

Village of Wellington/Acme Improvement District 2016 Water Quality Report

August 1, 2015 to July 31, 2016

Prepared By

MOCK • ROOS
CONSULTING ENGINEERS



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ELLINGTON

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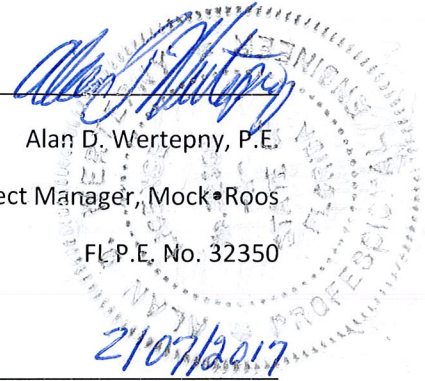
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Report Certification

Engineer's Certification

I hereby certify, as a Professional Engineer in the State of Florida, that this 2016 Water Quality Report for the Village of Wellington was assembled under by direct responsible charge based on information received and coordinated with the Village of Wellington. This certification is provided in accordance with Florida Board of professional Engineers Rule of Certification under Chapter 61G15-23.003.



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Executive Summary

This annual report serves to comply with the annual reporting requirements of the South Florida Water Management District (SFWMD) Permit No. 50-00548-S (Application No. 070330-35, Condition No. 13 and Application No. 090901-13) and provides an annual update for water quality and Best Management Practices (BMP) under the purview of the Village of Wellington (Wellington) and the Acme Improvement District (AID).

Wellington/AID continues to make strides to improve surface water quality discharged to the Regional Surface Water System (C-51 Canal) by implementing stormwater management programs to meet the target, Total Phosphorus level of 50 parts per billion (ppb). A summary of the water quality sampling results for the past ten (10) years, including this past year, are presented in the table below. All sampling and analyses conducted for the ten year reporting period are in compliance with the requirements of the permit and approved sampling and testing standards and procedures.

	Total Phosphorus Data 2007 through 2016 Reporting Period									
	2016 (ppb)	2015 (ppb)	2014 (ppb)	2013 (ppb)	2012 (ppb)	2011 (ppb)	2010 (ppb)	2009 (ppb)	2008 (ppb)	2007 (ppb)
Total Phosphorus (Geometric Mean)	42.5	41.5	42.3	42	28.6	29.6	45.1	45.2	28	38.5

Note: Testing results listed are composite results of the geometric mean for all five (5) C-51 discharge locations for the annual report period – August 1st to July 31st.

As shown in the table, Total Phosphorus levels for the ten-year reporting period remain well below the 50 ppb target level demonstrating that Wellington Stormwater Management Programs are effective.

Activities over the past ten-years contributing to achieving the total phosphorus target level include:

- Continued implementation and enforcement of Best Management Practices and Ordinances
- Continued removal of TP loadings through maintenance of the stormwater management system (canal dredging, canal sump cleaning, mechanical weed harvesting, pump station trash racks, debris removal, street sweeping, and equestrian waste management and disposal)
- Continued implementation and enforcement of Stormwater Permit Criteria Requirements for Land Development
- Continued monitoring and maintenance of the vegetation in the Wellington Environmental Preserve

Section 1 – Introduction

Pursuant to the SFWMD Permit, Wellington/AID continues to take significant strides to reduce Total Phosphorus levels and improve the quality of surface water discharged to the regional surface water system. This annual report provides the results for the storm water quality testing over the past year, as well as, the actions taken by Wellington/AID to maintain and improve surface water quality.

Section 2 – Surface Water Sampling Program - Phosphorus

Wellington collected and tested approximately 806 surface water samples for Total Phosphorus from 31 sampling sites (shown on Exhibit A) between August 1, 2015 and July 31, 2016. As prescribed, Wellington collected samples after each storm event and/or bi-weekly at each location. The sampling locations include the five (5) locations where the Wellington/AID system discharges to the Regional Water System (C-51 Canal). All samples were collected and tested in accordance with accepted standards and protocols. Wellington personnel collected all samples. Total Phosphorus testing was conducted by Pace Environmental, Inc. of Ormond Beach, Florida, a private, independent laboratory.

