.50	1.83	0.04	0.32
pH	None	127	7.7	7.8	8.3	6.4	0.2
Phosphorus, orthophosphate	mg/L	126	0.016	0.023	0.650	0.001	0.064
Phosphorus, Total	mg/L	127	0.043	0.042	1.400	0.003	0.139
Salinity	ppth	116	24.82	29.72	38.30	0.63	7.66
Specific Conductivity	umho/cm	125	35497	46665	59740	531	12315
Temperature	deg C	125	25.6	26.2	31.9	16.0	3.7
Total Hardness	mg/L	0	None	None	None	None	None
Total Suspended Solids	mg/L	11	24.9	32.0	56.0	4.0	17.1
Turbidity	NTU	128	1.9	2.2	13.0	0.1	1.5
Zinc	mg/L	14	0.0478	0.0109	5.0000	0.0034	2.1186

LWL-4		04/05/04 - 09/15/16			Samples 113		
		Count	Geometric Mean	Median	Max	Min	Standard Deviation
Alkalinity	mg/L	0	None	None	None	None	None
Arsenic	mg/L	7	0.0041	0.0025	0.0090	0.0023	0.0033
Cadmium	mg/L	7	0.0004	0.0003	0.0017	0.0003	0
Chlorophyll-a (corrected)	ug/L	86	2.4	2.1	14.7	0.1	2.8
Copper	mg/L	30	0.0019	0.0018	0.0031	0.0009	0.0006
Dissolved Oxygen	mg/L	101	7.6	7.0	97.8	4.7	17.5
Fecal Coliform	cfu/100mL	0	None	None	None	None	None
Lead	mg/L	7	0.0025	0.0025	0.0157	0.0005	0.0052
Nitrogen, Ammonia	mg/L	105	0.009	0.010	0.390	0.003	0.039
Nitrogen, nitrate + nitrite	mg/L	94	0.004	0.003	0.050	0.003	0.008
Nitrogen, Total	mg/L	93	0.28	0.27	0.74	0.00	0.16
Nitrogen, Total Kjeldahl	mg/L	94	0.29	0.27	0.73	0.13	0.15
pH	None	112	8.0	8.0	8.9	7.5	0.2
Phosphorus, orthophosphate	mg/L	95	0.004	0.004	0.028	0.001	0.006
Phosphorus, Total	mg/L	93	0.023	0.021	0.064	0.011	0.011
Salinity	ppth	77	32.55	33.30	36.40	24.70	2.83
Specific Conductivity	umho/cm	112	48287	50355	68870	4594	6534
Temperature	deg C	112	25.1	25.5	32.2	15.2	4.3
Total Hardness	mg/L	0	None	None	None	None	None
Total Suspended Solids	mg/L	82	6.4	6.0	52.0	1.5	8.3
Turbidity	NTU	111	2.6	2.7	8.9	0.9	1.6
Zinc	mg/L	6	0.0051	0.0042	0.0197	0.0034	0.0065

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LWL-8		01/26/99 - 11/12/16			Samples 133		
		Count	Geometric Mean	Median	Max	Min	Standard Deviation
Alkalinity	mg/L	0	None	None	None	None	None
Arsenic	mg/L	6	0.0043	0.0045	0.0098	0.0023	0.0032
Cadmium	mg/L	18	0.0016	0.0035	0.0060	0.0003	0.0023
Chlorophyll-a (corrected)	ug/L	92	4.8	4.6	41.2	0.5	7.3
Copper	mg/L	38	0.0029	0.0017	0.0500	0.0012	0.0110
Dissolved Oxygen	mg/L	111	6.6	6.8	15.6	2.7	1.7
Fecal Coliform	cfu/100mL	12	21	16	700	2	196
Lead	mg/L	17	0.0041	0.0050	0.0530	0.0011	0.0121
Nitrogen, Ammonia	mg/L	120	0.027	0.029	3.046	0.001	0.291
Nitrogen, nitrate + nitrite	mg/L	112	0.026	0.041	0.430	0.003	0.061
Nitrogen, Total	mg/L	101	0.50	0.50	1.67	0.02	0.33
Nitrogen, Total Kjeldahl	mg/L	102	0.45	0.47	1.50	0.13	0.31
pH	None	131	7.7	7.9	8.3	1.9	0.6
Phosphorus, orthophosphate	mg/L	114	0.015	0.016	0.130	0.001	0.017
Phosphorus, Total	mg/L	112	0.047	0.046	0.270	0.012	0.034
Salinity	ppth	81	25.73	28.90	36.40	9.32	7.27
Specific Conductivity	umho/cm	133	36982	43270	63187	2762	11382
Temperature	deg C	132	25.1	25.2	34.1	12.1	4.4
Total Hardness	mg/L	0	None	None	None	None	None
Total Suspended Solids	mg/L	101	8.2	8.0	82.0	1.0	12.9
Turbidity	NTU	132	4.9	5.4	14.0	1.2	2.5
Zinc	mg/L	18	0.0088	0.0100	0.1200	0.0034	0.0271

SITE 18C		01/30/04 - 08/11/16			Samples 120		
		Count	Geometric Mean	Median	Max	Min	Standard Deviation
Alkalinity	mg/L	1	140	140	140	140	None
Arsenic	mg/L	12	0.0183	0.0032	2.5000	0.0023	1.1288
Cadmium	mg/L	11	0.0020	0.0006	0.2500	0.0001	0.1166
Chlorophyll-a (corrected)	ug/L	112	5.8	5.9	32.0	0.1	5.8
Copper	mg/L	11	0.0167	0.0031	4.8000	0.0017	1.5902
Dissolved Oxygen	mg/L	101	7.6	7.0	112.2	2.5	18.4
Fecal Coliform	cfu/100mL	25	26	20	300	2	75
Lead	mg/L	11	0.0179	0.0026	2.5000	0.0009	1.1655
Nitrogen, Ammonia	mg/L	106	0.056	0.063	0.310	0.009	0.057
Nitrogen, nitrate + nitrite	mg/L	105	0.105	0.101	1.677	0.006	0.271
Nitrogen, Total	mg/L	106	0.86	0.90	20.80	0.10	2.01
Nitrogen, Total Kjeldahl	mg/L	109	0.68	0.73	20.70	0.04	1.98
pH	None	104	7.8	7.8	8.4	7.1	0.2
Phosphorus, orthophosphate	mg/L	110	0.025	0.038	0.500	0.001	0.051
Phosphorus, Total	mg/L	105	0.065	0.072	1.280	0.001	0.130
Salinity	ppth	83	22.34	27.77	3388.00	4.74	369.42
Specific Conductivity	umho/cm	91	32251	44100	55098	537	14919
Temperature	deg C	102	26.5	27.9	33.9	14.1	4.5
Total Hardness	mg/L	0	None	None	None	None	None
Total Suspended Solids	mg/L	2	42.0	42.0	42.0	42.0	0.0
Turbidity	NTU	114	9.0	11.5	222.0	0.1	21.3
Zinc	mg/L	7	0.1302	0.0190	5.0000	0.0034	2.6672

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SITE 18D		07/28/05 - 08/11/16			Samples 106		
		Count	Geometric Mean	Median	Max	Min	Standard Deviation
Alkalinity	mg/L	0	None	None	None	None	None
Arsenic	mg/L	11	0.0210	0.0048	2.5000	0.0023	1.1660
Cadmium	mg/L	11	0.0025	0.0006	0.2500	0.0001	0.1165
Chlorophyll-a (corrected)	ug/L	99	5.6	6.0	41.1	0.1	8.6
Copper	mg/L	11	0.0147	0.0021	3.0000	0.0017	0.9669
Dissolved Oxygen	mg/L	87	8.6	7.6	132.8	4.9	23.3
Fecal Coliform	CRu/100mL	15	18	20	400	1	101
Lead	mg/L	11	0.0159	0.0026	2.5000	0.0002	1.1656
Nitrogen, Ammonia	mg/L	100	0.050	0.059	0.400	0.009	0.063
Nitrogen, nitrate + nitrite	mg/L	86	0.077	0.064	1.477	0.006	0.290
Nitrogen, Total	mg/L	83	0.65	0.74	3.87	0.04	0.53
Nitrogen, Total Kjeldahl	mg/L	97	0.50	0.56	3.86	0.04	0.45
pH	None	78	7.9	7.9	8.3	7.3	0.2
Phosphorus, orthophosphate	mg/L	96	0.015	0.026	0.500	0.001	0.057
Phosphorus, Total	mg/L	100	0.065	0.063	1.620	0.016	0.188
Salinity	ppth	76	26.35	30.37	352.20	9.36	38.13
SpeCRfic Conductivity	umho/cm	75	39070	46500	54782	3311	11787
Temperature	deg C	90	26.8	26.8	263.7	16.6	25.3
Total Hardness	mg/L	0	None	None	None	None	None
Total Suspended Solids	mg/L	0	None	None	None	None	None
Turbidity	NTU	103	4.6	6.5	72.2	0.1	7.5
Zinc	mg/L	6	0.1472	2.5036	5.0000	0.0034	2.7361

LWL-11		01/26/99 - 09/14/16			Samples 120		
		Count	Geometric Mean	Median	Max	Min	Standard Deviation
Alkalinity	mg/L	0	None	None	None	None	None
Arsenic	mg/L	6	0.0040	0.0025	0.0173	0.0023	0.0060
Cadmium	mg/L	6	0.0004	0.0004	0.0006	0.0003	0
Chlorophyll-a (corrected)	ug/L	88	6.0	5.6	59.2	1.0	7.8
Copper	mg/L	29	0.0019	0.0017	0.0160	0.0008	0.0035
Dissolved Oxygen	mg/L	98	6.8	7.0	13.2	2.0	1.7
Fecal Coliform	cfu/100mL	3	12	20	63	1	32
Lead	mg/L	6	0.0035	0.0025	0.0198	0.0024	0.0071
Nitrogen, Ammonia	mg/L	110	0.019	0.015	0.410	0.001	0.053
Nitrogen, nitrate + nitrite	mg/L	100	0.016	0.016	0.190	0.003	0.045
Nitrogen, Total	mg/L	94	0.47	0.51	1.54	0.00	0.29
Nitrogen, Total Kjeldahl	mg/L	92	0.47	0.49	1.40	0.05	0.27
pH	None	119	7.8	8.0	8.8	1.8	0.6
Phosphorus, orthophosphate	mg/L	104	0.010	0.011	0.086	0.001	0.013
Phosphorus, Total	mg/L	100	0.046	0.047	0.180	0.018	0.023
Salinity	ppth	78	27.69	29.95	36.40	12.50	5.96
Specific Conductivity	umho/cm	120	38955	44767	65170	3117	10211
Temperature	deg C	120	25.6	25.3	233.0	13.0	19.5
Total Hardness	mg/L	0	None	None	None	None	None
Total Suspended Solids	mg/L	86	8.3	8.0	37.0	1.0	7.0
Turbidity	NTU	120	5.0	5.0	16.0	0.8	3.0
Zinc	mg/L	6	0.0041	0.0042	0.0050	0.0034	0.0009

Table 5-6

Monitoring Data Summary - Lake Worth Lagoon Central Watershed
January 1999 - September 2016

LWL-13		04/05/04 - 09/13/16			Samples 117		
		Count	Geometric Mean	Median	Max	Min	Standard Deviation
Alkalinity	mg/L	0	None	None	None	None	None
Arsenic	mg/L	7	0.0041	0.0025	0.0095	0.0023	0.0033
Cadmium	mg/L	7	0.0004	0.0003	0.0006	0.0003	0
Chlorophyll-a (corrected)	ug/L	90	4.8	4.2	39.5	1.6	5.8
Copper	mg/L	31	0.0017	0.0017	0.0039	0.0009	0.0007
Dissolved Oxygen	mg/L	100	7.0	7.0	17.0	4.0	1.9
Fecal Coliform	CZu/100mL	3	100	100	100	100	0
Lead	mg/L	7	0.0028	0.0025	0.0229	0.0005	0.0078
Nitrogen, Ammonia	mg/L	112	0.014	0.012	0.500	0.002	0.063
Nitrogen, nitrate + nitrite	mg/L	101	0.011	0.007	0.200	0.003	0.045
Nitrogen, Total	mg/L	93	0.38	0.39	1.42	0.00	0.29
Nitrogen, Total Kjeldahl	mg/L	95	0.39	0.35	1.40	0.16	0.26
pH	None	116	8.0	8.0	8.6	7.0	0.2
Phosphorus, orthophosphate	mg/L	107	0.007	0.007	0.067	0.001	0.013
Phosphorus, Total	mg/L	99	0.034	0.032	0.170	0.013	0.023
Salinity	ppth	80	29.26	31.80	37.20	14.40	5.68
Specific Conductivity	umho/cm	117	43585	47430	385822	3532	32935
Temperature	deg C	117	25.2	25.9	33.3	11.7	4.4
Total Hardness	mg/L	0	None	None	None	None	None
Total Suspended Solids	mg/L	84	5.8	6.0	28.0	1.0	5.8
Turbidity	NTU	107	3.0	3.0	12.0	0.7	1.9
Zinc	mg/L	6	0.0041	0.0042	0.0050	0.0034	0.0009

Table 5-6

Monitoring Data Summary - Lake Worth Lagoon South Watershed
January 1999 - September 2016

LWL-18		05/11/00 - 09/13/16			Samples 124		
		Count	Geometric Mean	Median	Max	Min	Standard Deviation
Alkalinity	mg/L	0	None	None	None	None	None
Arsenic	mg/L	7	0.0033	0.0025	0.0087	0.0023	0.0024
Cadmium	mg/L	15	0.0020	0.0008	0.0050	0.0002	0.0022
Chlorophyll-a (corrected)	ug/L	92	8.0	4.6	58.1	1.8	9.2
Copper	mg/L	37	0.0053	0.0033	0.0500	0.0017	0.0080
Dissolved Oxygen	mg/L	112	10.7	6.5	131.9	0.8	19.6
Fecal Coliform	cfu/100mL	8	40	17	180	4	59
Lead	mg/L	14	0.0056	0.0025	0.0250	0.0008	0.0070
Nitrogen, Ammonia	mg/L	116	0.037	0.024	0.410	0.003	0.049
Nitrogen, nitrate + nitrite	mg/L	108	0.037	0.021	0.210	-0.005	0.044
Nitrogen, Total	mg/L	99	0.53	0.44	1.51	0.00	0.29
Nitrogen, Total Kjeldahl	mg/L	106	0.86	0.44	39.00	0.07	3.75
pH	None	123	7.8	7.9	8.5	6.5	0.2
Phosphorus, orthophosphate	mg/L	114	0.024	0.015	0.160	0.001	0.027
Phosphorus, Total	mg/L	108	0.052	0.042	0.230	0.003	0.036
Salinity	ppth	80	28.57	30.85	36.70	9.37	6.74
Specific Conductivity	umho/cm	124	43066	46275	64472	3790	10417
Temperature	deg C	123	26.4	26.1	33.6	16.3	4.1
Total Hardness	mg/L	0	None	None	None	None	None
Total Suspended Solids	mg/L	92	10.9	8.0	56.0	1.0	9.4
Turbidity	NTU	113	4.2	4.0	17.0	0.7	2.3
Zinc	mg/L	14	0.0204	0.0100	0.1160	0.0019	0.0297

TABLE 5-7
Summary of Geometric Mean Values
January 1999 - September 2016

Watershed	Site	Total Nitrogen mg/L	Total Phosphorus mg/L	Chlorophyll-a ug/L
C-15	31E	1.61	0.253	22.22
	31C	1.27	0.126	16.14
	C15S40	1.02	0.110	12.52
C-16	22	1.04	0.060	11.96
	24	0.99	0.064	13.58
	27B	1.50	0.169	14.93
	27A	1.21	0.130	14.83
	C16S41	0.00	0.000	0.00
C-17	12A	1.52	0.051	13.69
	C17S44	0.83	0.041	9.16
C-18	16	1.00	0.034	4.05
	15	0.96	0.019	2.27
	C18G92	0.80	0.022	3.25
	C18S46	0.76	0.021	3.63
C-51 W	38B	1.68	0.098	6.75
C-51 E	37B	1.25	0.075	4.21
	C51S155	1.13	0.064	1.67
Loxahatchee River	69	1.01	0.036	1.44
	62	0.82	0.046	2.58
	51	0.35	0.026	2.26
	72	0.59	0.037	4.64
	30	0.29	0.026	2.23
Lake Worth Lagoon North	LWL-1	0.36	0.034	5.34
	11	0.47	0.037	3.29
	13	0.55	0.043	4.02
	LWL-4	0.28	0.023	2.39
Lake Worth Lagoon Central Watershed	LWL-8	0.50	0.047	4.81
	18C	0.86	0.065	5.77
	18D	0.65	0.065	5.60
	LWL-11	0.47	0.046	5.97
	LWL-13	0.38	0.034	4.85
Lagoon South	LWL-18	0.53	0.052	7.99

- C-15, a Class III Freshwater has a maximum level of chlorophyll-a (corrected) AGM of 20µg/L
- Northern Lake Worth Lagoon has a maximum level of chlorophyll-a (corrected) AGM of 2.9µg/L
- Northern Lake Worth Lagoon has a maximum level of Total Nitrogen AGM of .54 mg/L
- Northern Lake Worth Lagoon has a maximum level of Total Phosphorus AGM of .044 mg/L
- Central Lake Worth Lagoon has a maximum level of Total Nitrogen AGM of .66 mg/L
- Central Lake Worth Lagoon has a maximum level of Total Phosphorus AGM of .049 mg/L

Table 5-8 (page 1 of 3) Total Nitrogen (Annual Geometric Mean)

	C-15				C-16						C-17		
	31E	31C	C15S40	Basin	22	24	27B	27A	C16S41	Basin	12A	C17S44	Basin
2008	●	●	●	●	●	●	●	●	●	●	●	●	●
2009			●	●					●	●		●	●
2010	●	●	●	●	●	●	●	●	●	●	●	●	●
2011	●	●	●	●	●	●	●	●	●	●	●	●	●
2012	●	●	●	●	●	●	●	●	●	●	●	●	●
2013	●	●	●	●	●	●	●	●	●	●	●	●	●
2014	●	●	●	●	●	●	●	●	●	●	●	●	●
2015	●	●	●	●	●	●	●	●	●	●	●	●	●
2016	●	●		●	●	●	●	●		●	●	●	●
FDEP Criteria	No Criteria	No Criteria	No Criteria	No Criteria	No Criteria	No Criteria	No Criteria	No Criteria	No Criteria	No Criteria	No Criteria	No Criteria	No Criteria

● Meeting criteria
● Not meeting criteria
● No numeric criteria

Values Used (mg/l)

2008	1.90	1.63	1.08	1.50	1.45	1.39	1.77	0.82	0.98	1.23	1.35	1.08	1.20
2009			0.92	0.92					1.04	1.04		0.94	0.94
2010	2.13	1.58	0.88	1.44	1.29	1.29	1.96	1.53	0.89	1.35	1.67	0.93	1.25
2011	1.56	1.01	1.09	1.20	1.10	1.32	1.44	1.09	0.88	1.15	1.31	0.91	1.09
2012	1.30	1.08	0.97	1.11	1.01	1.00	1.44	1.16	1.01	1.11	1.16	0.91	1.02
2013	1.20	1.00	0.97	1.05	0.80	0.76	1.18	0.92	1.01	0.92	0.92	0.89	0.91
2014	1.30	0.84	0.76	0.94	0.82	0.72	1.14	0.86	0.74	0.85	0.93	0.39	0.60
2015	1.21	0.76	0.88	0.93	0.91	0.83	1.31	0.80	1.46	1.03	1.07	0.77	0.91
2016	1.61	1.09		1.32	0.96	0.85	1.33	1.22		1.07	0.98	0.88	0.93

Table 5-8 (page 2 of 3) Total Nitrogen (Annual Geometric Mean)

	C-18					C-51W	C-51E			Lox	Lox		
	16	15	C18G92	C18S46	Basin	38B	37B	C51S155	Basin	69	30	51	62
2008	●	●			●	●	●	●	●				
2009			●		●			●	●	●	●	●	●
2010	●	●	●	●	●	●	●	●	●	●	●	●	●
2011	●	●	●	●	●	●	●	●	●	●	●	●	●
2012	●	●	●	●	●	●	●	●	●	●	●	●	●
2013	●	●	●	●	●	●	●	●	●	●	●	●	●
2014	●	●	●	●	●	●	●	●	●	●	●	●	●
2015	●	●	●	●	●	●	●	●	●	●	●	●	●
2016	●		●	●	●	●	●	●	●	●	●	●	●
FDEP Criteria	<=1.54	<=1.54	<=1.54	<=1.54	<=1.54	No Criteria	No Criteria	No Criteria	No Criteria	<=1.54	<=0.66	<=0.8	<=1.26

