



Martin County, Florida
Growth Management Department
COMPREHENSIVE PLANNING DIVISION
2401 SE Monterey Road, Stuart, FL 34996
772-288-5495 www.martin.fl.us

COMPREHENSIVE PLAN AMENDMENT APPLICATION

A. General Information:

Type of Application: Text Amendment

Name or Title of Project:

Turner Groves Text Amendment - Policy 4.13A.9(7)(k)

Future Land Use Amendment

Location of Project and Description of Proposal:

N/A

Parcel Control Number(s):

_____	_____
_____	_____
_____	_____
_____	_____

Project within a CRA? Which One?: Not in CRA

Size of Project (Acres): N/A

Current Future Land Use Designation: N/A

Current Zoning Designation: N/A

Proposed Future Land Use Designation: N/A

Proposed Zoning Designation: N/A

Text Amendment

Proposed Elements to Amend:

Policy 4.13A.9.(7)(k)

Description of Text Amendment:

Delete the following phrase: "...a final site plan approval for an initial phase of development within 10 years of the effective date of this amendment."

Property Owner:

Name or Company Name: Turner Groves LTD Partnership

Company Representative: Mitch Hutchcraft, Vice President

Address: 3602 Colonial Court

City: Fort Myers, State: FL Zip: 33913

Phone: 239-210-9040 Email: mhutchcraft@colpcitrus.com

Agent:

Name or Company Name: The MilCor Group

Company Representative: Melissa Corbett

Address: 10975 SE Federal Highway

City: Hobe Sound, State: FL Zip: 33465

Phone: 772-223-8850 Email: Melissac@themilcorgroup.com

Contract Purchaser:

Name or Company Name: N/A

Company Representative: _____

Address: _____

City: _____, State: _____ Zip: _____

Phone: _____ Email: _____

Land Planner:

Name or Company Name: _____

Company Representative: _____

Address: _____

City: _____, State: _____ Zip: _____

Phone: _____ Email: _____

Traffic Engineer:

Name or Company Name: N/A

Company Representative: _____

Address: _____

City: _____, State: _____ Zip: _____

Attorney:

Phone: 772-286-1700

Email: TPM@mccarthysummers.com

Name or Company Name: McCarthy Summers

Company Representative: Terry McCarthy

Address: 2400 S.E. Federal Highway, 4th Floor

City: Stuart

State: FL

Zip: 34994

Phone: 772-286-1700

Email: TPM@mccarthysummers.com

Other Professional:

Name or Company Name: Neale Montgomery

Company Representative: Pavese Law Firm

Address: 1833 Hendry Street

City: Fort Myers

State: FL

Zip: 33902

Phone: 239-336-6235

Email: NealeMontgomery@PaveseLaw.com

B. Applicant or Agent Certification:

I have read this application, and to the extent that I participated in the application, I have answered each item fully and accurately.

Mitch Hutchcraft

Applicant's signature

February 25, 2019

Date

Mitchel A. Hutchcraft

Printed name

NOTARY ACKNOWLEDGMENTSTATE OF: FLORIDACOUNTY OF: LEE

I hereby certify that the foregoing instrument was acknowledged before me this 25 day of FEBRUARY, 2019, by MITCH HUTCHCRAFT

He or she ☒ is personally known to me ☐ or has produced Identification

Notary public signature

Printed name

State of FLORIDA

at-large

Applicant declares:

He/she understands that this application is submitted pursuant to Chapter I, Section 1-11 of the Martin County Comprehensive Growth Management Plan and Chapter 163, Part II (The Community Planning Act) of the Florida Statutes. The public record of this matter will consist of this application, the exhibits, documents or other materials prepared by the applicant and submitted to the Martin County Growth Management Department; information or materials the Martin County Growth Management Department may submit; public comment submitted through the Martin County Growth Management Department; and comments made at public hearings related to this application.

He/she understands the application must be submitted during the established submission period to: Martin County, Growth Management Department, 2401 SE Monterey Road, Stuart, FL 34996. Completeness of application is the responsibility of the applicant. Applications not complete by the sufficiency due date will be returned to the applicant.