A summary of the annual aggregate water quality sampling results for the five (5) regional discharge locations for the ten years of data is provided in the table below:

	Total Phosphorus Data 2007 through 2016 Reporting Period									
	2016 (ppb)	2015 (ppb)	2014 (ppb)	2013 (ppb)	2012 (ppb)	2011 (ppb)	2010 (ppb)	2009 (ppb)	2008 (ppb)	2007 (ppb)
Total Phosphorus (Geometric Mean)	42.5	41.5	42.3	42	28.6	29.6	45.1	45.2	28	38.5

Note: Testing results listed are composite results of the geometric mean for all five (5) C-51 discharge locations for the annual report period – August 1st to July 31st of the following year.

As shown in the table, the annual geometric mean for Total Phosphorus levels for the ten-year reporting period remain below the 50 ppb target level.

The August 1, 2015 – July 31, 2016 test results for each of the five (5) C-51 discharge locations are provided in Exhibit B. The spreadsheet provided is color coded. Green cells contain Phosphorus results less than 0-50 ppb. Blue cells contain results between 51-150 ppb. Red cells contain results over 150 ppb. Use of annual geometric mean values to represent annual data sets is consistent with using the Florida Department of Environmental Protection (FDEP) impaired water rule and applicable numeric nutrient criteria.

Exhibit C provides a summary of the data for all the sampling locations that are a part of Wellington’s surface water quality sampling program for August 1, 2015 – July 31, 2016. As shown in Exhibit C, the highest annual geometric mean levels are in Basin B at Sites 63R and 63P. Land uses adjacent to these sites include agricultural uses (equestrian, tree nursery, and residential). Per State Statutes, Best Management Practices (BMPs) for equestrian and nurseries fall under the authority of the Florida Department of Agricultural and Consumer Services (FDACS).

Section 3 – Best Management Practices and Infrastructure Maintenance

Wellington has adopted and implemented a variety of Best Management Practices (BMPs) geared toward reducing Total Phosphorus – either by source control or by operational and maintenance activities. Key practices and revisions are described below.

Fertilizer Control

As part of Wellington’s BMP Ordinance (No 2012-12), the Village adopted standards to enhance Best Management Practices for fertilizer storage and application.

Key provisions of this Ordinance include:

- Fertilizers containing an excess of two percent phosphate/phosphorus per guaranteed analysis label shall not be applied to turf grass, pastures, paddocks, or used in nurseries unless justified by a soil test.
- Fertilizers in excess of two percent phosphate/phosphorus shall not be applied within ten feet of the edge of water or within ten feet of a drainage facility.
- Liquid fertilizers in excess of two percent phosphate/phosphorus shall not be applied through an irrigation system within ten feet of the edge of water or drainage facility.
- Fertilizers must be applied in accordance with the published application rates and frequencies. No additional application of fertilizers is permissible unless soil tests determine a deficiency.
- Fertilizers and grass clipping shall be removed from impervious surfaces and prevented from entering the surface water system.
- Commercial fertilizer applicators must possess required certifications and licenses and must register with Wellington.

Licensed Village Code Compliance Officers are responsible for making inspections of fertilizer storage areas to ensure compliance with the provisions of this section of the Code of Ordinances. Wellington also has developed a Public Education Campaign to educate residents on the proper types, storage, use amount and application of fertilizers. The Village will continue to enforce the provisions of the Ordinance.

Livestock Waste Storage and Disposal

The Village Code of Ordinance Section 30-153 provides standards for the storage and disposal of livestock waste.

Provisions in the Ordinance include:

- Each livestock facility must have an approved waste storage area

- Livestock waste storage areas are required to have an impermeable floor with sidewalls on three sides.
- The size of the storage area must be proportioned to the number of livestock served by the storage area.
- Approved roll-off or dumpster containers must be placed on a concrete or asphalt pad with a lip around it to contain seepage.
- All livestock waste storage areas must be covered.
- Waste storage areas must be located at least five (5) feet away from any roof overhang, fifty (50) feet from any public drainage conveyance or drainage inlet, at least one hundred (100) feet from any waterbody and at least one hundred (100) feet from a potable water supply well.
- All livestock waste must be hauled to an approved disposal site and haulers must be registered.
- Haulers are required to submit annual reports on the amount of material removed.

Equestrian waste haulers reported 135,000 cubic yards of collected manure and bedding material properly disposed material for the reporting period. This equates to 44,000 tons of material removed. Based on the Florida Department of Agricultural and Consumer Services, the BMP manual for equine operations, the average phosphorus concentration is 2.5 pounds per ton of manure containing bedding material. Therefore, the amount of phosphorus removed by this program is estimated at 110,000 pounds.