● Meeting criteria
● Not meeting criteria
● No numeric criteria

Values Used (mg/l)

2008	1.43	1.13			1.27	1.68	1.28	0.90	1.07				
2009			0.99		0.99			1.18	1.18	1.05	0.02	0.23	0.48
2010	1.32	1.30	0.87	0.86	1.06	1.83	1.60	1.25	1.41	0.94	0.21	0.15	0.72
2011	1.27	1.27	0.93	0.86	1.07	2.13	1.26	0.88	1.05	0.67	0.34	0.87	0.76
2012	1.08	0.93	0.95	0.90	0.96	1.40	0.76	0.95	0.85	1.30	0.21	0.22	0.57
2013	0.87	0.64	0.88	0.82	0.79	1.15	1.26	1.96	1.57	0.81	0.15	0.15	0.62
2014	0.66	0.66	0.23	0.25	0.39	1.39	1.16	0.73	0.92	0.91	0.24	0.35	0.79
2015	0.77	0.76	0.80	0.74	0.77	1.19	1.09	0.97	1.03	0.85	0.20	0.20	0.58
2016	0.94		0.97	0.91	0.94	1.37	1.02	1.14	1.08	0.91	0.25	0.25	0.72

Table 5-8 (page 3 of 3) Total Nitrogen (Annual Geometric Mean)

	Lox	LWL-N					LWL-C						LWL-S
	72	LWL-1	11	13	LWL-4	Basin	LWL-8	18C	18D	LWL-11	LWL-13	Basin	LWL-18
2008													
2009	●			●		●		●	●			●	
2010	●	●	●	●		●	●	●	●	●	●	●	●
2011	●	●	●	●		●	●	●	●	●	●	●	●
2012	●	●	●	●		●	●	●	●	●	●	●	●
2013	●	●	●	●	●	●	●	●	●	●	●	●	●
2014	●	●	●	●	●	●	●	●	●	●	●	●	●
2015	●	●	●	●	●	●	●	●	●	●	●	●	●
2016	●	●	●	●	●	●	●	●	●	●	●	●	●
FDEP Criteria	<=1.26	<=0.54	<=0.54	<=0.54	<=0.54	<=0.54	<=0.66	<=0.66	<=0.66	<=0.66	<=0.66	<=0.66	<=1.17

● Meeting criteria
● Not meeting criteria
● No numeric criteria

Values Used (mg/l)

2008													
2009	0.40			0.49		0.49		0.79	0.53			0.64	
2010	0.50	0.32	0.45	0.52		0.42	0.48	0.99	0.65	0.45	0.37	0.55	0.40
2011	0.38	0.22	0.45	0.50		0.36	0.14	0.83	0.52	0.26	0.22	0.32	0.24
2012	0.51	0.33	0.72	0.81		0.58	0.42	0.94	0.84	0.42	0.35	0.54	0.42
2013	0.41	0.28	0.53	0.59	0.23	0.38	0.54	0.93	0.90	0.48	0.41	0.62	0.44
2014	0.57	0.19	0.25	0.33	0.14	0.22	0.32	0.65	0.52	0.16	0.14	0.30	0.15
2015	0.52	0.32	0.22	0.25	0.21	0.25	0.39	0.62	0.30	0.39	0.30	0.39	0.46
2016	0.70	0.33	0.23	0.37	0.31	0.31	0.55	0.55	0.39	0.53	0.32	0.46	0.46

Table 5-9 (page 1 of 3) Total Phosphorus (Annual Geometric Mean)

	C-15				C-16						C-17		
	31E	31C	C15S40	Basin	22	24	27B	27A	C16S41	Basin	12A	C17S44	Basin
2008	●	●	●	●	●	●	●	●	●	●	●	●	●
2009													
2010	●	●	●	●	●	●	●	●	●	●	●	●	●
2011	●	●	●	●	●	●	●	●	●	●	●	●	●
2012	●	●	●	●	●	●	●	●	●	●	●	●	●
2013	●	●	●	●	●	●	●	●	●	●	●	●	●
2014	●	●	●	●	●	●	●	●	●	●	●	●	●
2015	●	●	●	●	●	●	●	●	●	●	●	●	●
2016	●	●		●	●	●	●	●		●	●	●	●
FDEP Criteria	No Criteria	No Criteria	No Criteria	No Criteria	No Criteria	No Criteria	No Criteria	No Criteria	No Criteria	No Criteria	No Criteria	No Criteria	No Criteria

● Meeting criteria
● Not meeting criteria
● No numeric criteria

Values Used (mg/l)

2008	0.33	0.16	0.17	0.21	0.04	0.05	0.17	0.10	0.08	0.08	0.05	0.06	0.05
2009													
2010	0.39	0.12	0.11	0.17	0.06	0.07	0.19	0.14	0.06	0.09	0.01	0.05	0.02
2011	0.19	0.08	0.09	0.11	0.03	0.09	0.13	0.08	0.04	0.07	0.06	0.05	0.05
2012	0.24	0.12	0.09	0.14	0.05	0.05	0.14	0.12	0.06	0.08	0.06	0.05	0.05
2013	0.25	0.15	0.09	0.15	0.06	0.07	0.07	0.10	0.06	0.07	0.06	0.05	0.05
2014	0.28	0.12	0.10	0.15	0.12	0.06	0.18	0.11	0.07	0.10	0.05	0.04	0.05
2015	0.16	0.07	0.05	0.08	0.05	0.07	0.16	0.05	0.05	0.07	0.04	0.04	0.04
2016	0.30	0.16		0.22	0.06	0.05	0.33	0.14		0.11	0.06	0.04	0.05

Table 5-9 (page 2 of 3) Total Phosphorus (Annual Geometric Mean)

	C-18					C-51W	C-51E			Lox	Lox		
	16	15	C18G92	C18S46	Basin	38B	37B	C51S155	Basin	69	30	51	62
2008	●	●			●	●	●	●	●				
2009										●	●	●	●
2010	●	●	●	●	●	●	●	●	●	●	●	●	●
2011	●	●	●	●	●	●	●	●	●	●	●	●	●
2012	●	●	●	●	●	●	●	●	●	●	●	●	●
2013	●	●	●	●	●	●	●	●	●	●	●	●	●
2014	●	●	●	●	●	●	●	●	●	●	●	●	●
2015	●	●	●	●	●	●	●	●	●	●	●	●	●
2016	●	●	●	●	●	●	●	●	●	●	●	●	●
FDEP Criteria	<=0.12	<=0.12	<=0.12	<=0.12	<=0.12	No Criteria	No Criteria	No Criteria	No Criteria	<=0.12	<=0.035	<=0.03	<=0.075

● Meeting criteria
● Not meeting criteria
● No numeric criteria

Values Used (mg/l)

2008	0.04	0.01			0.02	0.09	0.08	0.05	0.06				
2009										0.04	0.02	0.02	0.05
2010	0.05	0.04	0.02	0.02	0.03	0.11	0.11	0.07	0.09	0.04	0.03	0.02	0.05
2011	0.03	0.02	0.02	0.02	0.02	0.07	0.06	0.04	0.05	0.06	0.05	0.06	0.02
2012	0.03	0.01	0.02	0.02	0.02	0.13	0.04	0.03	0.04	0.04	0.03	0.03	0.04
2013	0.03	0.00	0.02	0.02	0.02	0.09	0.08	0.06	0.07	0.03	0.02	0.03	0.06
2014	0.01	0.01	0.04	0.02	0.02	0.11	0.14	0.06	0.09	0.04	0.02	0.03	0.06
2015	0.02	0.01	0.02	0.02	0.02	0.11	0.08	0.08	0.08	0.03	0.02	0.02	0.05
2016	0.02	0.01	0.03	0.03	0.02	0.08	0.09	0.06	0.08	0.03	0.02	0.02	0.05

Table 5-9 (page 3 of 3) Total Phosphorus (Annual Geometric Mean)

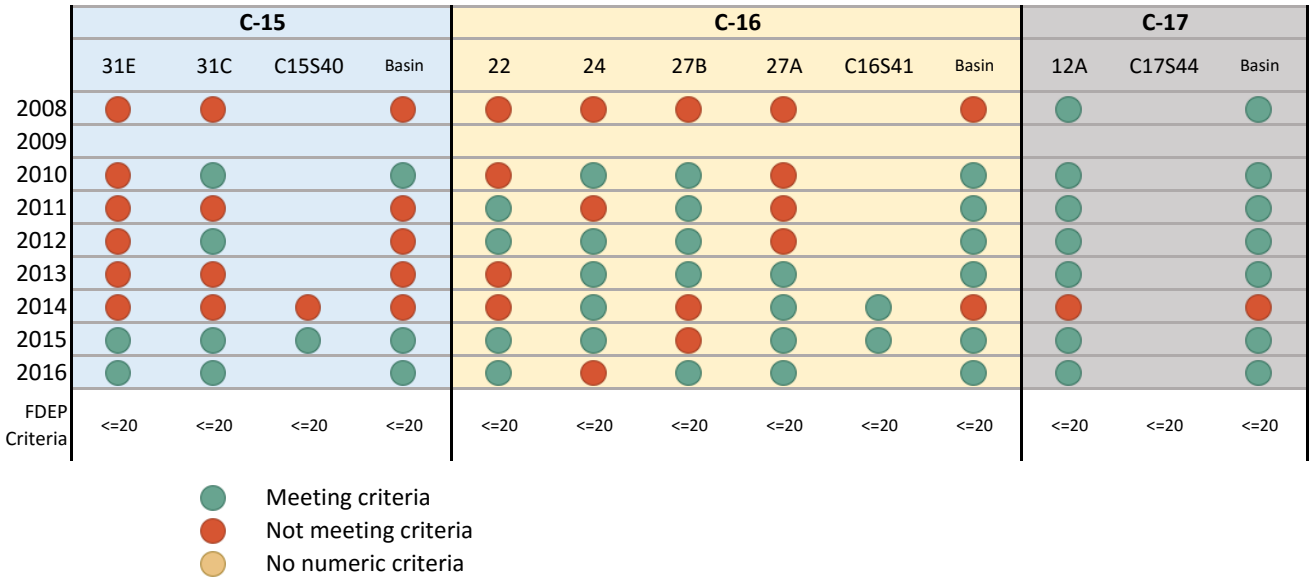
	Lox	LWL-N					LWL-C						LWL-S
	72	LWL-1	11	13	LWL-4	Basin	LWL-8	18C	18D	LWL-11	LWL-13	Basin	LWL-18
2008													
2009	●			●		●		●	●			●	
2010	●	●	●	●		●	●	●	●	●	●	●	●
2011	●	●	●	●		●	●	●	●	●	●	●	●
2012	●	●	●	●		●	●	●	●	●	●	●	●
2013	●	●	●	●	●	●	●	●	●	●	●	●	●
2014	●	●	●	●	●	●	●	●	●	●	●	●	●
2015	●	●	●	●	●	●	●	●	●	●	●	●	●
2016	●	●	●	●	●	●	●	●	●	●	●	●	●
FDEP Criteria	<=0.075	<=0.044	<=0.044	<=0.044	<=0.044	<=0.044	<=0.049	<=0.049	<=0.049	<=0.049	<=0.049	<=0.049	<=0.146

● Meeting criteria
● Not meeting criteria
● No numeric criteria

Values Used (mg/l)

2008													
2009	0.03			0.19		0.19		0.17	0.20			0.18	
2010	0.04	0.03	0.03	0.03		0.03	0.04	0.06	0.06	0.04	0.03	0.04	0.04
2011	0.03	0.02	0.05	0.06		0.04	0.01	0.07	0.07	0.03	0.03	0.04	0.03
2012	0.04	0.04	0.03	0.04		0.04	0.04	0.01	0.04	0.04	0.03	0.03	0.04
2013	0.04	0.03	0.07	0.06	0.02	0.04	0.05	0.08	0.08	0.06	0.04	0.06	0.05
2014	0.04	0.03	0.06	0.04	0.02	0.03	0.05	0.07	0.06	0.05	0.03	0.05	0.04
2015	0.04	0.03	0.06	0.06	0.02	0.04	0.04	0.08	0.07	0.04	0.02	0.05	0.05
2016	0.05	0.03	0.04	0.04	0.02	0.03	0.05	0.08	0.06	0.04	0.03	0.05	0.05

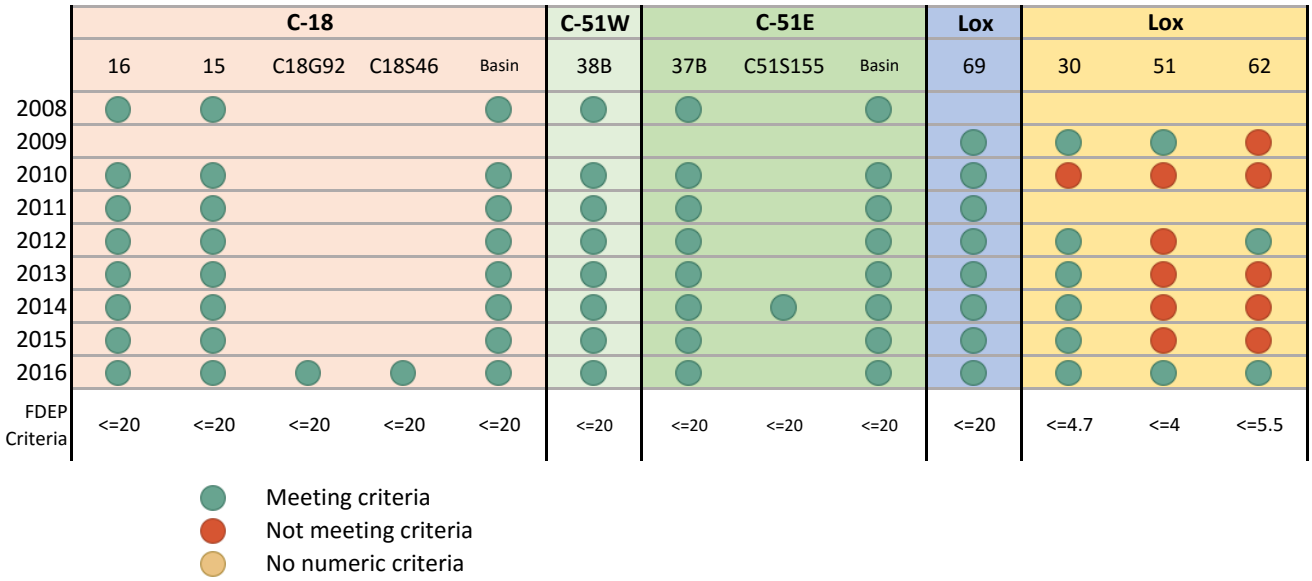
Table 5-10 (page 1 of 3) Chlorophyll-A (Annual Geometric Mean)



Values Used (ug/l)

2008	23.25	22.05		22.64	20.81	21.93	28.39	22.51		23.24	12.28		12.28
2009													
2010	33.53	7.63		15.99	21.80	13.51	19.74	24.55		19.43	17.26		17.26
2011	28.22	23.48		25.74	17.83	20.25	15.35	20.92		18.45	12.41		12.41
2012	24.95	16.18		20.09	17.67	18.51	18.54	20.44		18.76	17.74		17.74
2013	43.87	24.19		32.57	28.64	15.83	7.38	17.32		15.51	12.50		12.50
2014	39.23	28.66	27.53	31.39	22.70	17.75	35.79	18.36	15.53	21.03	20.44		20.44
2015	16.28	9.10	18.72	14.05	9.86	13.62	26.83	8.03	8.27	11.91	12.94		12.94
2016	9.72	8.42		9.05	12.73	20.70	7.45	8.11		11.24	11.78		11.78

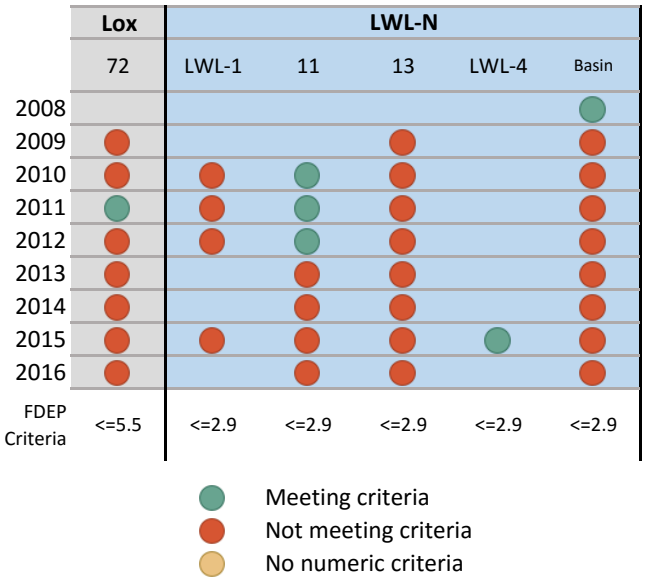
Table 5-10 (page 2 of 3) Chlorophyll-A (Annual Geometric Mean)



Values Used (ug/l)

2008	8.68	5.90			7.15	13.42	10.88		10.88			
2009										4.98	3.98	2.78	7.04
2010	5.62	2.99			4.10	7.97	8.25		8.25	5.67	6.00	4.19	6.58
2011	6.44	1.52			3.13	19.35	4.84		4.84	2.94			
2012	6.17	1.52			3.06	8.64	4.21		4.21	2.01	3.39	4.17	4.64
2013	5.65	2.09			3.44	5.16	4.36		4.36	2.36	3.50	4.28	6.10
2014	2.14	2.14			2.14	4.07	2.79	0.03	0.26	3.00	4.14	4.49	5.50
2015	2.54	1.26			1.79	5.64	2.06		2.06	1.92	4.02	4.07	5.94
2016	5.63	2.34	6.51	8.05	5.13	10.17	3.93		3.93	2.47	3.53	2.95	4.76

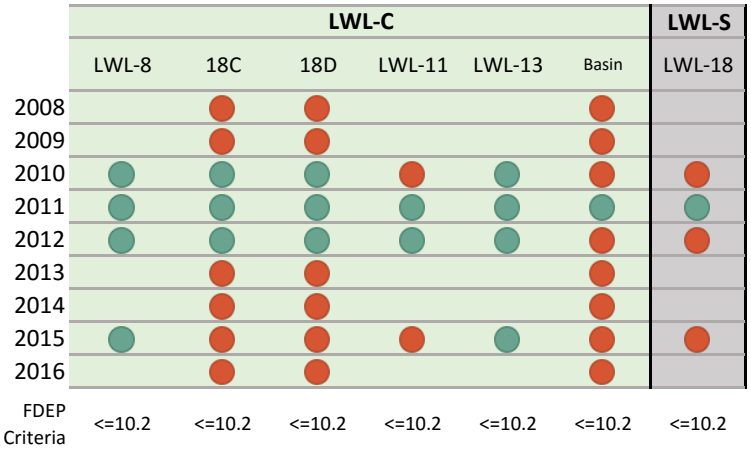
Table 5-10 (page 3 of 3) Chlorophyll-A (Annual Geometric Mean)



Values Used (ug/l)

2008						
2009	10.14			4.48		4.48
2010	11.53	4.51	2.16	4.08		3.41
2011	3.48	3.48	2.89	4.05		3.44
2012	9.86	4.73	2.85	4.12		3.81
2013	8.66		3.90	4.55		4.22
2014	11.23		5.23	7.51		6.26
2015	10.83	5.10	3.28	3.41	1.81	3.19
2016	7.07		7.06	3.82		5.19