Applicant/Owner:

Charles W. Lucas

Print Name



Signature of Applicant

Applicant Agent:

Mitchel A. Hutchcraft

Print Name

Mitch Hutchcraft

Digitally signed by Mitch Hutchcraft
DN: cn=Mitch Hutchcraft, o=King Ranch
Corporation, email=mhutchcraft@kingranch.com, c=US
Date: 2018.02.28 08:17:18 -0800



Signature of Agent

Note: The above noted agent, or owner, if no agent is listed, address and phone number will be used by the County as the single contact for all correspondence and other communication.

Comprehensive Plan Amendment Application

**Proposed Text Amendment:
Amending Policy 4.13A.9(7)(k)**

Support Documentation and Narrative

February 26, 2019

Submitted by:
Turner Groves Limited Partnership

The following information is provided in response to the submittal requirements established in Martin County's "Instructions for an Amendment to the Comprehensive Growth Management Plan". All applicant responses are italicized for clarity.

Application:

As required by the "Instructions for an Amendment to the Comprehensive Growth Management Plan", all application materials have been provided as electronic files in PDF format on a USB flash drive.

*The application is for a **text amendment**, and does not include any amendments to the FLUM, zoning district, or Planned Unit Development.*

Applicant:

For any FLUM amendment and for a text amendment which changes an allowable use of land for a specific parcel, proof of ownership of the property subject to the request must be supplied.

- *The proposed amendment does not require a FLUM amendment.*
- *The proposed text amendment does not change "an allowable use of land"*
- *Therefore, the applicant is not required to provide proof of ownership*
- *The applicant is listed on the attached "Comprehensive Plan Amendment Application"*

Electronic Map Files:

The proposed text amendment does not amend any plat, site plan, zoning or land use. Therefore, no electronic survey, map or digital drawing is required.

Public Participation:

The applicant will support staff's efforts for public participation, and will participate in all meetings scheduled before the LPA or County Commission.

In compliance with the "Instructions for an Amendment to the Comprehensive Growth Management Plan", the applicant will comply with the signage requirements established by the following:

*"For Future Land Use Map changes, text changes to the CGMP applicable to a single property, or zoning changes, in addition to the notice requirements of state law and other elements of this Plan, **signs shall be placed in the right of way** and notice shall be as provided for a zoning district change. All published notices shall provide sufficient information for the public to understand the meaning and impact of the amendment."
[Emphasis added]*

Letters to Surrounding Property Owners:

*In compliance with the “Instructions for an Amendment to the Comprehensive Growth Management Plan”, the applicant is **not required to notify surrounding land owners by mail** because the proposed amendment is not a “proposed land use amendment”, as detailed on Page 4 of 11.*

PART III: APPLICATION JUSTIFICATION

In compliance with the justification requirements, as detailed in the “Instructions for an Amendment to the Comprehensive Growth Management Plan”, the application provides the following justifications, narratives and planning support for the proposed text amendment.

Text Amendment - Overview:

Proposed Text Amendment:

Policy 4.13A.9(7)(k): *In order to protect the allocation of the industrial land base, Martin County may initiate an amendment to remove the AgTEC land use category if the owner, or its designee, has not achieved a Planned Unit Development approval for an initial phase of development within 5 years of the effective date of the amendment., ~~and a final site plan approval for an initial phase of development within 10 years of the effective date of this amendment.~~*

The proposed amendment is a text amendment that deletes language from Policy 4.13A.9 of the CGMP that requires a final site development plan to be obtained for an initial phase of development within 10 years of the effective date of the original amendment. This timeline is not required, and if un-changed, could render the Policy inconsistent with State Statutes. Further, the timeline would precluding on-going coordination between the landowner/applicant and Florida Department of Environmental Protection (DEP) regarding opportunities to facilitate the implementation of the C-23 intercept canal (that is a Central Everglades Planning Project (CEPP) predecessor project required to address the “savings clause” (an obligation within the CEPP program to ensure adequate water supply will be retained for legal, permitted users), and an opportunity to remove nutrients from the C-23 Canal by co-locating a “stormwater treatment area” adjacent to the C-23 intercept canal. This reduction in nutrients is documented in the attached “AgTEC Project Water Quality Treatment Analysis”, and clearly demonstrates the potential of making significant contributions towards achievement of the St. Lucie Basin Management Action Plan (BMAP) nutrient reduction targets.