Mechanical Weed Removal

The Village uses and maintains a weed harvester as part of its overall maintenance program to keep Village waterways functional for stormwater conveyance, as well as appearance. The weed harvester is able to cut five and a half (5 ½) feet below the water's surface. Material is removed from the water and transferred to a dump truck where it is disposed of at the Public Works Storage site in vegetation containers for periodic removal by a contracted waste management service. The need for operation of the weed harvester is determined by visual inspection of the waterways. During the 2015-2016 reporting period, 96 cubic yards of material were removed.

Based on the Florida Stormwater Association Nutrient Removal Assessment Tool, this equates to 80 pounds of phosphorus removed.

Canal Dredging/Sloping

Canal dredging is carried out for the purpose of gathering bottom sediments and reusing them to stabilize the canal right-of-way. Proactive maintenance of the Village's canal system is necessary to keep the waterways navigable, clean and functional for stormwater conveyance, with the added benefit of enhancing the visual appearance. Therefore, the Village of Wellington Public Works Department performs canal dredging maintenance work throughout the Village waterways. Annual and periodic inspections determine what canals, if any, have sediment buildup. Once these canals are identified, the depth of the canal is measured and, if determined to be insufficient, are placed on the schedule to be dredged.

In reporting period October 2015 – September 2016 Wellington’s canal sloping and dredging program removed 37,200 cubic yards of material from the waterways. Based on the Florida Stormwater Association Nutrient Removal Assessment Tool, this equates to 32,045 pounds of phosphorus.

Canal Sump Cleaning

Wellington installed seven canal sumps within its stormwater management system to collect and remove bottom sediments. Since 2011, the Village has removed 240 cubic yards of sediment material containing 182 pounds of phosphorus. Five of the seven sites are located in Basin B, south of Pierson Road, within Canals C-2, C-4, C-6, C-7 and C-8. The other two are in Basin A, south of Pump Station 7 in the C-2 Canal and south of Pump Station 6 in the C-8 Canal. More information on this sediment removal program is contained in SFWMD Permit Application No. 090901-13. For the current reporting period, monthly inspections identified that there was minimal material in Wellington’s canal sumps, so no material was removed.

Pump Station Trash Rack Debris Removal

Trash rakes are located at Pump Station #3, 4, 6, 7, 8, and 9 and are part of the maintenance activities used to remove trash and debris from the Village’s waterways. These rakes are programmed to automatically turn on and run whenever pumps are discharging water. The rakes place the debris to the side of the canal to be pick up manually and transported to the Public Works Storage site in vegetation containers for periodic removal by a contracted waste management company.

In the period of October 2015 – September 2016, Wellington’s pump station trash racks removed 276 cubic yards of material. Based on the Florida Stormwater Association Nutrient Removal Assessment Tool, this equates to 230 pounds of phosphorus.

Street Sweeping

Wellington maintains a Street Sweeping Program that collects and removes debris (paper, leaves, vegetation, metals, waste products, sediments, etc.) from streets and roadways within the Village. This program has two primary benefits – flood prevention and improved stormwater quality. Debris can cause blockages in the stormwater facilities resulting in localized flooding during rainfall events. Vegetation and other materials can break down to release nutrients to the waterways. Collection and removal of this debris prevents these materials from reaching and degrading Wellington’s Stormwater Management System. Sweeping is performed daily following a pre-determined route from Monday through Thursday. Street sweeping frequency varies by specific roadway and may be weekly, bi-weekly, or monthly. During the October 2015 – September 2016 reporting period, 5,086 miles of roadway were swept and 1,150 cubic yards of material were removed. Based on the Florida Stormwater Association Nutrient Removal Assessment Tool, this equates to 952 pounds of phosphorus.

Catch Basin Cleaning

Wellington has an inventory of 2,173 catch basins. In the 2015-2016 reporting period, these catch basins were inspected approximately twice a month, for accumulation of trash, debris, vegetation, sediment and general condition. Any material discovered in these catch basins was collected and placed in bags for disposal.

In the period from October 2015 – September 2016, Wellington’s catch basin cleaning program removed 900 cubic yards of material. Based on the Florida Stormwater Association Nutrient Removal Assessment Tool, this equates to 860 pounds of phosphorus.