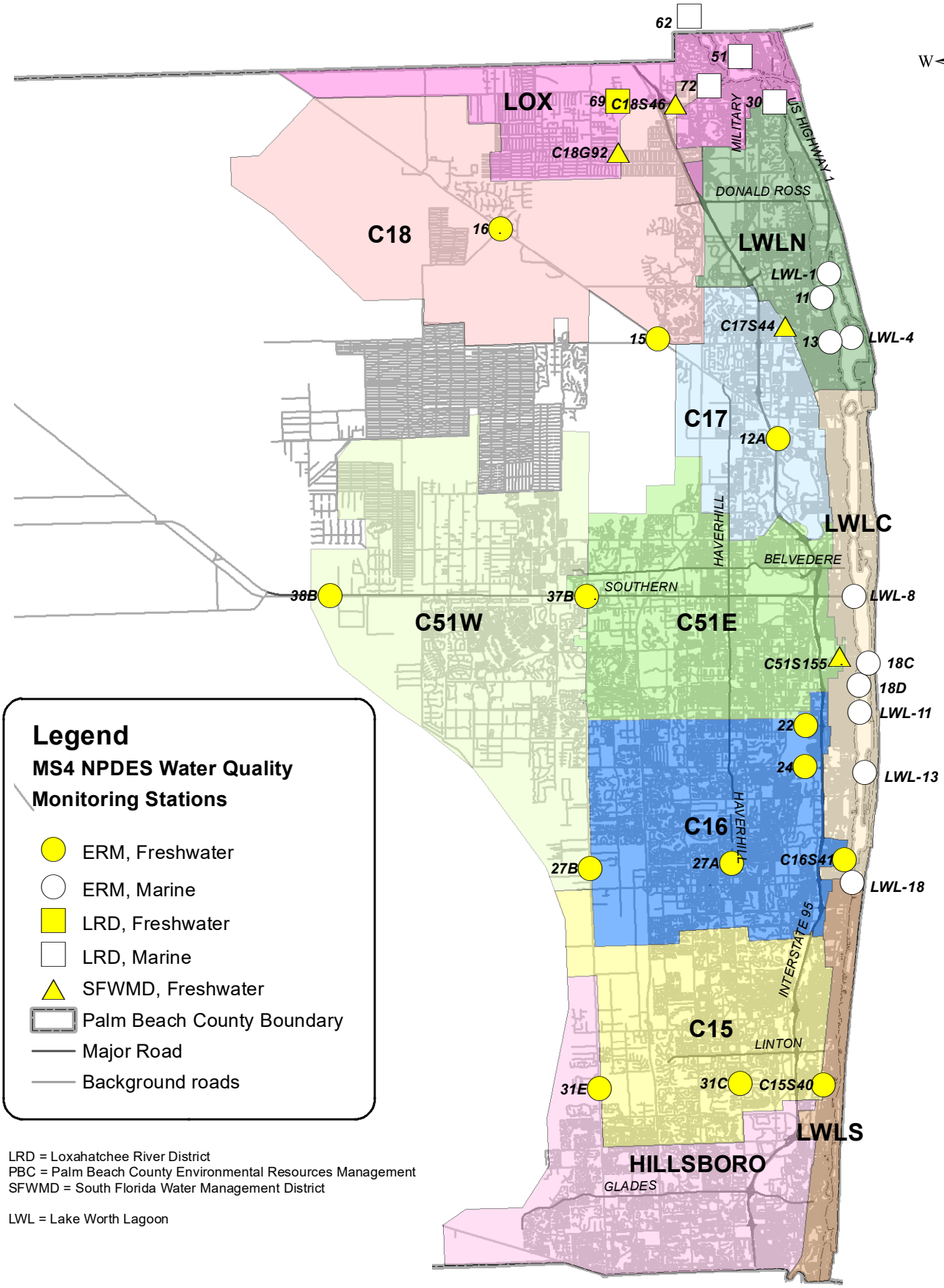
Table 5-11 Chlorophyll-A (10 Percent Exceedance) (LWL-C and LWL-S)



Meeting criteria
Not meeting criteria
No numeric criteria

2008		1/4	1/4			2/8	
2009		3/11	3/11			6/22	
2010	1/12	1/12	1/12	3/12	1/12	7/60	2/12
2011	0/2	1/11	1/11	0/2	0/2	2/28	0/2
2012	1/11	1/12	1/12	1/10	1/12	5/47	5/12
2013		4/12	5/12			9/12	
2014		6/9	8/9			14/18	
2015	1/10	2/7	1/7	2/10	0/10	6/44	2/10
2016		1/5	1/5			2/5	

g:/npbc/npbcnpds/monitoring/B4050.90/WQ_Stations.mxd



LRD = Loxahatchee River District
PBC = Palm Beach County Environmental Resources Management
SFWMD = South Florida Water Management District

LWL = Lake Worth Lagoon

P.A. No.: B4050.90

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Palm Beach County Watershed Boundaries and Water Quality Monitoring Stations