A more detailed discussion of why the proposed amendment is necessary is provided, below.

Justification Statement:

The proposed text amendment is necessary due to the fact that the text (recommended for deletion) is no longer consistent with State Statutes. More specifically, the timeline established in the policy is now inconsistent with Section 252.363, Florida Statutes, as applied. This section authorizes extensions for permits or other authorizations during and following the declaration of an emergency by the Governor. Consistent with this Section, the land owner has notified Martin County of its intent to claim multiple extensions, in accordance with the requirements of Section 252.363, F.S. Martin County has acknowledged, in writing, the extension of the Final Site Plan requirement for the AgTEC-1 PUD in accordance with the state statute. As a result of statutorily authorized extensions, the deadline has been extended by operation of law beyond the date established in the CGMP.

Second, the requirements established by 9J-5 to specifically establish need and limit allocation were repealed in 2011. Section 163.3177(6)(a).4 now provides that while each future land use category must be defined in terms of uses included, and must include standards to be followed in the control and distribution of...building and structure intensities, “The amount of land designated for future land uses should allow the operation of real estate markets to provide adequate choices for permanent and seasonal residents and business and may not be limited solely by the projected population.” The elimination of the timeline established in Policy 4.13A.9(7)(k) is consistent with the requirements of Section 163.3177.

The land owner continues to advance the vision of the CGMP. Specifically, the original intent of Policy 4.13A.9 of the Martin County CGMP was to establish a land use category that encouraged innovative planning, provided for long term expansion of the tax base and employment opportunities, allowed for the well-planned conversion of agriculture, and encouraged investigation of opportunities to improve natural resource and environmental performance through financially feasible, public/private partnerships. The land owner has been investigating such opportunities, as detailed in the attached “AgTEC Project Water Quality Treatment Analysis”, which is in furtherance of a number of policies contained within Policy 4.13A.9,

Specifically, the application continues outreach to DEP, the South Florida Water Management District (SFWMD) and Martin County in an effort to identify financially feasible, public-private partnerships that would help implement the CEPP Predecessor C-23/C-44 Intercept Canal (which is required to meet the “savings clause”, and is required prior to the full operation of the EAA Reservoir, as provided for in the Central Everglades Planning Project Final Integrated Project Implementation and Environmental Impacts Statement).

In pursuing this concept, the applicant has also submitted a concept that would help eliminate nutrients from the C-23 canal, which could be a significant component in the furtherance of the St. Lucie BMAP. In order to fully coordinate with the appropriate agencies, additional time is necessary and appropriate. Therefore the elimination of Policy 4.13A.9(7)(k) is necessary to undertake the required coordination and implementation without the threat of running out of time.

Additional time is warranted for land owners to assess changing conditions following the “Great Recession”. Since Policy 4.13A.9 (which encourages the expansion of the tax base, provision of industrial and commercial uses, and sustainable development practices) was adopted, Martin County has experienced the impacts of the “Great Recession”, and private land owners have had to re-assess the cost of extension of infrastructure, as well as understand the impacts resulting from the changing nature of retail and industrial development. This can be seen in the proliferation of on-line shopping, a shift to mega-distributors (Amazon), and market limitations exacerbated by workforce challenges.

Similarly, recent planning efforts have focused more on sustainable planning and a greater functional mix of uses (including consideration of water quality opportunities like those being considered within the Land Use category). These market and external economic forces further support the deletion of a timeline that is now inconsistent with State Statutes.