Culvert Cleaning

In 2015, Wellington’s inventory of culverts totaled 35.4 miles. Wellington has a goal to inspect at least 10% of these culverts annually. During the 2015-2016 reporting period, 4.3 miles were inspected and Wellington’s culvert cleaning program removed 91 cubic yards of material. Based on the Florida Stormwater Association Nutrient Removal Assessment Tool, this equates to 76 pounds of phosphorus.

Phosphorus Load Reduction Goal

SFWMD Permit 50-00548-S (Application No. 090901-13) for construction and operation of 7 sediment sumps established a goal of removing 82 pounds of phosphorus a year. Historically, this program has averaged only 30 pounds a year. Recently, Wellington submitted an application to modify this permit requirement to perform sump cleaning on an as needed basis. The goal of removing 82 pounds per year from Wellington’s stormwater system is being exceeded by the combined programs described above. Wellington’s 2015-2016 program removed an estimated total of 110,952 pounds of phosphorus from the stormwater management system (equestrian waste and street sweeping) and an estimated 34,243 pounds of phosphorus from the stormwater management system (mechanical weed removal, canal dredging, canal sumps clean, pump station trash rack debris removal, catch basin cleaning, culvert cleaning) prior to discharging into the C-51 Canal.

Section 4 – Other Programs

Land Development Permit

In the 2015-2016 reporting period Wellington received 224 proposed site plan applications and approved 196 plans. The review and approval included both temporary and permanent stormwater treatment practices. Project applicants were advised that coverage may be required under the FDEP National Pollutant Discharge Elimination System (NPDES) Construction Generic Permit (CGP) and/or a SFWMD Environmental Resource Permit (ERP). During the reporting period, 54 projects were notified of needing CGP coverage and ERP coverage. Wellington's engineering personnel confirmed that 23 required and obtained CGP and ERP coverage. During construction of both Wellington-owned and private sites, Wellington engineering staff performed construction site inspections which included observation of proper stormwater, erosion and sedimentation control BMPs. During the reporting period, 64 construction projects were inspected and a total of 3,000 inspections were carried out. Wellington issued 74 Notices of Violations, 2 Stop Work Orders, and 3 fines.

Wellington Environmental Preserve

Wellington's Environmental Preserve (Section 24) is located in Section 24, Township 44 South, Range 40 East, Palm Beach County Florida (west of water quality monitoring Sites 9-In and S24-Out). Section 24 includes 251.5 acres of wetlands and a 364.4-acre impoundment. The primary purpose of the impoundment is for stormwater storage and attenuation (flood protection). Additional benefits include passive recreation and stormwater water quality improvement. Wellington staff inspects and maintains this facility including the control of invasive exotic vegetation and monitoring the growth of the natural vegetation and planting. In the reporting period, the invasive exotic coverage was 3%, the marsh coverage was 88.5%, and the survivorship of the tree/scrub species was 95%. Review of Exhibit C indicates that the annual geometric mean for total phosphorus in water leaving the impoundment was reduced by 64%

Florida Department of Agricultural and Consumer Services (FDACS)