Figure 5-1

Figure 5-2
Total Nitrogen
C-15 Watershed

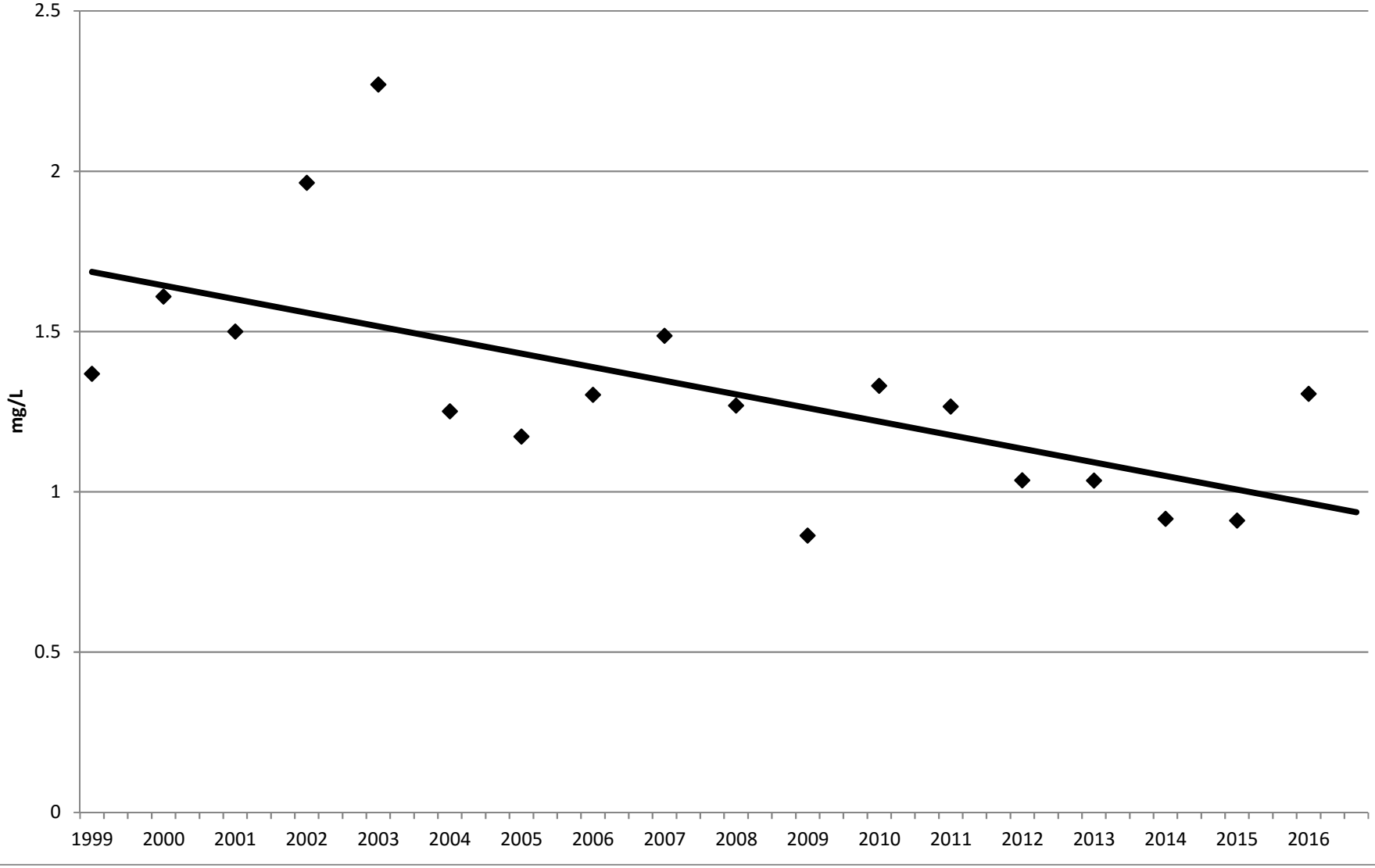


Figure 5-2
Total Nitrogen
C-16 Watershed

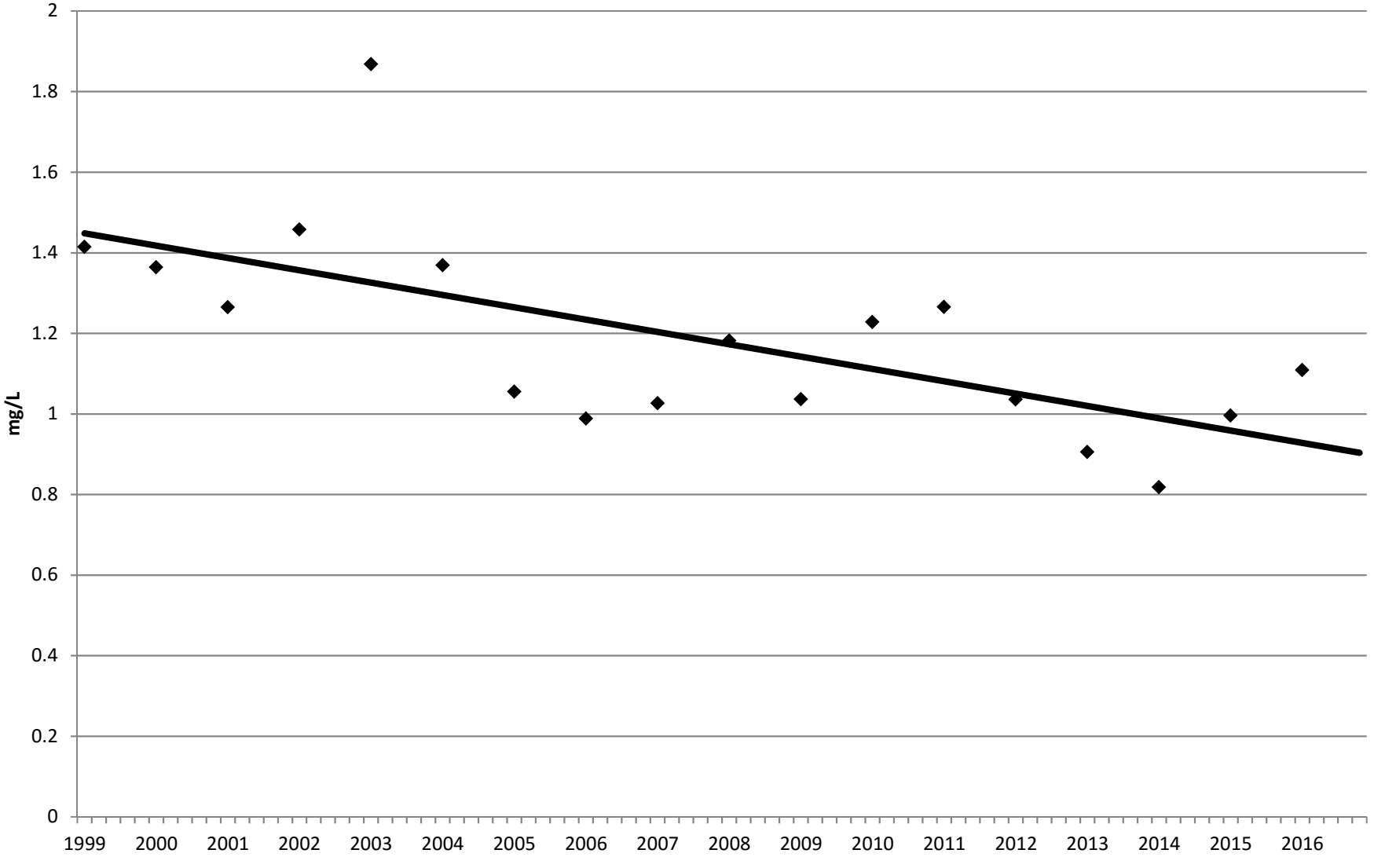


Figure 5-2
Total Nitrogen
C-17 Watershed

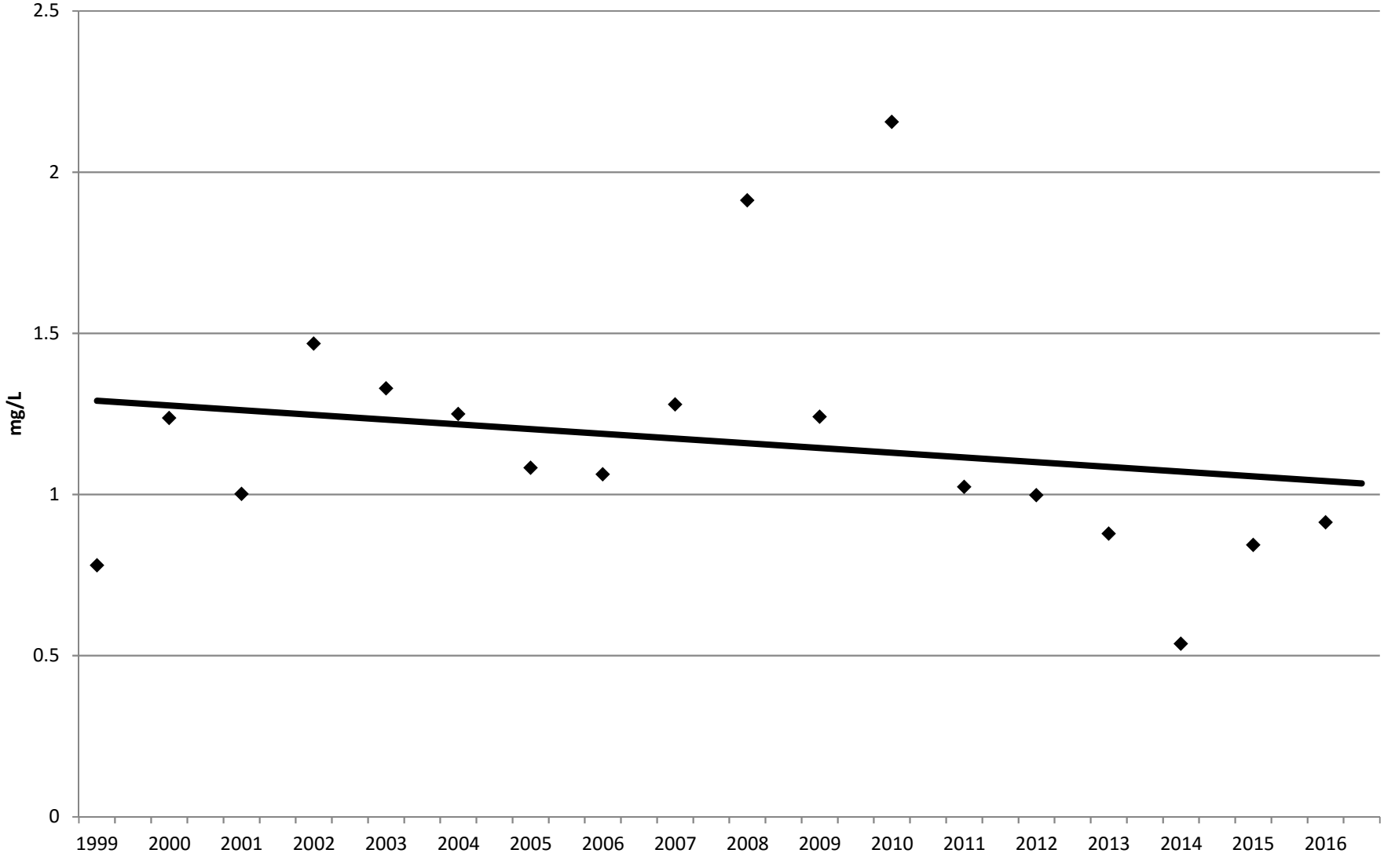


Figure 5-2
Total Nitrogen
C-18 Watershed

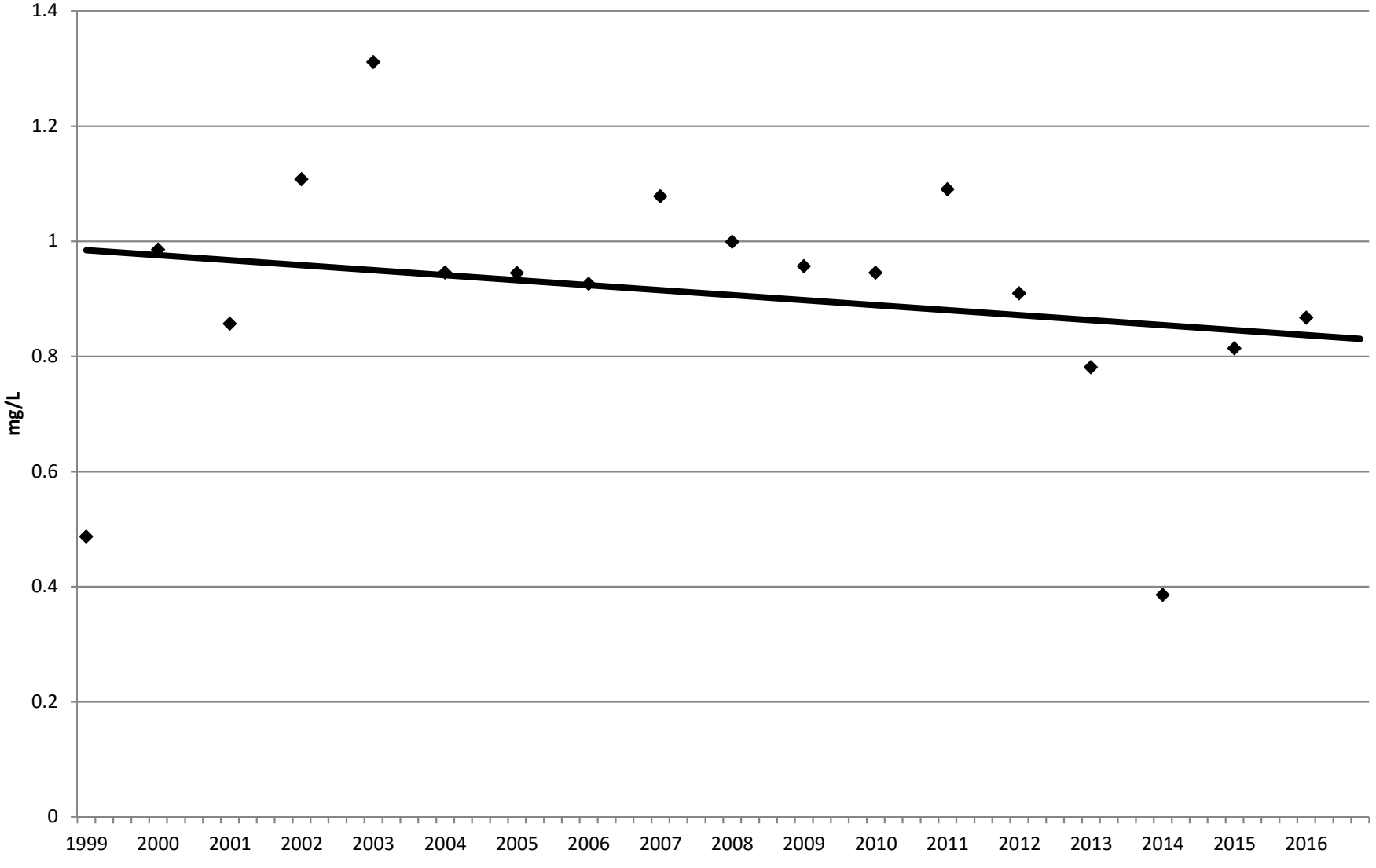


Figure 5-2
Total Nitrogen
C-51 W Watershed

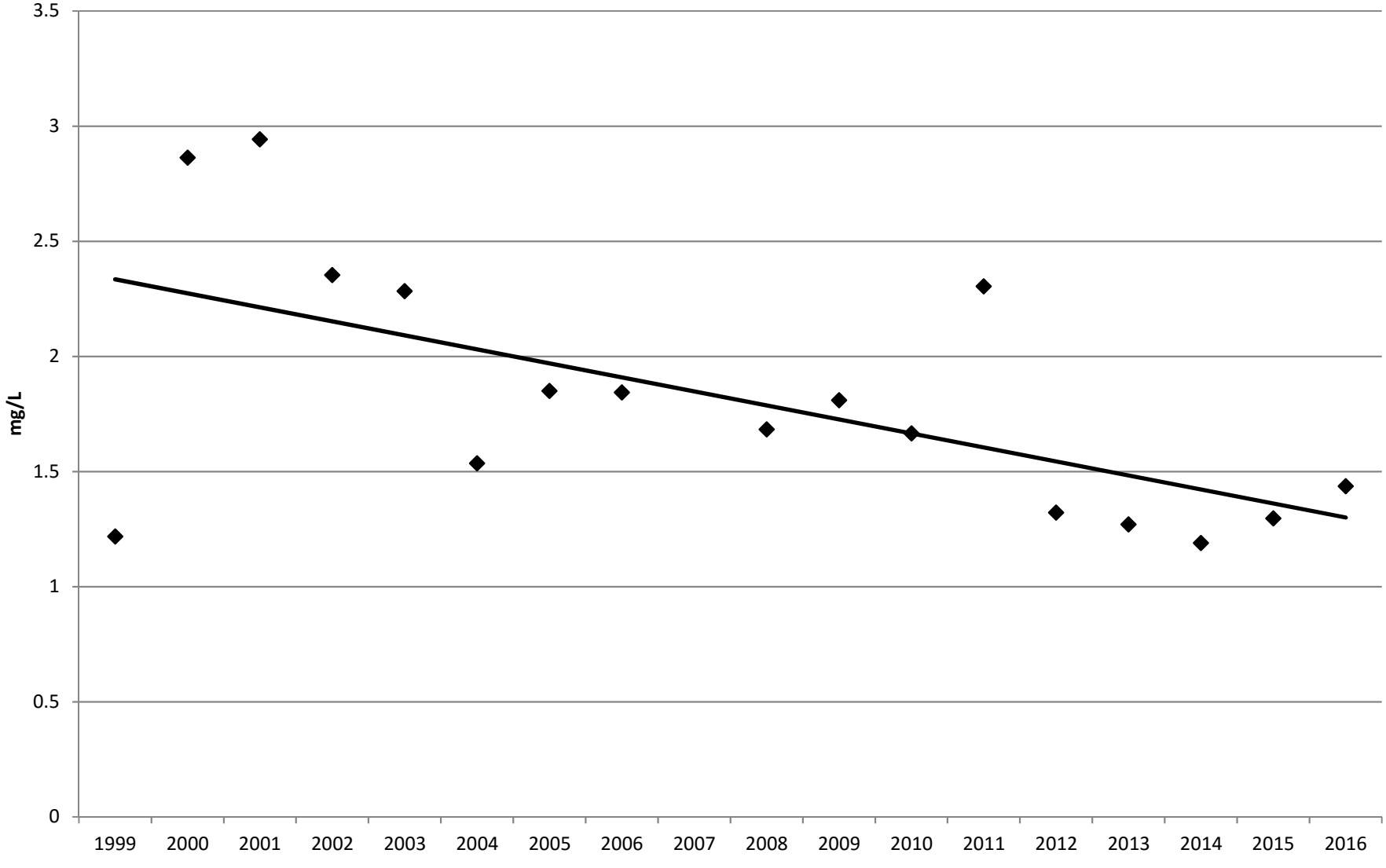


Figure 5-2
Total Nitrogen
C-51 E Watershed

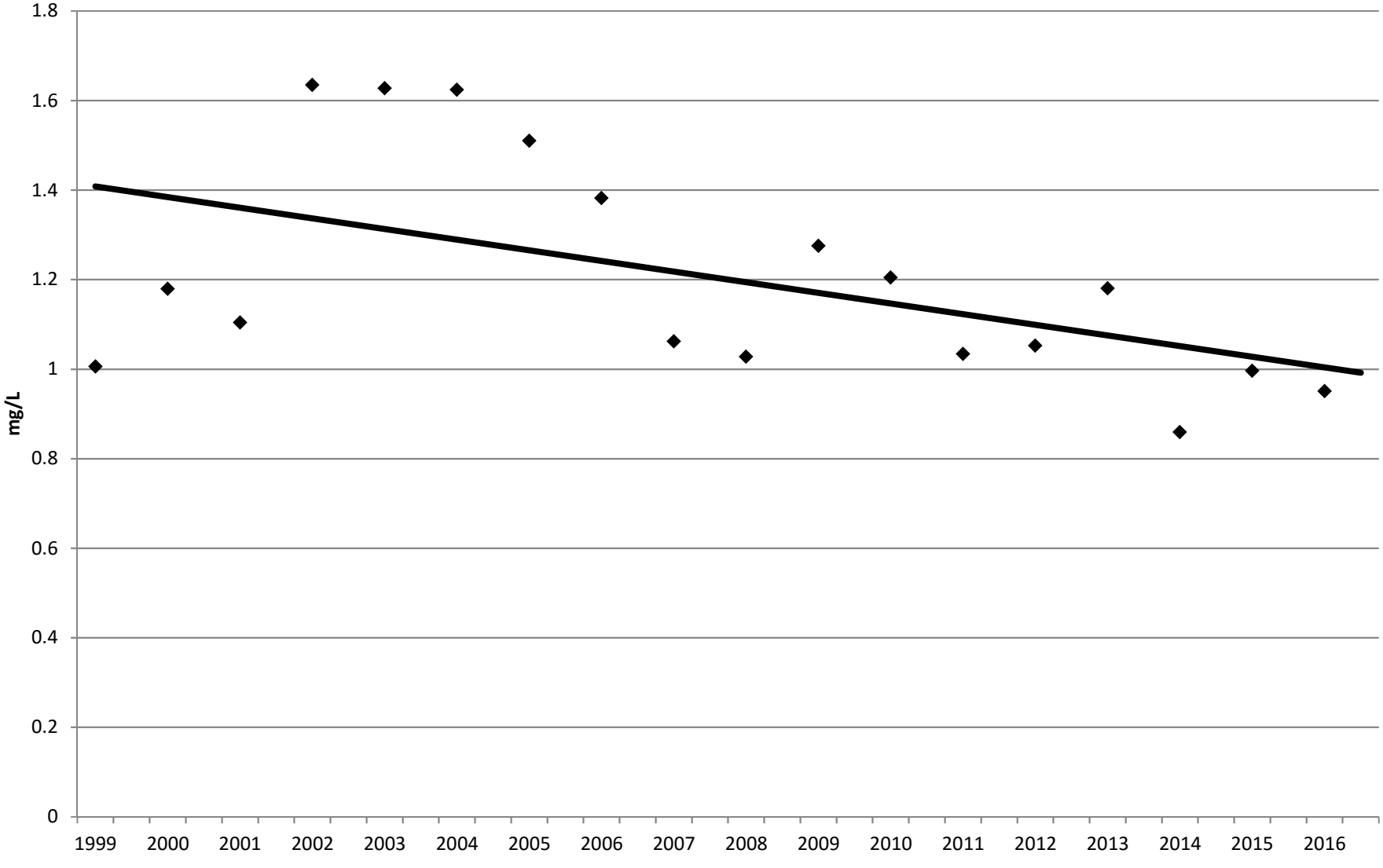


Figure 5-2
Total Nitrogen