Finally, the proposed text amendment does not change the land use, open space, intensity or any environmental provisions. It simply eliminates a sentence that established an unnecessary timeline, and that runs contrary to the overall vision of Policy 4.13A.9. By deleting the timeline, it provides all parties with the assurance that the coordination can continue along with the outreach to end users and potential environmental partners. These efforts will further implement other provisions of the CGMP, which will ultimately result in environmental benefits, increase in taxable value, and consideration of a more sustainable form of development.

Because of these changes, the proposed request is reasonable and consistent with area land use characteristics.

Consistent with the purposes of the CGMP:

The proposed text amendment brings the CGMP into consistency with State Statutes, while also implementing and strengthening the comprehensive planning process. In fact, the amendment allows the applicant to continue coordination with State and Local agencies in pursuit of opportunities that protect and restore natural resources while maintaining the character, stability and quality of life for present and future County residents.

The text amendment also provides predictability in the planning process so that orderly growth and development decisions can be made in conjunction with environmental considerations.

The text amendment has no adverse impact on the county’s prudent fiscal management, and has no impact on any other goals, objectives or policies of Martin County.

Compatibility with surrounding uses.

The original amendment was found to be compatible with surrounding uses, and since the adoption of the amendment (and due in part to the impacts of the Great Recession), there have been no meaningful changes in the surrounding development pattern.

Since the text amendment does not result in any change to land use, density, intensity, open space or other item that would impact adjacent uses, the deletion of the time line will have no impact on compatibility with surrounding uses.

Consistency with CGMP.

The original amendment was found to be consistent with the CGMP policies, and the proposed deletion of an timeline that is now inconsistent with State Statutes, will not only have no adverse impacts on the purposes of the plan, but it will bring it into consistency with the Statutes. More specifically:

- 1) The elimination of a timeline that is inconsistent with the application of Section 252.363, Florida Statutes, will bring the CGMP into compliance, while also allowing for continued investigations with FDEP, SFWMD and Martin County that could likely help further implement the policies of the CGMP, and allow for a strengthened comprehensive planning process.*
- 2) Consistent with Policy 4.13A.9, the proposed text change will allow time to:*
 - a. investigate opportunities for green development in the region through sustainable, environmentally-friendly and energy efficiency in planning and design;*
 - b. analyze designs that will maintain water quality in excess of the Martin County and SFWMD standards;*
 - c. pursue financially feasible partnership opportunities with state and local agencies to illustrate techniques in water quality enhancement or more environmentally beneficial surface water management practices;*
 - d. evaluate innovative planning practices that would help minimize greenhouse gas emissions and vehicle miles traveled;*
 - e. develop planning principles that further the goal of providing large areas of common open space and provide opportunities for natural lands restoration; and*
 - f. explore ways to cost effectively integrate land management, preservation, agriculture, passive recreation, water quality and water management areas and environmental service activities.*
- 3) The proposed text change facilitates well-planned and orderly growth by allowing for greater coordination with state and local agencies, greater public outreach, and the consideration and evaluation of more sustainable development patterns. The alternative of not accepting the proposed amendment would be inconsistent with State Statutes, and could result in the premature conversion of land, thereby prohibiting more creative options in the future.*

- 4) *The proposed amendment does not create any additional demand on the County's fiscal management. Conversely, the amendment allows for the investigation of alternatives that could establish public-private partnerships to help reduce or eliminate the financial impact of BMAP Nutrient Reduction obligations of local governments or state costs necessary to implement the full suite of CEPP projects.*
- 5) *The proposed amendment does not alter any of the County's other goals, objectives, policies or procedures, but would facilitate greater coordination between the land owner, County, state and regional agencies, and the public prior to advancing with any specific development activities.*

For these reasons, the proposed text amendment should be deemed compatible with the County's CGMP, and recommended for transmittal and adoption.

Environmental Issues.