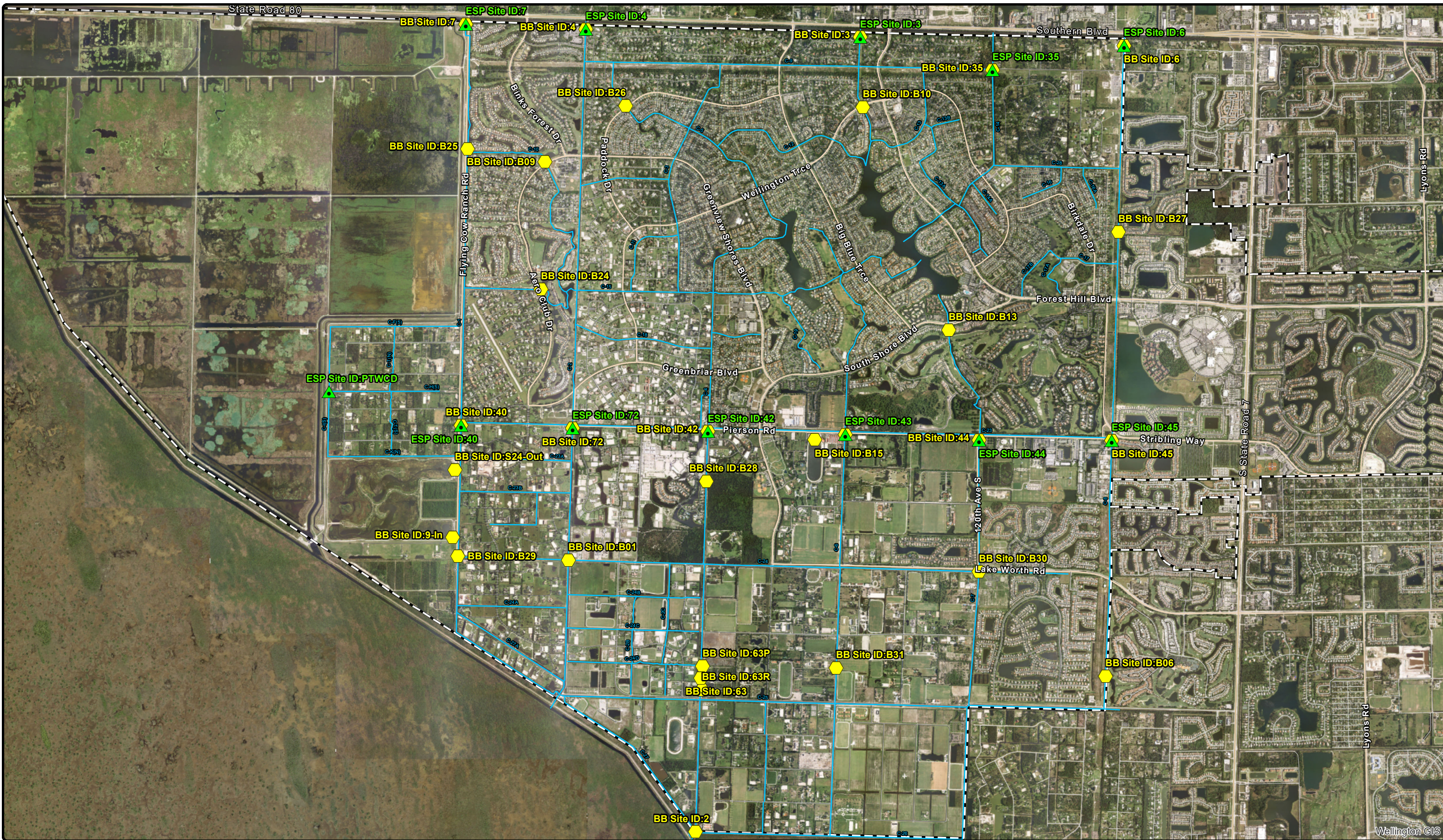
In June 2016, FDACS sent a letter to Wellington indicating that Wellington's BMPs for equine operations and nurseries are in a jurisdictional conflict with Florida Statutes and the FDACS BMP program. A bona fide farm operation on land classified as agricultural is regulated through implemented best management practices adopted either by FDACS or the SFWMD. Since SFWMD has not adopted Wellington's BMPs as their own, the FDACS BMPs are applicable. In response, Wellington has initiated discussions with FDACS to develop a cooperative program. An interlocal agreement is underway that will cover a collaborative and resource-sharing program. Joint activities include BMP enrollment in FDACS program, BMP enrollment training, record reviews, on-farm record keeping and reporting frequency, frequency of farm facility inspections and enforcement. Updates and success of this program will be reported in future Wellington Annual Water Quality Annual Reports.

Palm Beach County Waste Pilot Program

During 2015 - 2016, Wellington actively participated in Western Community meetings with Palm Beach County Commissioner McKinley. These meetings covered review of local government priorities and collaboration on issues of

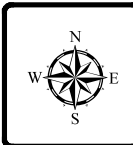
mutual interest. One of the topics of mutual interest included continued growth of equestrian activities and the need for improved management of equine waste. An Equestrian Waste Management focus group was formed to research long term solutions for proper disposal of equestrian waste. Discussion items by the Focus Group included estimates of the volume of livestock waste, current disposal options, limited number of local disposal sites, hauling distances, illegal dumping and code enforcement, impacts on stormwater quality, Palm Beach County Solid Waste Authority tipping fees, disposal costs, alternative disposal options, and current zoning restrictions for recycling or processing livestock waste.