Loxahatchee

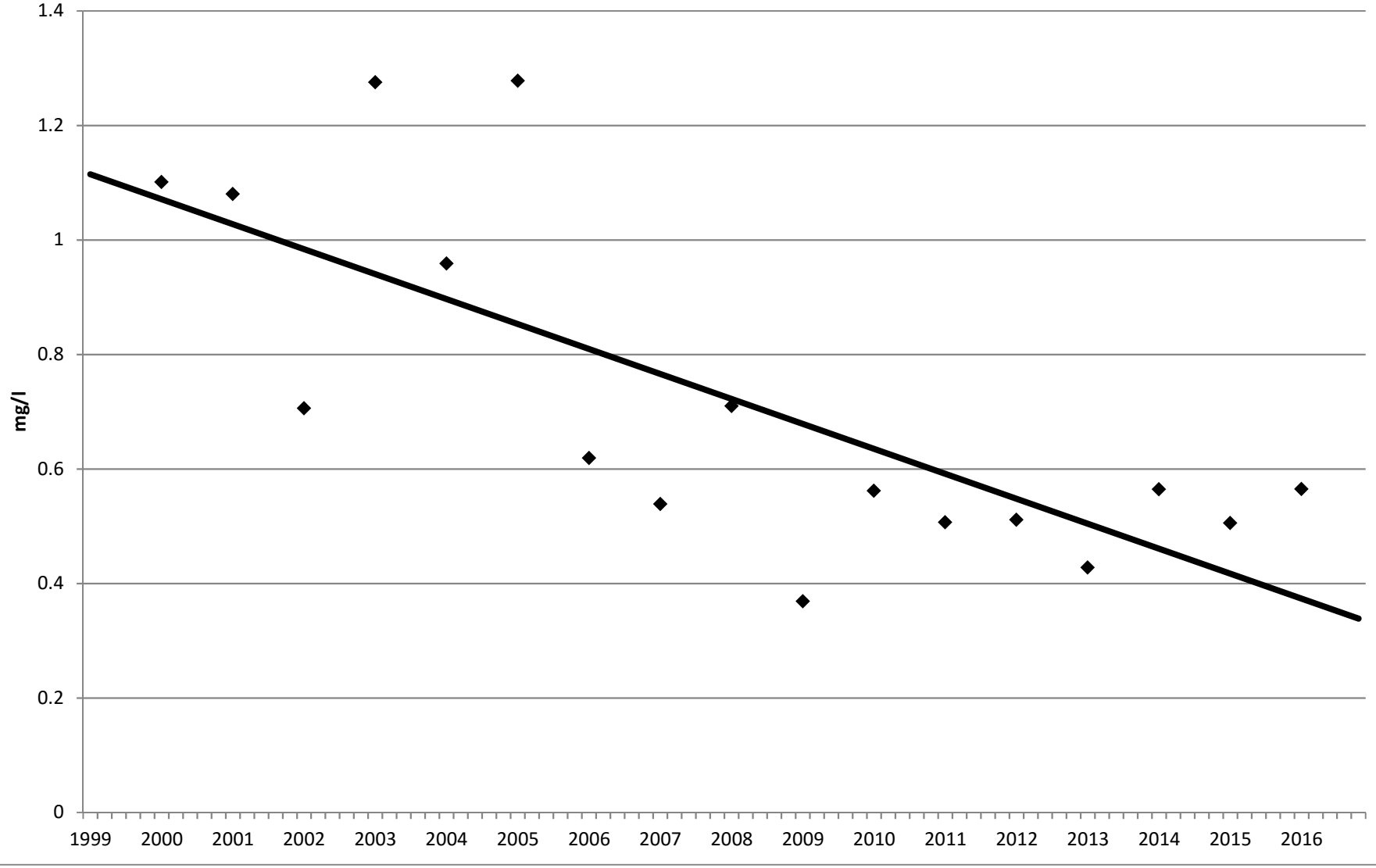


Figure 5-2
Total Nitrogen
Lake Worth Lagoon-N

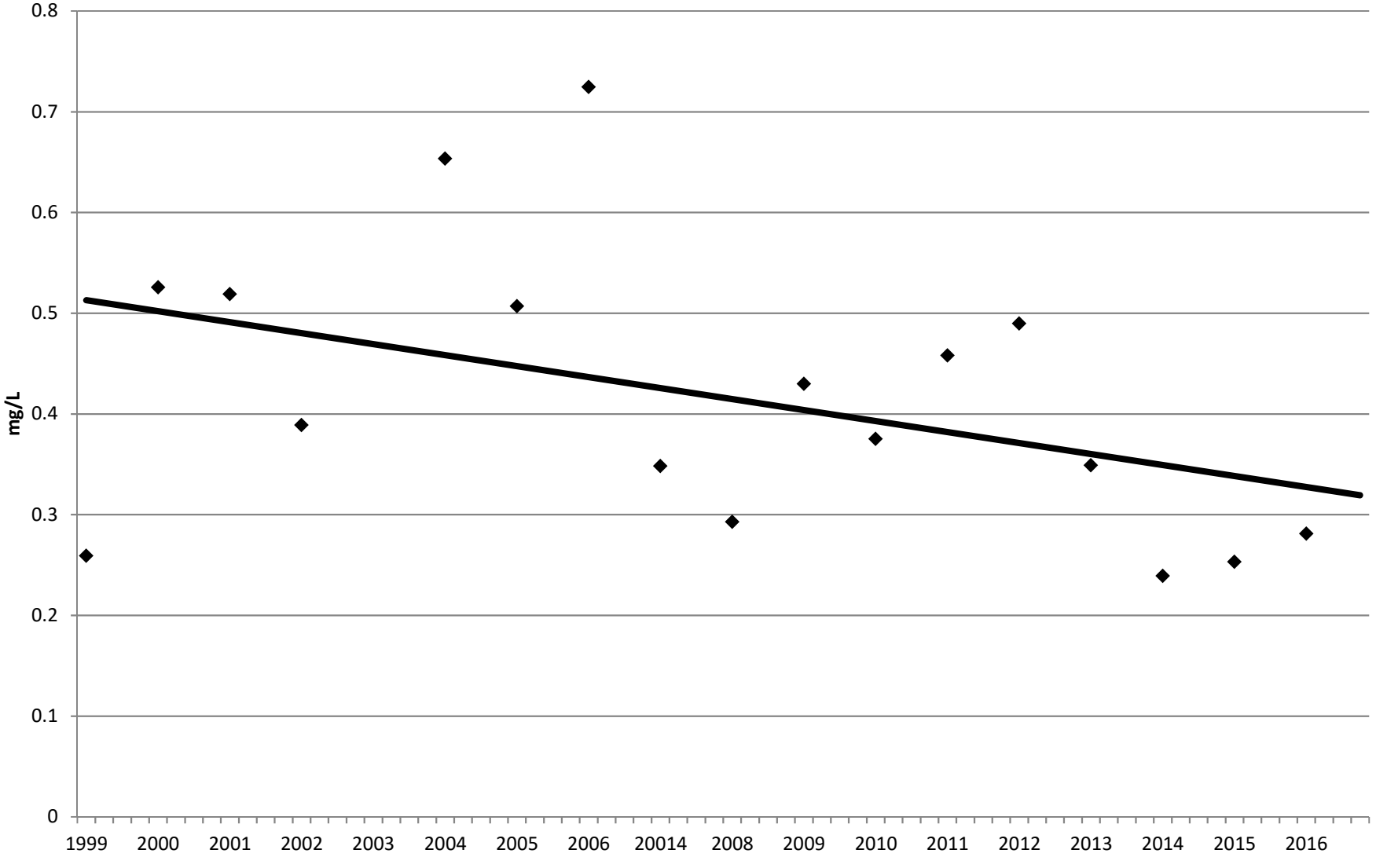


Figure 5-2
Total Nitrogen
Lake Worth Lagoon-C

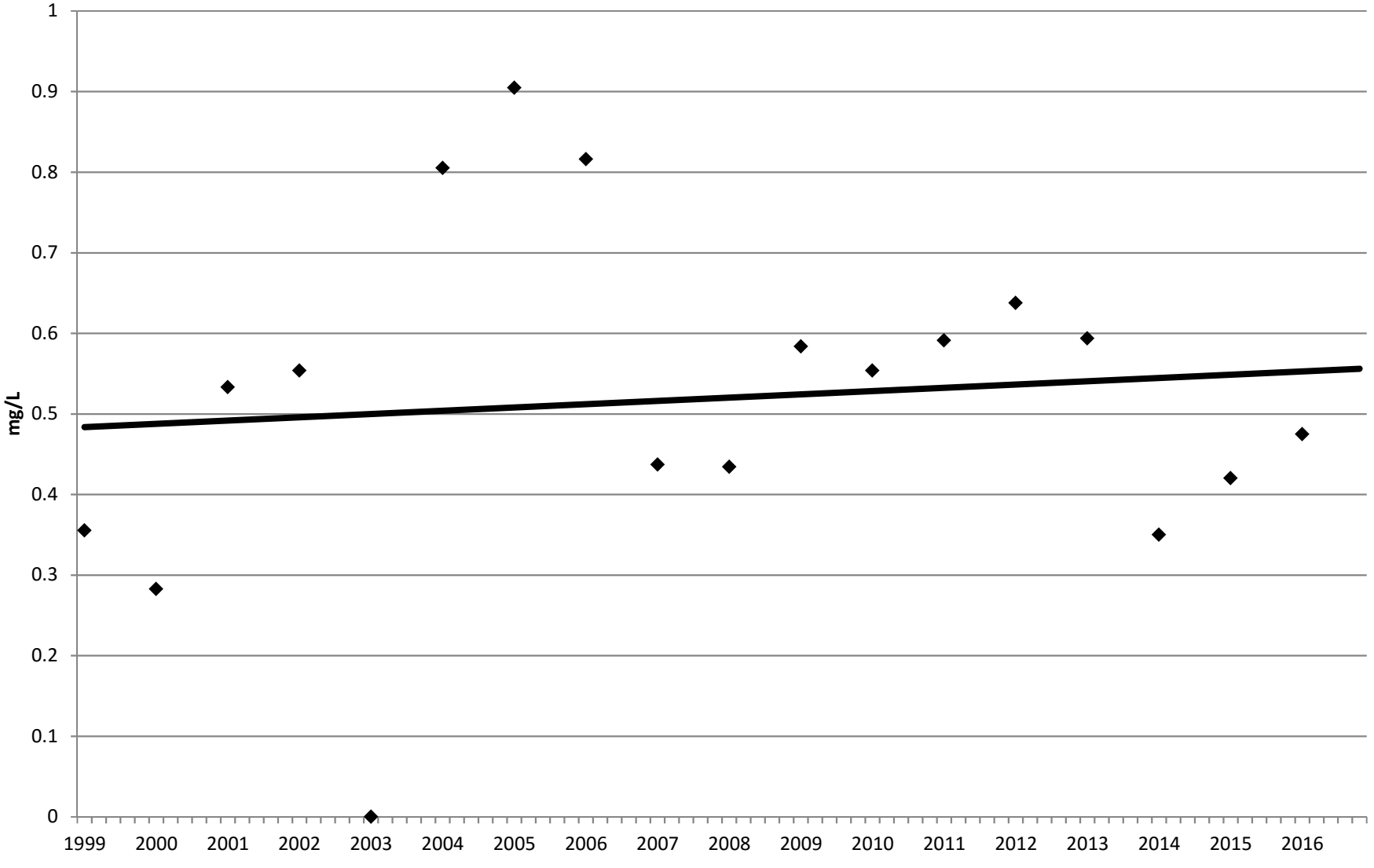


Figure 5-2
Total Nitrogen
Lake Worth Lagoon-S

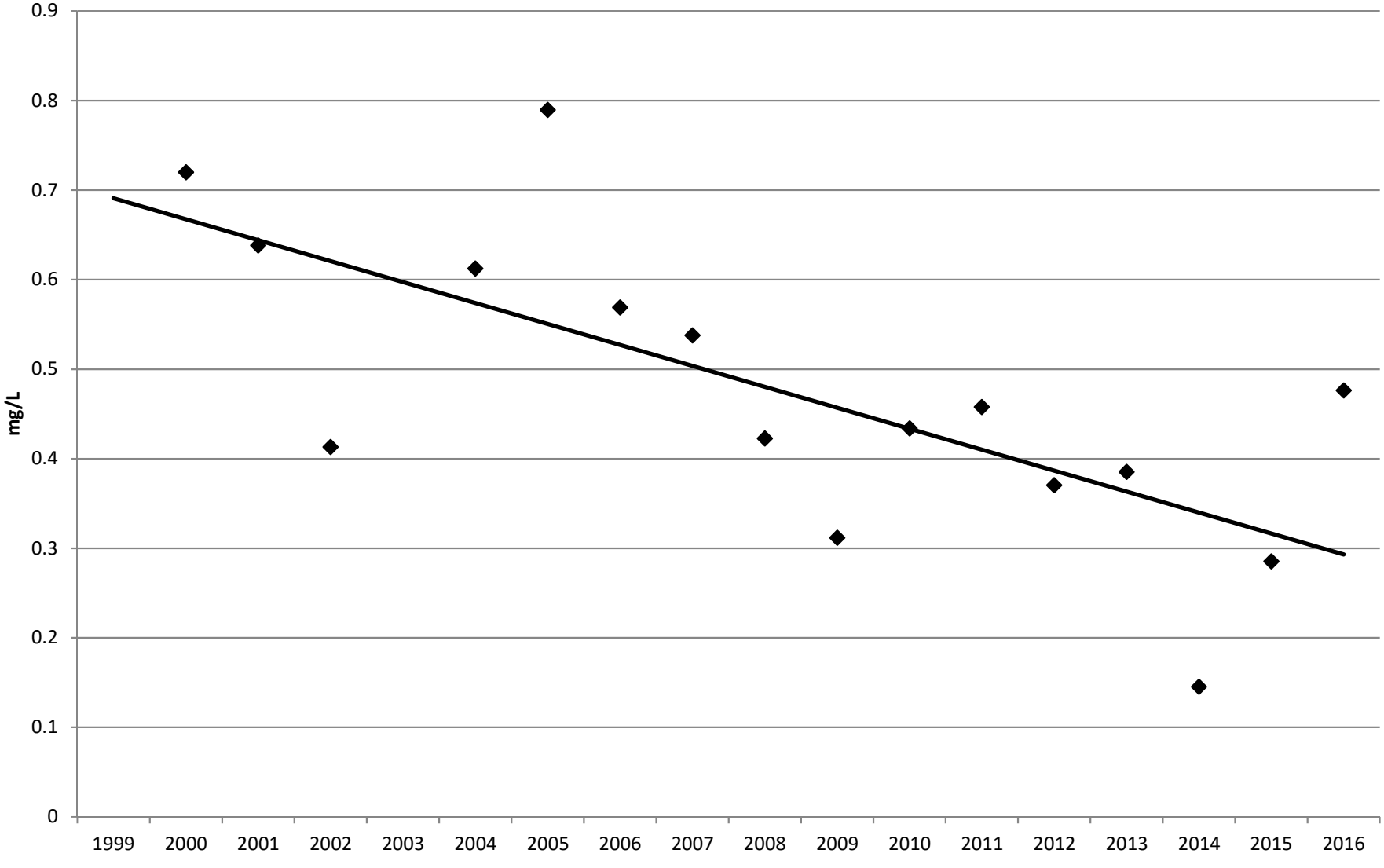


Figure 5-3
Total Phosphorus
C-15 Watershed

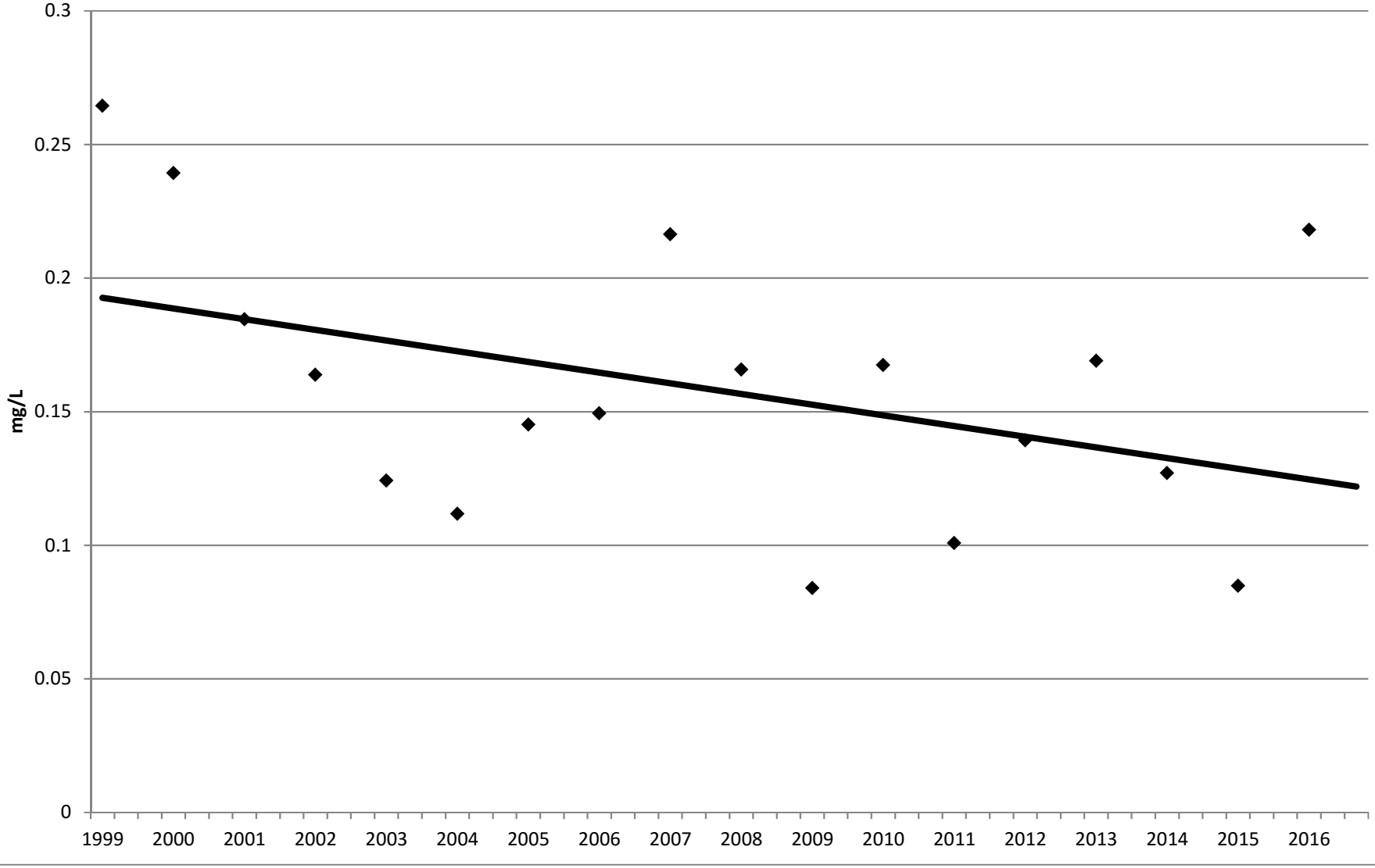


Figure 5-3
Total Phosphorous
C-16 Watershed

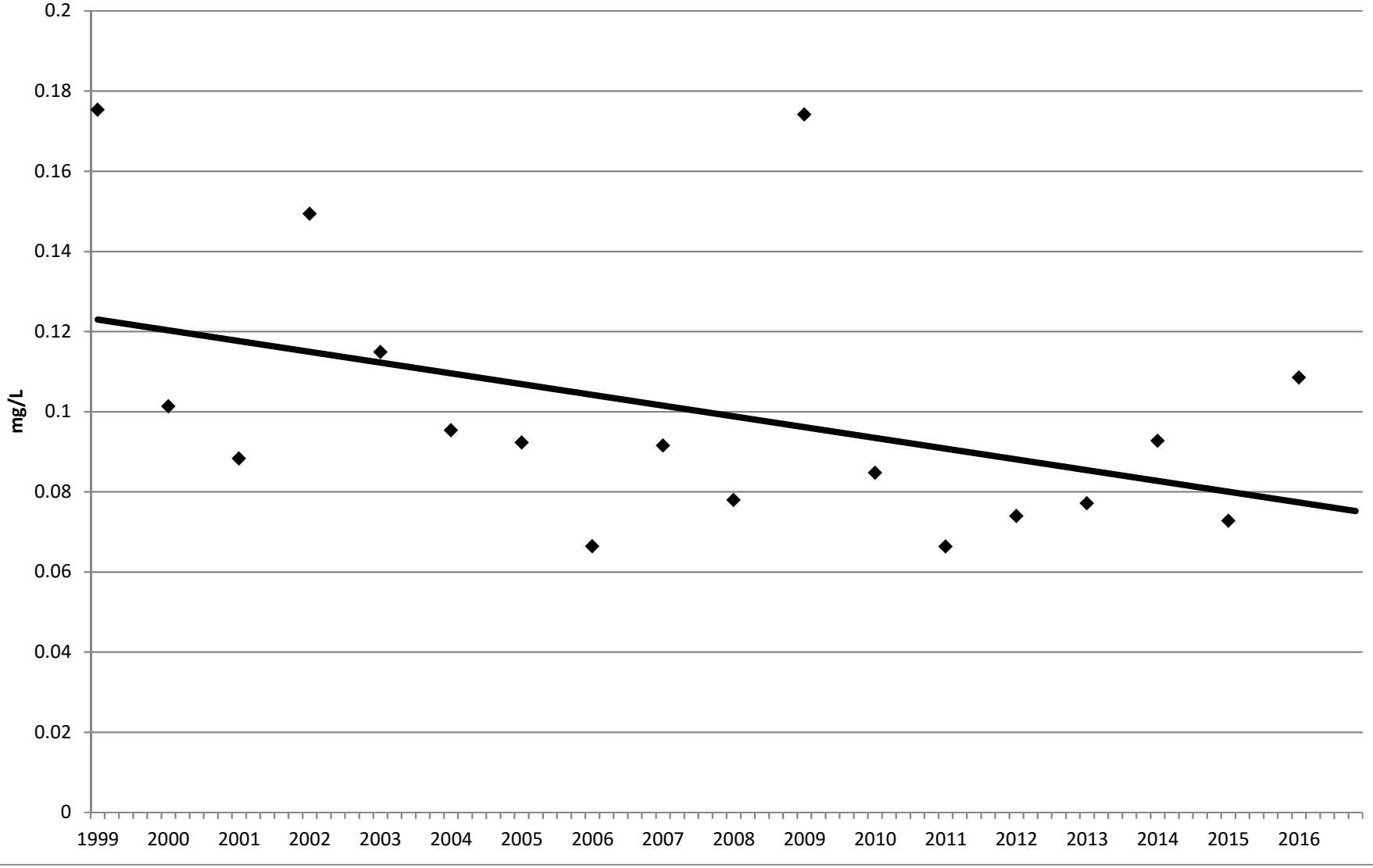


Figure 5-3
Total Phosphorus
C-17 Watershed