As a result of these discussions and meetings with Palm Beach County staff, the County has proposed an amendment to the Unified Land Development Code to allow a Pilot Project for an equestrian waste recycling facility, limited to the Special Agriculture future land use in the Glades Tier, in order to allow this use closer to the equestrian hub in Wellington, Loxahatchee Groves, and the surrounding Western Communities. The proposed amendment will promote sustainable options by establishing opportunities for the recycling of equestrian waste in an efficient, environmentally sustainable manner. The first reading of the amendment to the Board of County Commissioners was held on January 26, 2017 with an adoption hearing scheduled for February 23, 2017. Wellington will continue to monitor and support this Pilot Program in hope that it may result in a long term solution.



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000000 WORK ORDER #	SHEET NO.	DATE	1/18/2017
	1	DRAWN	Christian Nakoley
	1	SCALE	1 in = 1 mile
	1	REQUESTED	Christine Wadeigh
	1	FILENAME	ExhibitsMap



Surface Water Sample Sites
Exhibit A
Village of Wellington

- ▲ Everglades Stormwater Program (ESP) Sites
- ⬡ Basin B Bi-Weekly Sites
- Canals
- Municipal Boundary



EXHIBIT B
Wellington C-51 Discharge Sites - TP Data (ppb) and Statistics

DATE	Average Village-Wide Rainfall ≤ 24 hrs. (inches)	Pump Station 3	Pump Station 4	Structure 35	Pump Station 6	Pump Station 7
August 12, 2015	0.56"	50	48	30	39	110
August 26, 2015	<0.10"	49	58	19	50	60
September 9, 2015	<0.10"	62	89	36	65	41
September 23, 2015	0.64"	53	85	28	46	48
October 7, 2015	0.00"	55	87	30	63	41
October 21, 2015	0.00"	53	42	35	43	47
November 4, 2015	<0.10"	220	44	96	25	78
November 18, 2015	0.00"	57	32	77	25	57
December 2, 2015	<0.10"	38	28	29	19	37
December 15, 2015	<0.10"	39	54	30	25	43
December 30, 2015	<0.10"	44	61	46	48	51
January 13, 2016	<0.10"	44	28	24	38	46
January 27, 2016	3.28"	61	74	18	55	56
February 10, 2016	<0.10"	69	59	16	35	39
February 24, 2016	0.41"	81	32	110	42	58
March 9, 2016	0.00"	48	43	28	35	33
March 23, 2016	0.00"	50	26	32	35	31
April 6, 2016	0.00"	43	54	25	30	24
April 20, 2016	0.00"	54	36	22	26	49
May 4, 2016	0.37"	64	86	26	31	45
May 18, 2016	1.96"	44	65	30	31	40
June 1, 2016	<0.10"	42	47	17	32	40
June 15, 2016	0.00"	32	56	38	58	44
June 29, 2016	0.53"	35	120	18	110	42
July 13, 2016	<0.10"	33	88	18	26	31
July 27, 2016	0.11"	30	34	19	42	44
Geometric Mean		50.7	52.2	29.8	38.3	45.3

Target Total Phosphorus Goal for the Annual Geometric Mean is 50 ppb

All Sites Geometric Mean = 42.5

Green	≤ 50 ppb
Blue	>50 ppb, ≤ 150 ppb
Red	>150 ppb

EXHIBIT C
Wellington Total Phosphorus Values
August 2015 - July 2016

DATE ▼	PS2	PS3	PS4	PS6	PS7	35	40	42	43	44	45	72	63R	63P	B1	B6	B9	B10	B13	B15	B24	B25	B26	B27	B28	B29	B30	B31	63	9-IN	S24-Out
8/12/2015	110	50	48	39	110	30	120	230	260	120	54	93	210	180	120	75	110	42	98	59	60	83	100	45	82	78	180	140	150	76	23
8/26/2015	130	49	58	50	60	19	55	110	140	120	60	55	200	150	87	59	190	65	91	50	93	62	57	65	92	53	50	110	140	62	28
9/9/2015	95	62	89	65	41	36	74	110	220	190	43	59	141	69	79	47	130	140	140	54	61	46	62	51	67	65	110	180	71	69	24
9/23/2015	71	53	85	46	48	28	64	110	170	150	60	75	160	82	84	55	110	55	120	67	120	130	52	43	66	62	47	89	94	67	24
10/7/2015	82	55	87	63	41	30	46	100	85	130	54	39	150	720	45	75	60	46	68	47	110	45	33	47	67	55	32	67	71	39	28
10/21/2015	100	53	42	43	47	35	52	78	100	140	54	41	120	460	69	59	270	59	55	57	88	31	58	27	53	56	30	69	76	46	39
11/4/2015	85	220	44	25	78	96	74	100	100	96	66	41	150	480	56	63	45	55	44	58	76	50	44	27	76	59	44	71	120	54	25
11/18/2015	65	57	32	25	57	77	57	71	87	170	82	25	170	550	46	64	64	52	51	55	82	46	47	37	54	53	48	73	66	49	38
12/2/2015	87	38	28	19	37	29	45	54	79	210	70	26	140	300	42	57	37	32	75	69	60	46	32	27	45	79	25	65	54	64	28
12/15/2015	95	39	54	25	43	30	54	98	89	140	68	48	130	240	63	78	30	31	99	82	54	42	34	40	64	56	38	66	70	53	25
12/30/2015	82	44	61	48	51	46	64	56	64	190	76	35	250	110	44	64	48	42	81	68	45	42	34	43	43	50	56	77	74	50	67
1/13/2016	74	44	28	38	46	24	38	51	200	100	65	47	100	130	45	47	44	44	68	120	56	46	33	34	51	38	53	59	71	29	22
1/27/2016	62	61	74	55	56	18	52	74	190	220	49	63	120	190	160	78	44	40	76	210	63	47	39	70	55	61	31	220	65	69	270
2/10/2016	60	69	59	35	39	16	31	64	82	140	55	60	80	160	72	51	58	41	69	100	40	54	52	42	44	58	180	87	79	37	19
2/24/2016	100	81	32	42	58	110	76	91	93	150	72	50	95	340	80	61	51	56	70	120	49	62	41	43	69	58	48	120	84	49	22
3/9/2016	62	48	43	35	33	28	52	68	48	240	67	62	100	230	70	54	53	38	61	80	40	51	27	29	73	58	28	69	61	50	22
3/23/2016	26	50	26	35	31	32	53	80	67	88	47	44	110	310	59	41	52	30	71	61	39	45	26	21	49	58	38	59	38	46	24
4/6/2016	74	43	54	30	24	25	52	78	100	130	56	48	120	120	39	63	47	40	62	50	54	48	36	28	52	86	41	82	76	48	33
4/20/2016	36	54	36	26	49	22	54	88	110	78	53	68	240	260	45	79	57	30	50	41	41	51	23	30	67	67	40	71	69	42	27
5/4/2016	35	64	86	31	45	26	43	92	110	150	86	46	170	540	43	71	96	54	66	49	45	95	28	44	62	56	46	51	45	47	26
5/18/2016	44	44	65	31	40	30	55	95	110	240	72	44	440	680	43	50	45	37	82	33	39	38	36	28	70	48	58	79	55	50	28
6/1/2016	12	42	47	32	40	17	60	95	140	150	55	43	110	840	41	46	31	32	72	32	32	74	49	31	71	41	64	55	66	50	17
6/15/2016	52	32	56	58	44	38	55	85	120	130	45	39	100	640	42	42	39	29	220	37	36	41	43	38	56	72	52	59	67	43	70
6/29/2016	40	35	120	110	42	18	44	66	88	140	52	40	91	400	45	39	40	29	85	42	54	43	25	43	52	86	41	49	57	33	28
7/13/2016	37	33	88	26	31	18	55	60	95	150	84	50	170	290	44	70	48	59	130	39	38	34	27	47	52	47	72	57	58	28	26
7/27/2016	33	30	34	42	44	19	42	61	69	280	52	49	110	180	83	67	47	23	120	31	48	38	32	18	54	42	42	50	46	33	31
Geometric Mean	59.9	50.7	52.2	38.3	45.3	29.8	54.5	82.6	106.7	148.2	60.3	47.7	141.3	267.6	58.8	58.6	59.7	42.9	79.9	58.9	54.9	50.6	38.7	36.6	59.9	58.1	49.8	77.1	70.3	47.8	30.6

Green ≤ 50 ppb
Blue >50 ppb, ≤ 150 ppb
Red >150 ppb