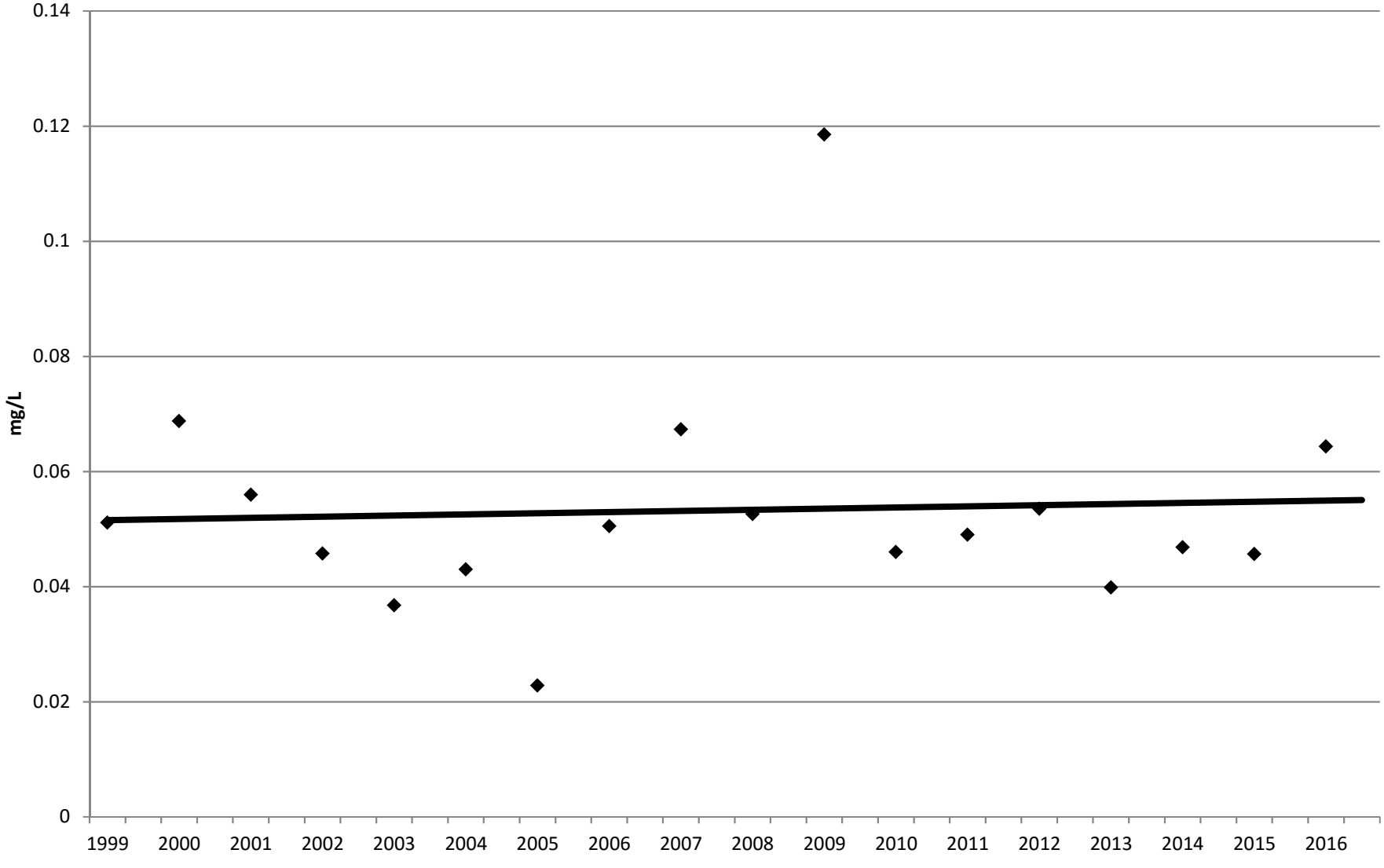


Figure 5-3
Total Phosphorus
C-18 Watershed

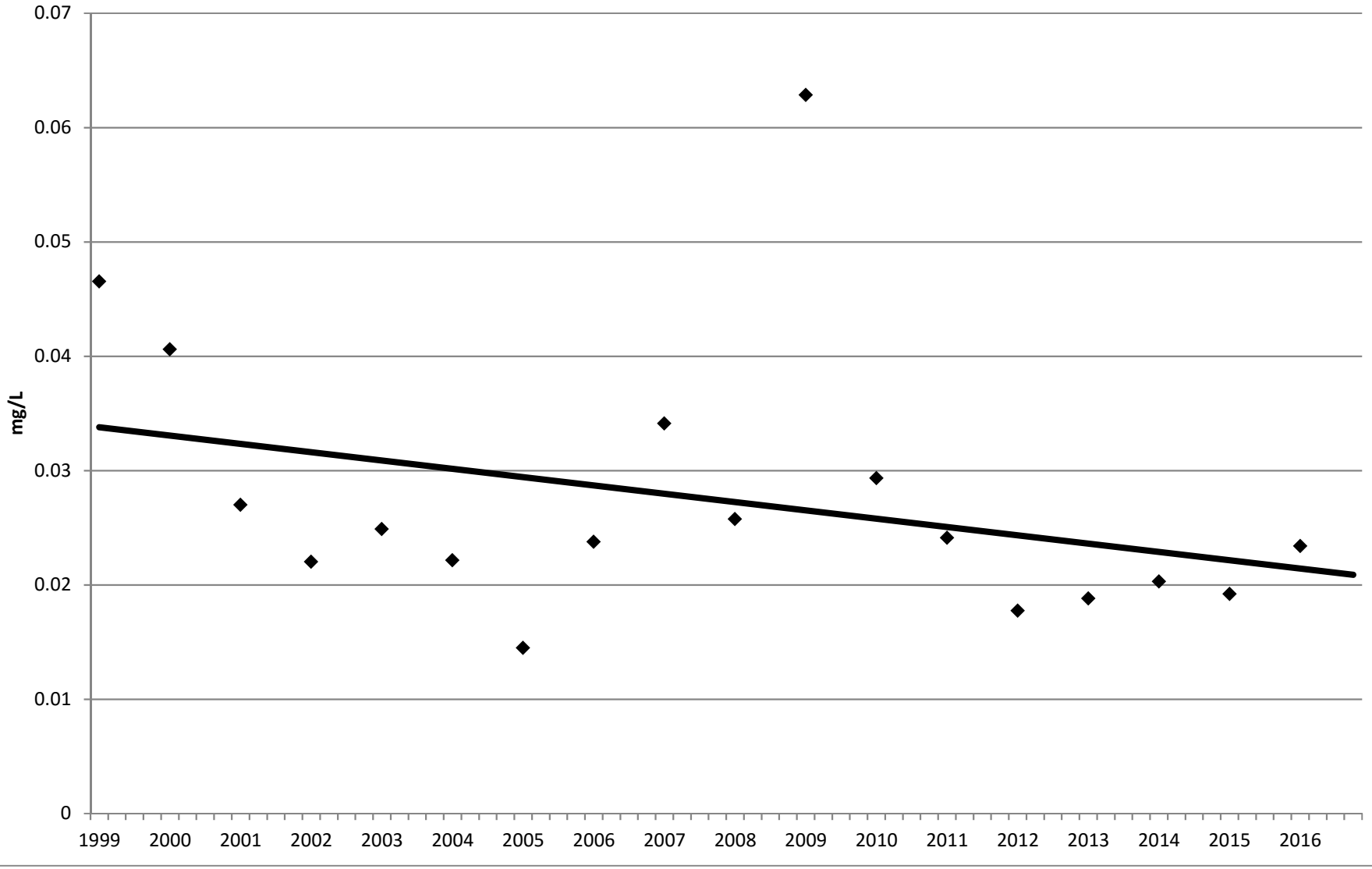


Figure 5-3
Total Phosphorus
C-51 W Watershed

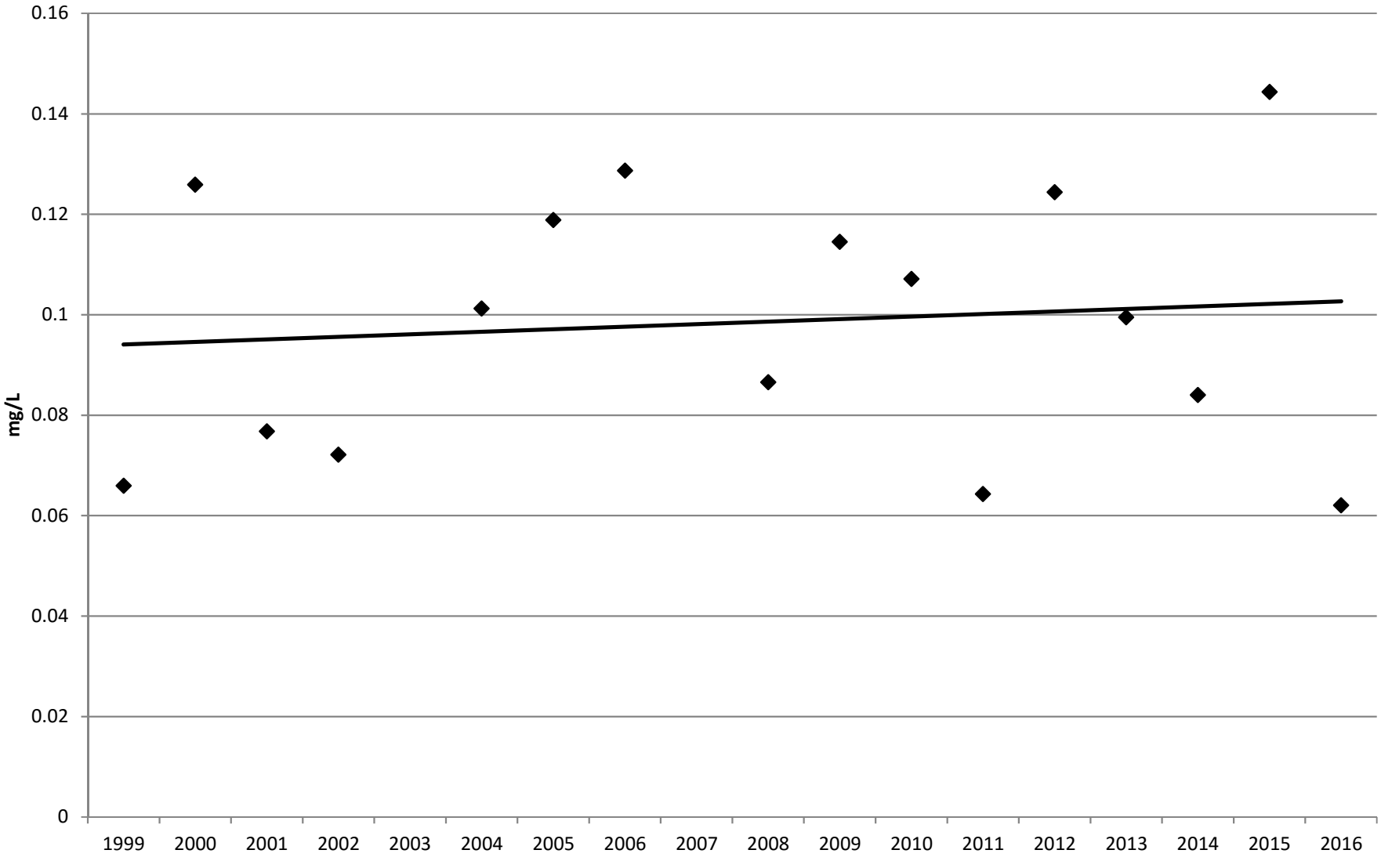


Figure 5-3
Total Phosphorus
C-51 E Watershed

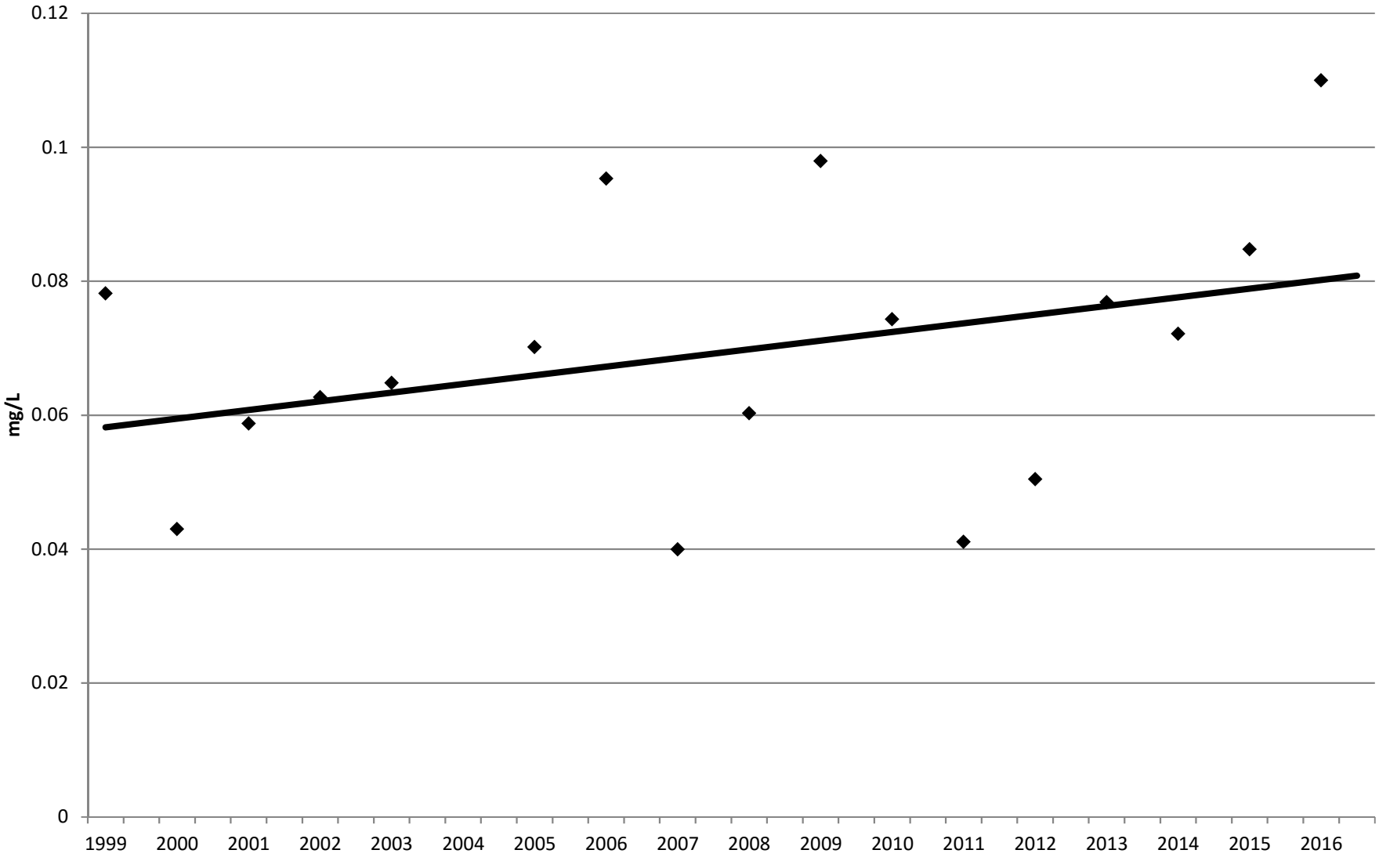


Figure 5-3
Total Phosphorus
Loxahatchee

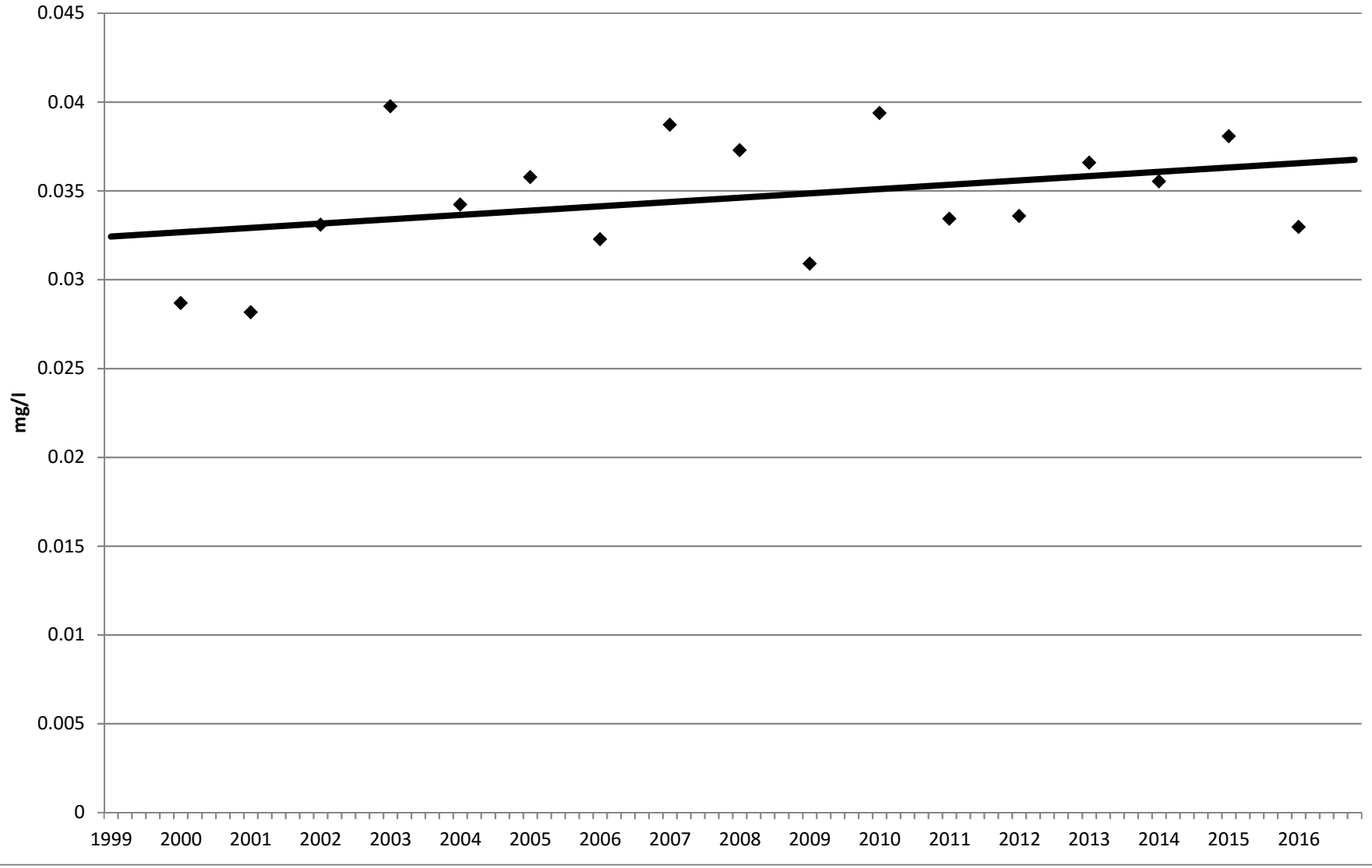


Figure 5-3
Total Phosphorus
Lake Worth Lagoon-N

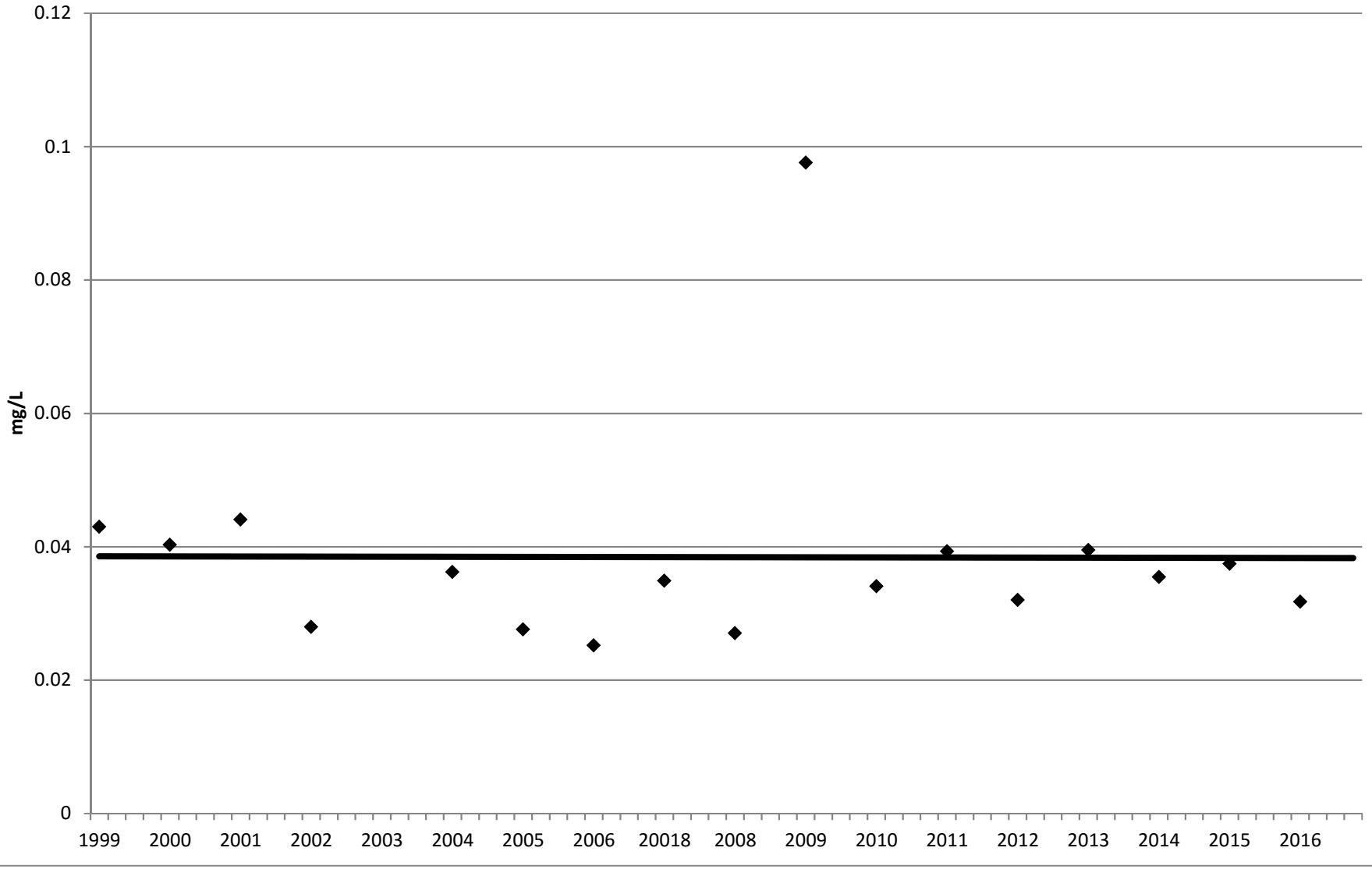


Figure 5-3
Total Phosphorus
Lake Worth Lagoon-C

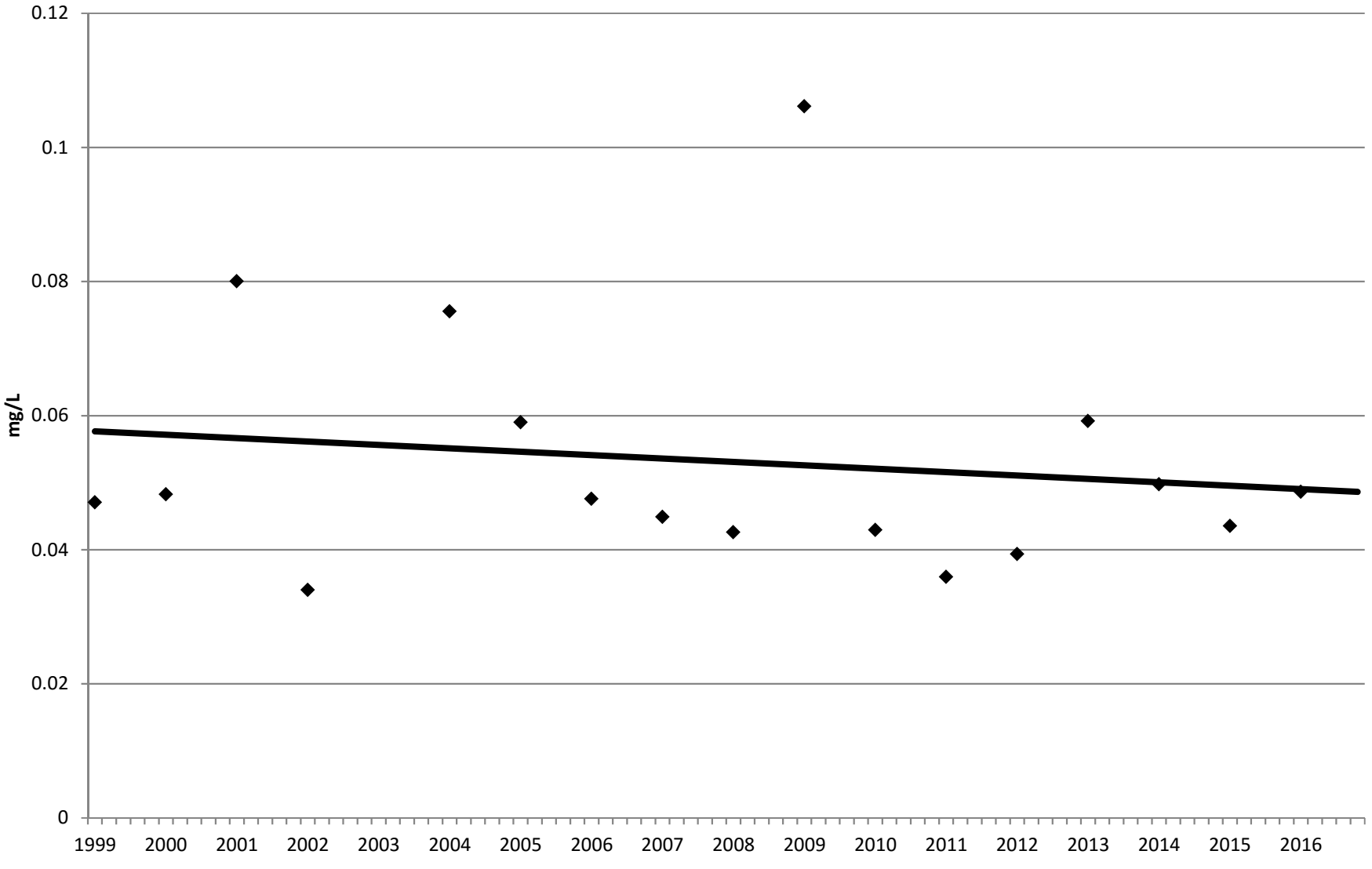


Figure 5-3
Total Phosphorus
Lake Worth Lagoon-S

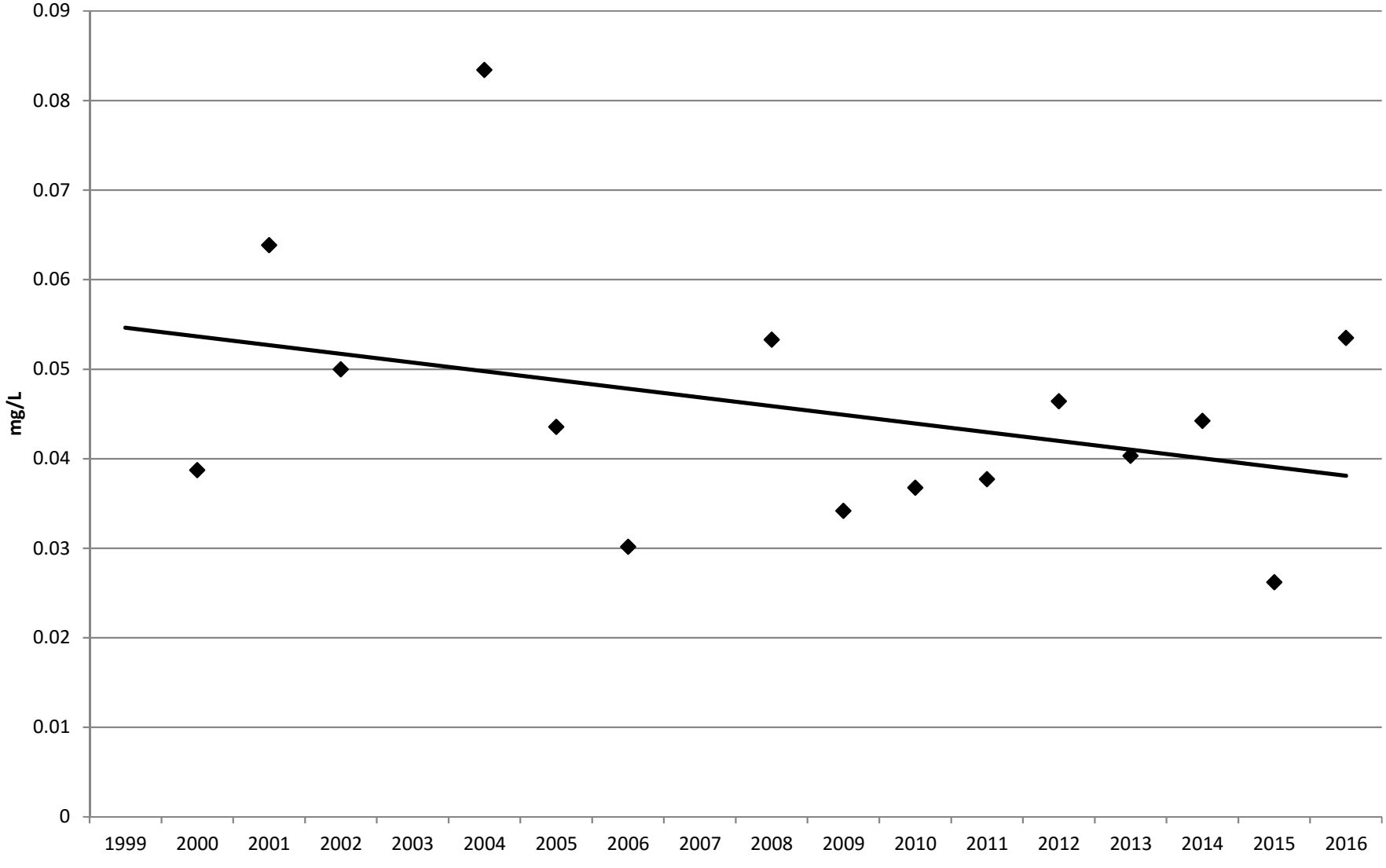


Figure 5-4
Chlorophyll-A
C-15 Watershed

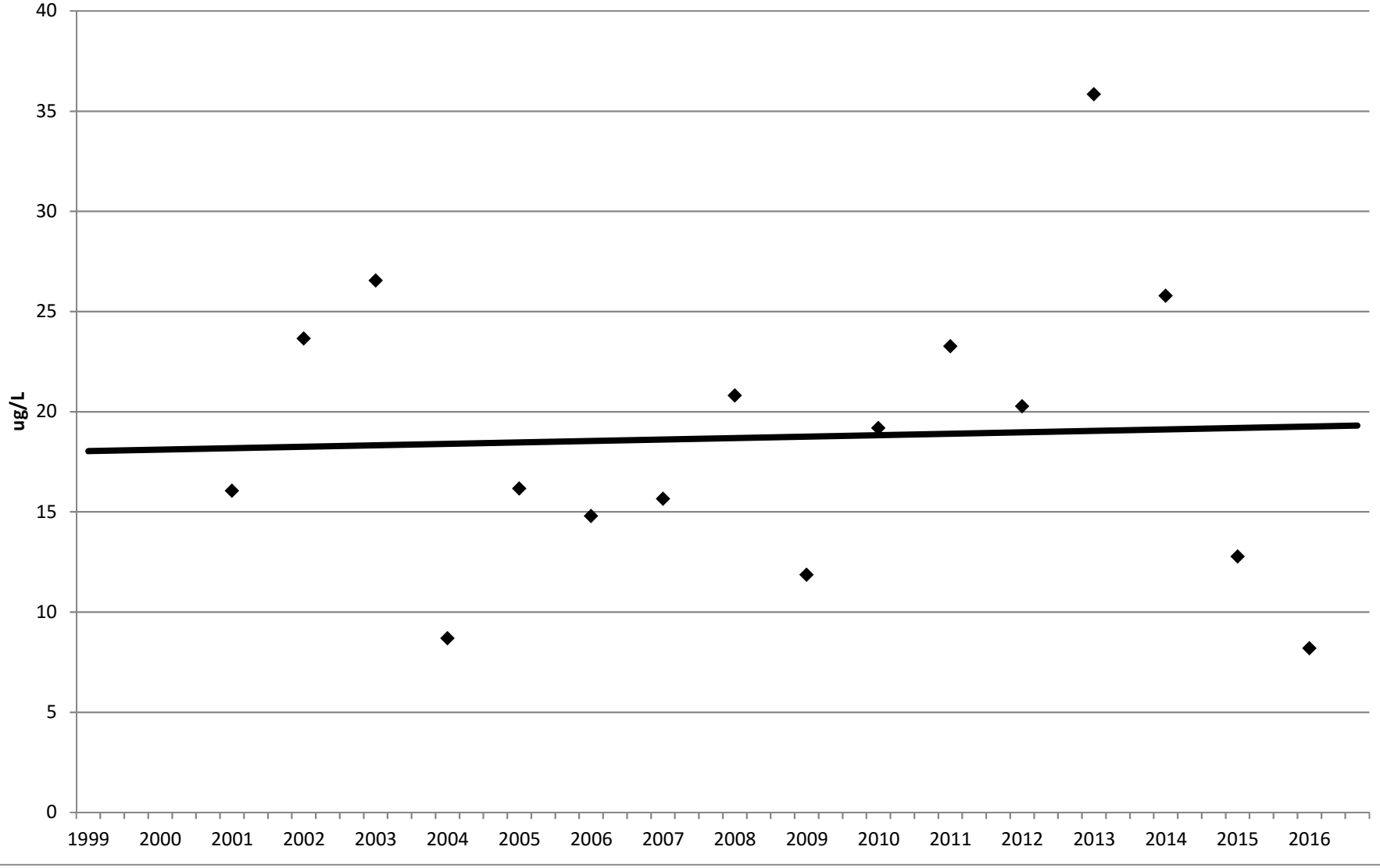


Figure 5-4
Chlorophyll-A
C-16 Watershed

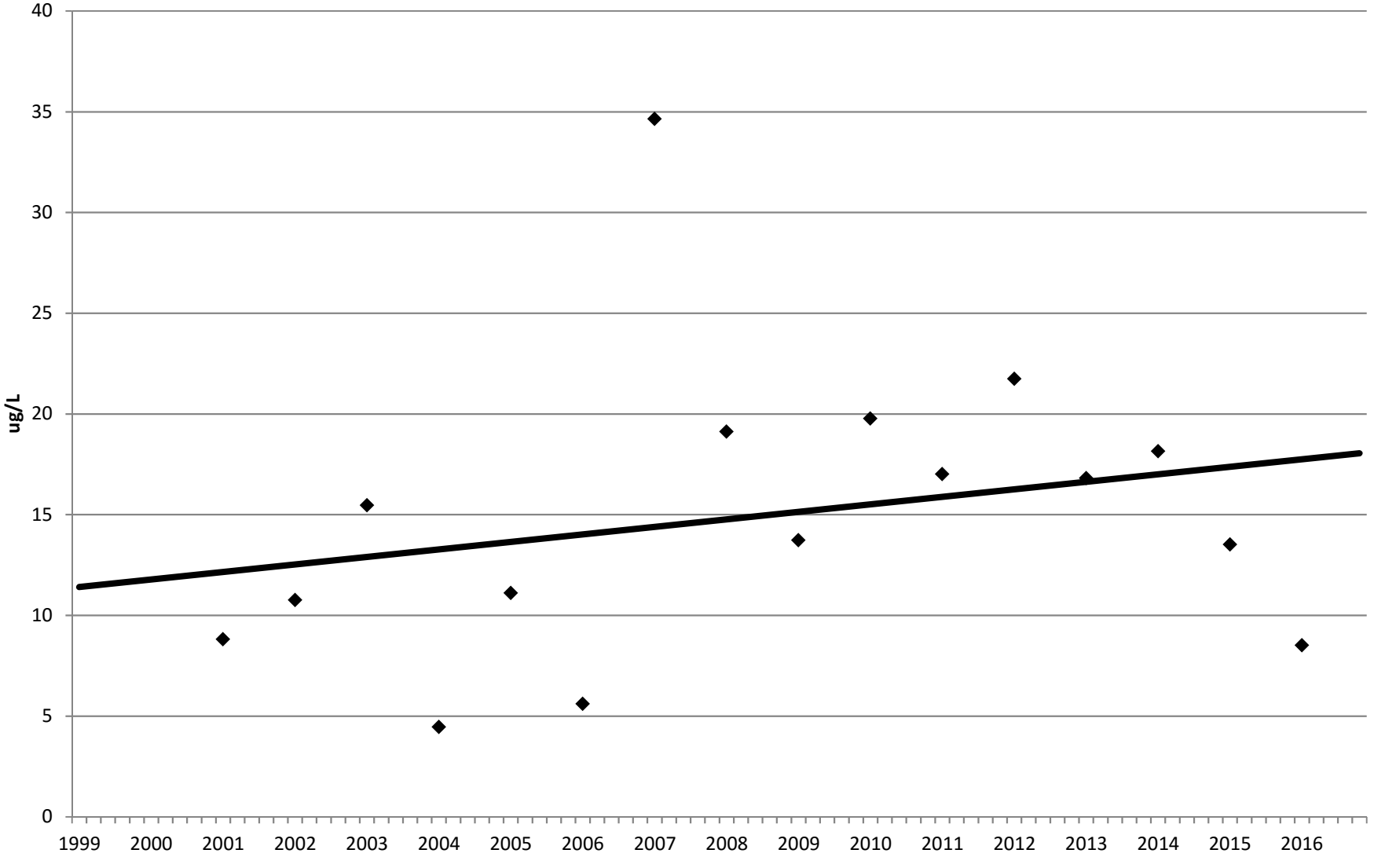


Figure 5-4
Chlorophyll-A
C-17 Watershed

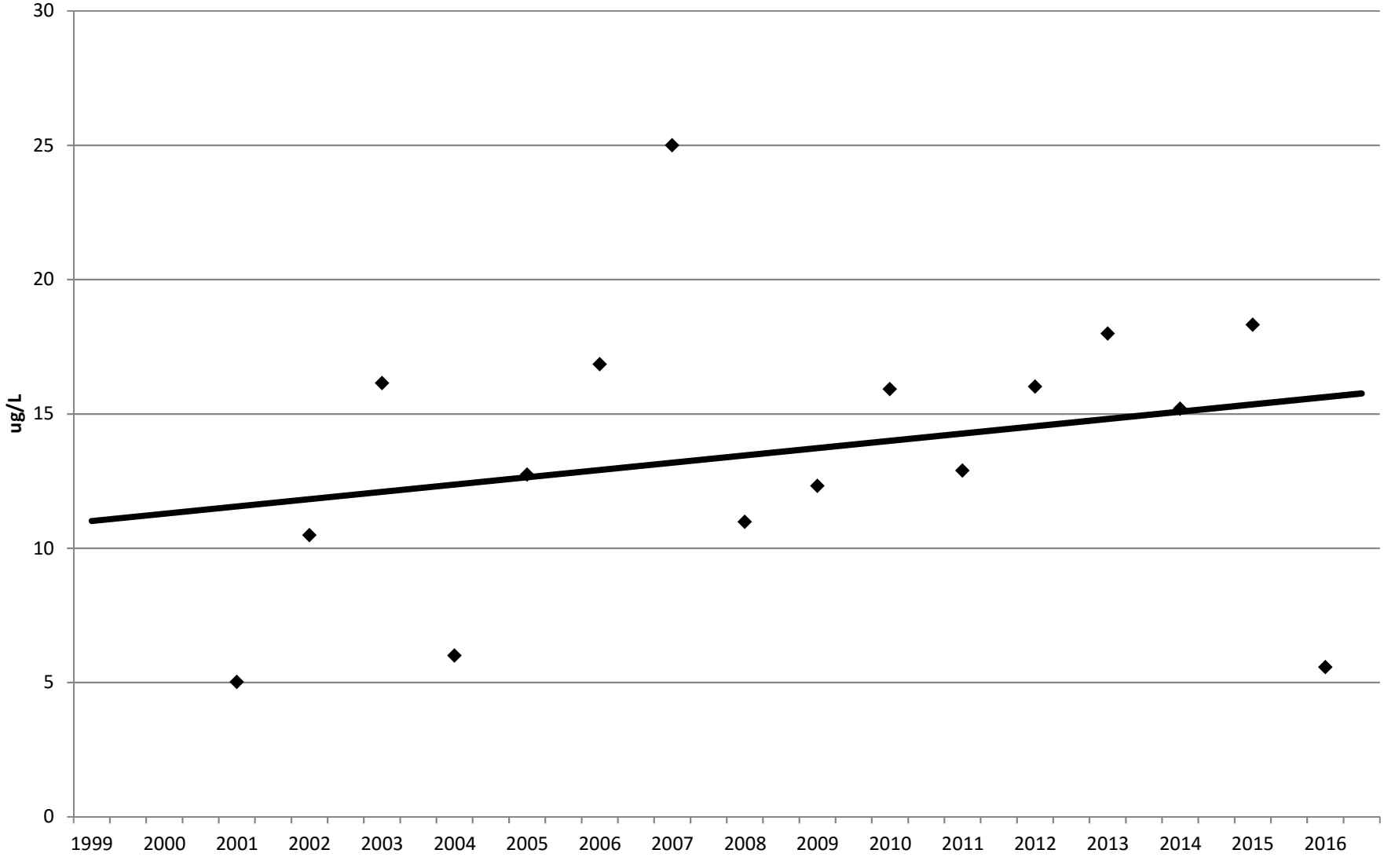


Figure 5-4
Chlorophyll-A
C-18 Watershed

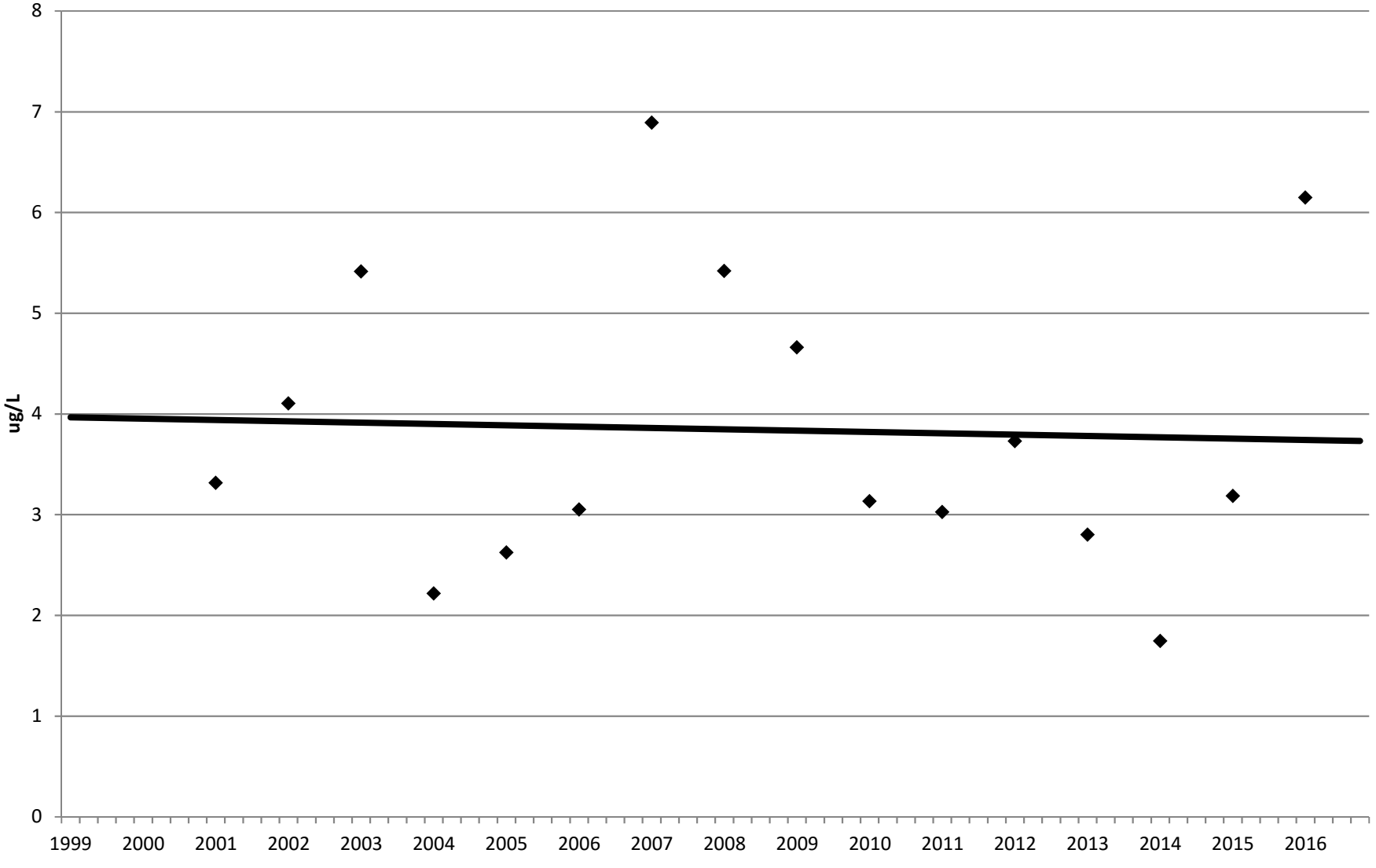


Figure 5-4
Chlorophyll-A
C-51 W Watershed

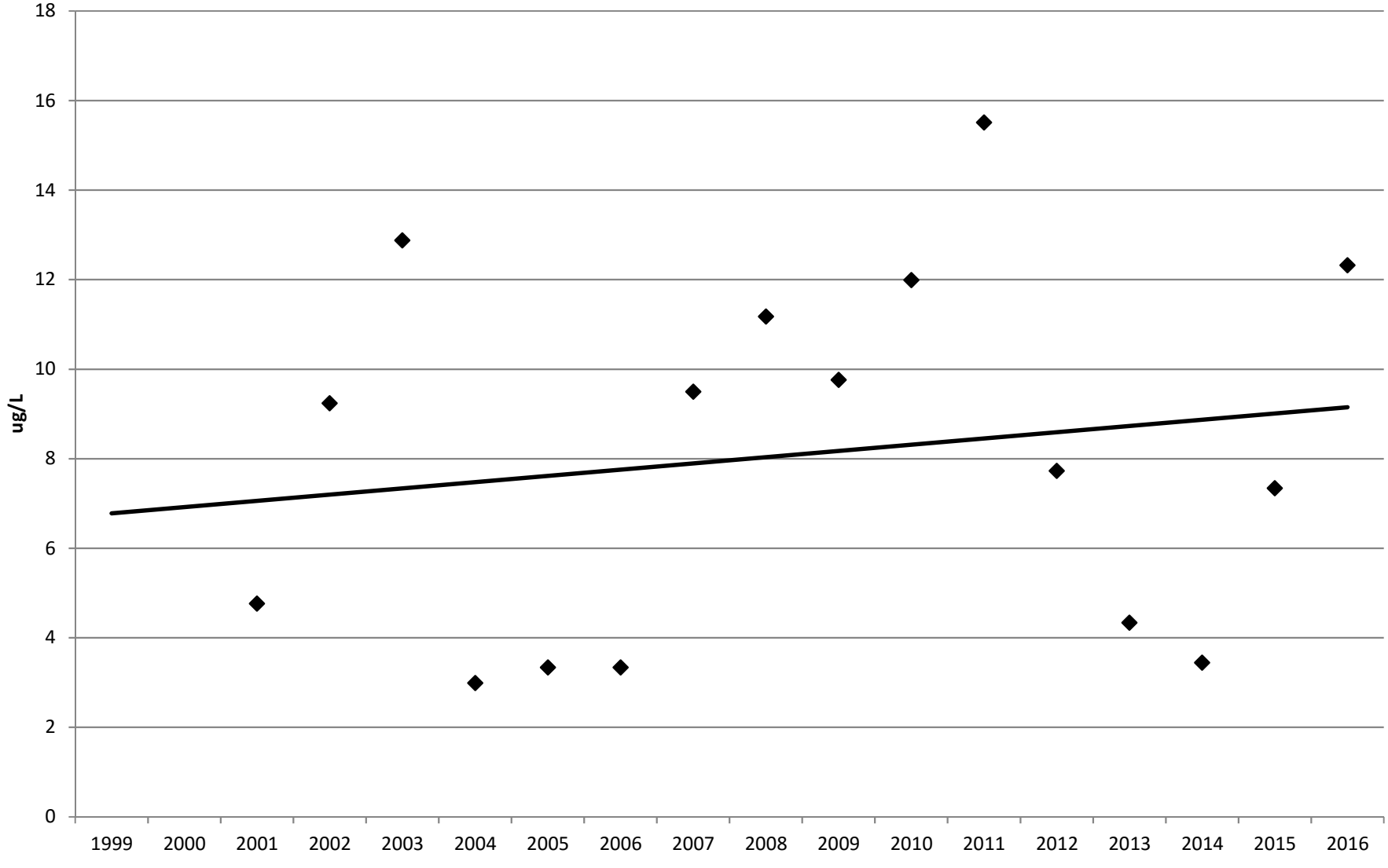


Figure 5-4
Chlorophyll-A
C-51 E Watershed

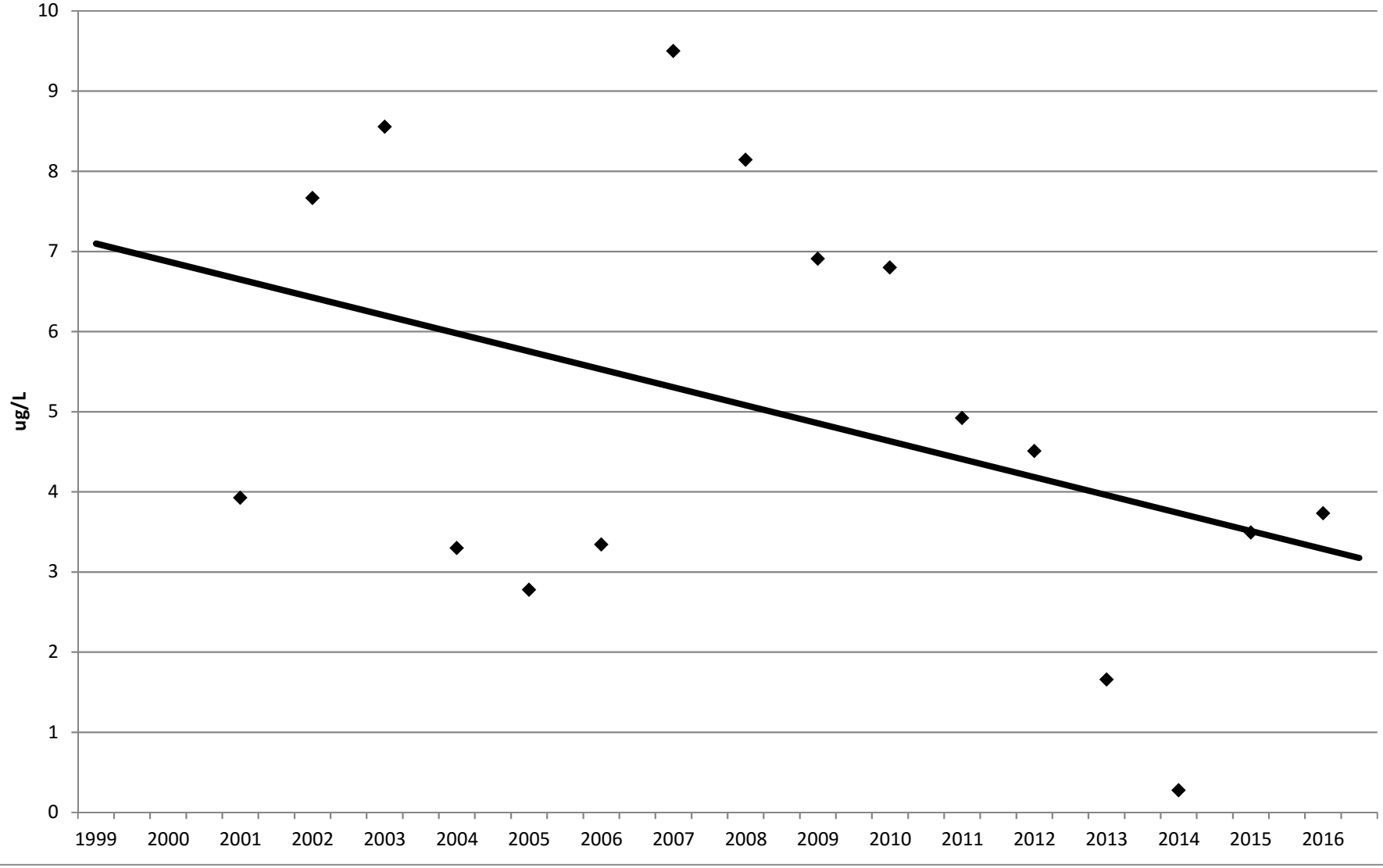


Figure 5-4
Chlorophyll-A
Loxahatchee

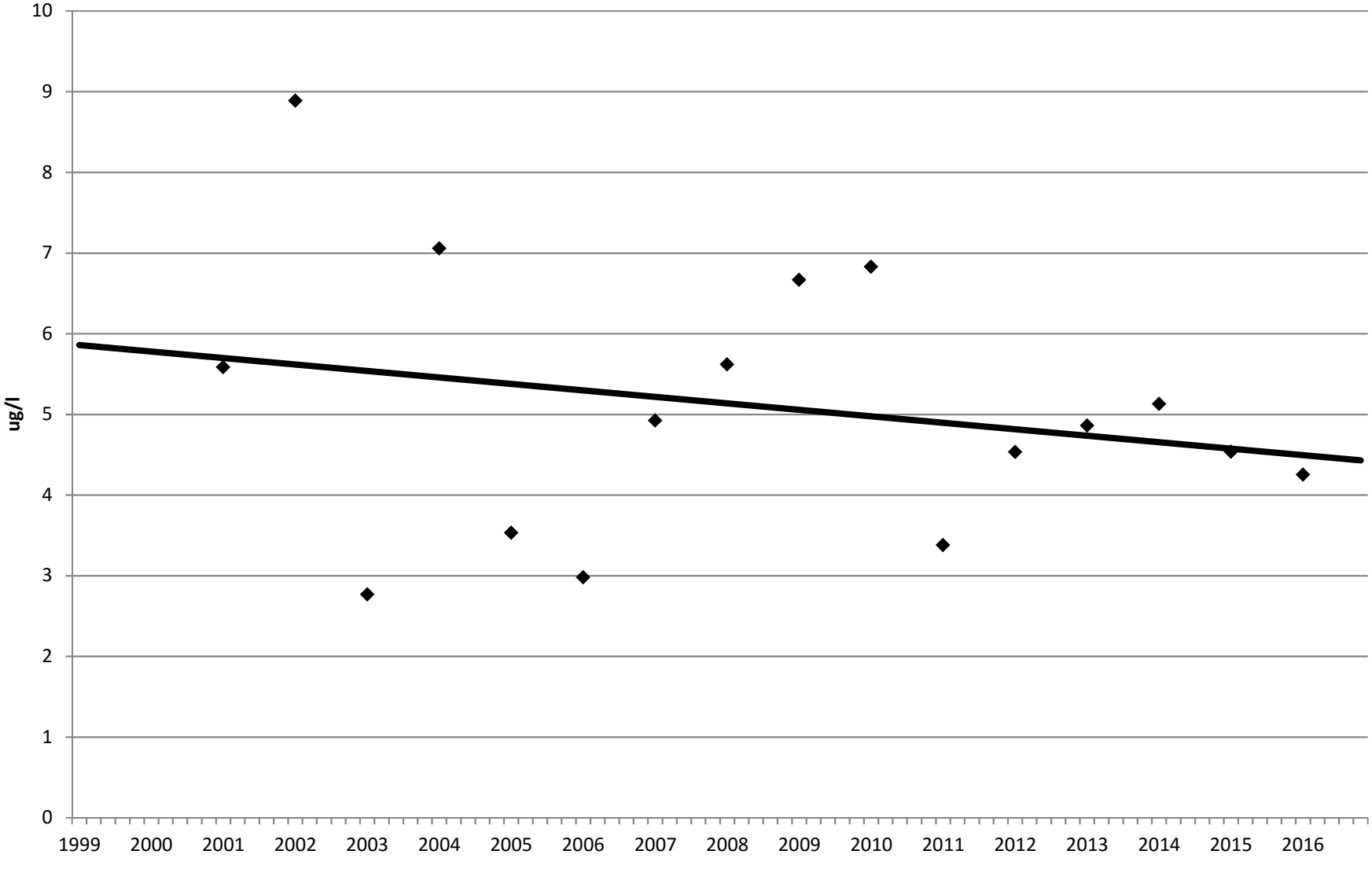


Figure 5-4
Chlorophyll-A
Lake Worth Lagoon-N

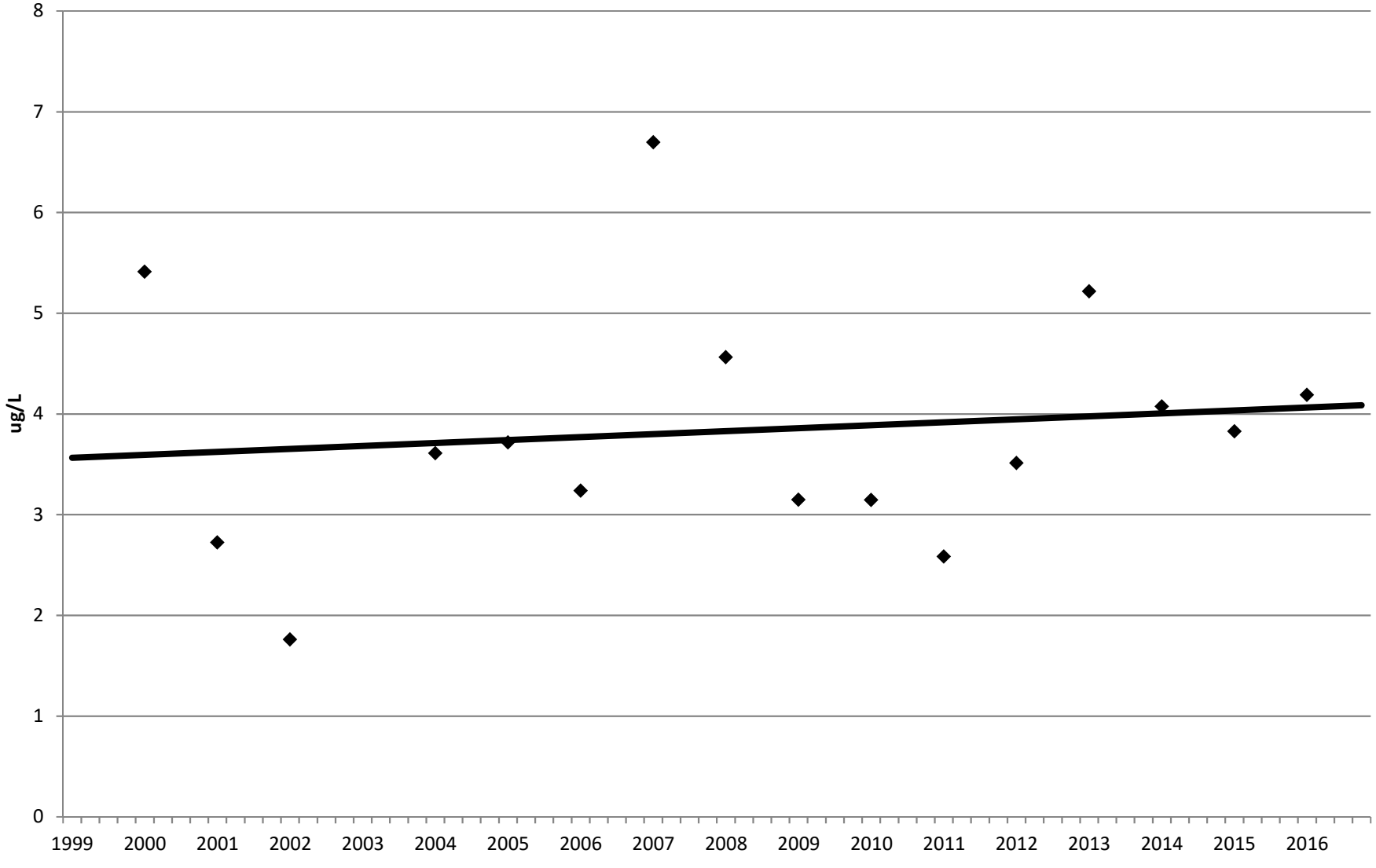


Figure 5-4
Chlorophyll-A
Lake Worth Lagoon-C

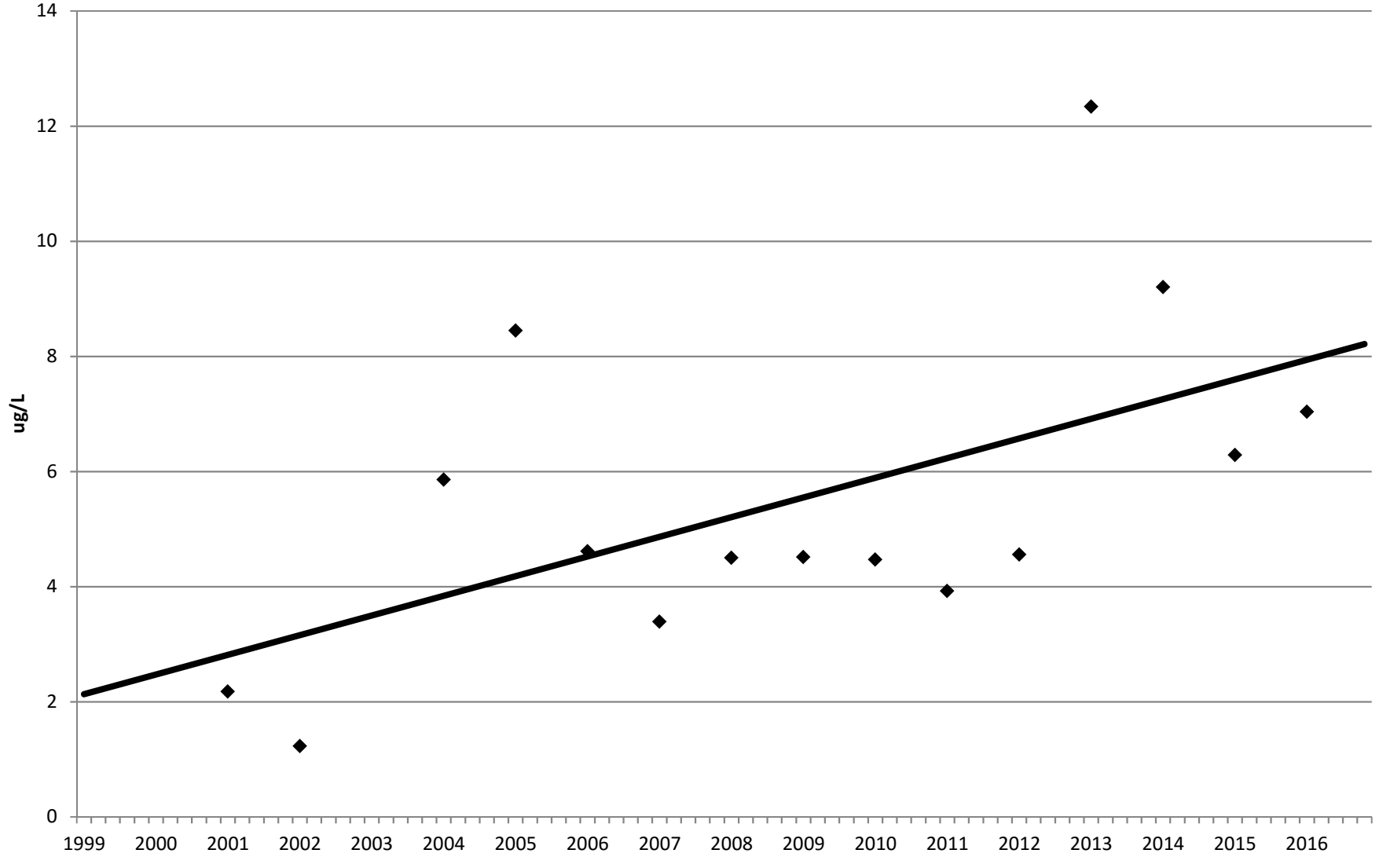
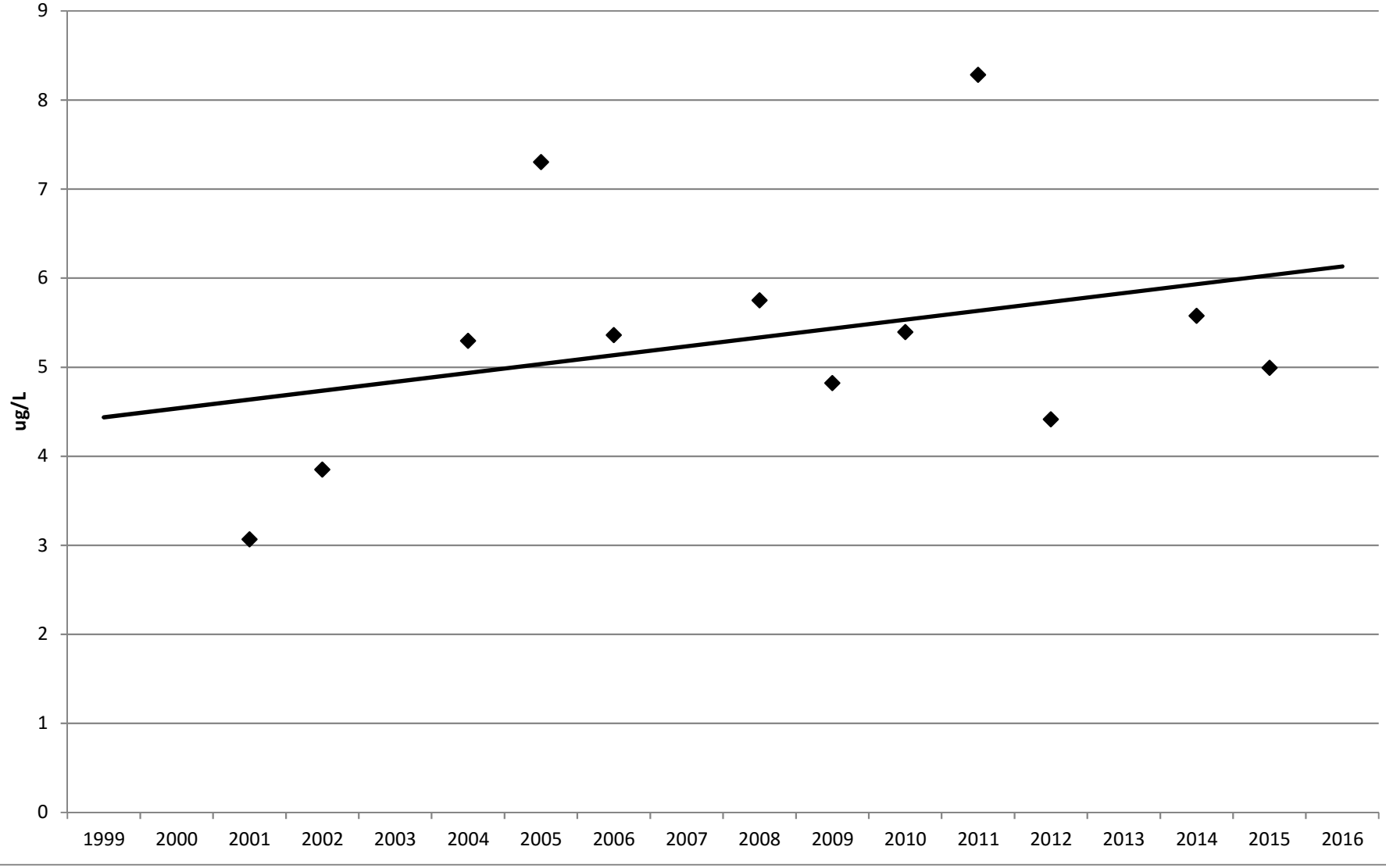
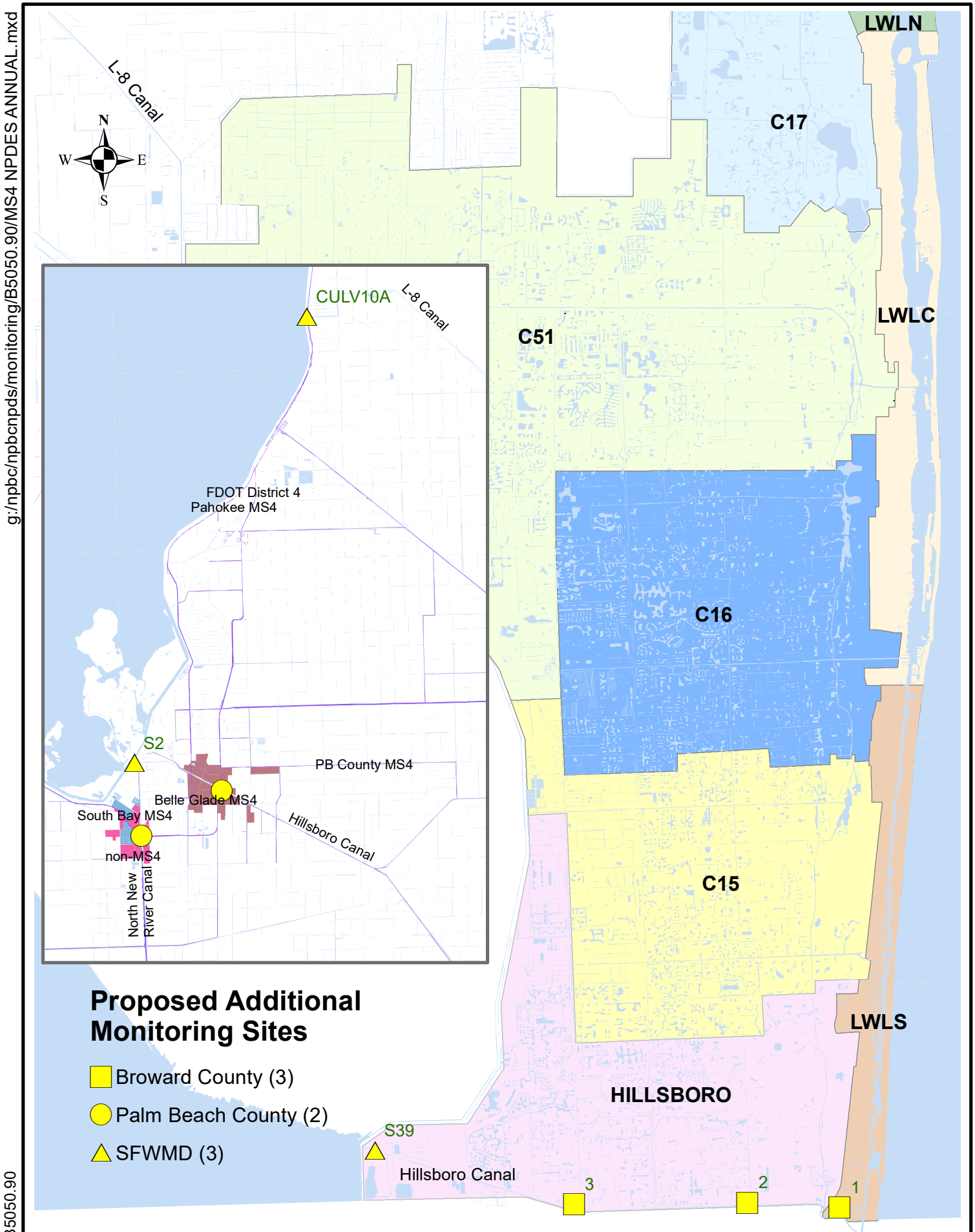


Figure 5-4
Chlorophyll-A
Lake Worth Lagoon-S





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Proposed Additional
Surface Water Quality Monitoring Stations

Figure 5-5