The original amendment was found to be consistent with the CGMP policies, and established policies that encouraged coordination with other agencies on ways to improve on water quality, open space and sustainable planning. The applicant has demonstrated the proposed deletion of this timeline will bring the policy back into compliance with State Statutes without having any adverse impacts on the purposes of the plan. More specifically:

- 1) *The elimination of this unnecessary timeline will allow for continued investigations with FDEP, SFWMD and Martin County that could likely help further implement the policies of the CGMP, and allow for a strengthened comprehensive planning process.*
- 2) *The proposed text change will allow time to:*
 - a. *investigate opportunities for green development in the region through sustainable, environmentally-friendly and energy efficiency in planning and design*
 - b. *analyze designs that will maintain water quality in excess of the Martin County and SFWMD standards*
 - c. *investigate financially feasible partnership opportunities with state and local agencies to illustrate techniques in water quality enhancement or more environmentally beneficial surface water management practices*
 - d. *evaluate innovative planning practices that would help minimize greenhouse gas emissions and vehicle miles traveled*
 - e. *develop planning principles that further the goal of providing large areas of common open space and provide opportunities for natural lands restoration*
 - f. *investigate ways to cost effectively integrate land management, preservation, agriculture, passive recreation, water quality and water management areas and environmental service activities.*

Concurrency.

The original amendment was found to be consistent with the CGMP policies, and put provisions in place to ensure that concurrency was addressed as development proceeded. The proposed amendment does not diminish the policies the County has in place to review a project against capacity, nor does the amendment diminish a development's obligation to address concurrency as development is proposed. More specifically:

- 1) The elimination of this timeline will allow for development to occur in a well-planned manner, consistent with the policies of the CGMP.*

Expansion of Urban Service Districts.

Not Applicable

Commercial/Industrial

The original amendment was found to be compatible with surrounding uses, and since the adoption of the amendment (and due in part to the impacts of the Great Recession), there have been no meaningful changes in the surrounding development pattern.

The continued designation of the AgTEC land use category is consistent with, and in furtherance of the CGMP, as well as the 2016 Commercial and Industrial Land Analysis, which shows the AgTEC property as "Category A with Compatible Land Use" designation for industrial uses.

Since the text amendment does not result in any change to land use, density, intensity, open space or other item that would impact adjacent uses, the deletion of the arbitrary timeline will have no impact on compatibility with surrounding uses.

Conversion of Agricultural Lands.

The AgTEC policy addresses the retention of agricultural land, as well as the well planned conversion to other uses. This policy was found to adequately address the protection of agricultural uses, and because the text amendment does not result in any change to land use, density, intensity, open space or other item that would result in an adverse, or premature, conversion of agricultural lands, the proposed change is deemed consistent with the CGMP of Martin County.

Urban Sprawl.

The original amendment was found to not have any of the characteristics of urban sprawl, and the deletion of the language that is now inconsistent with Section 252.363, Florida Statutes, will not result in any proliferation of urban sprawl.

Conclusion:

Based on the foregoing information, the proposed amendment to Policy 4.13A.9(7)(k) brings the Martin County CGMP into compliance with State Statutes, allows for further implementation of policies that encourage environmental coordination and consideration of opportunities to enhance natural resources. The amendment provides predictability to the County and applicant, and allows the opportunity to enhance the tax base. These objectives are supported by the land owner's investment backed efforts to secure water and sewer commitments from Port St. Lucie, establishing a minimum 100' environmental reservation along the western property line, and completing an initial PUD within 5 years of the effective date of the amendment.



TO: Mitch Hutchcraft
Vice President Real Estate
King Ranch / Consolidated Citrus

FROM: MacVicar Consulting, Inc.

SUBJECT: AgTEC Project
Water Quality Treatment Analysis

DATE: October 31, 2018

Executive Summary

The C-23 Canal is one of the largest sources of phosphorus pollution to the St Lucie Estuary. The proposed AgTEC Project is located in Martin County south and adjacent to the C-23 canal and immediately west of I-95 as shown in Figure 1. The overall property is approximately 1,700 acres. The conceptual project is a Stormwater Treatment Area (STA) on a portion of the

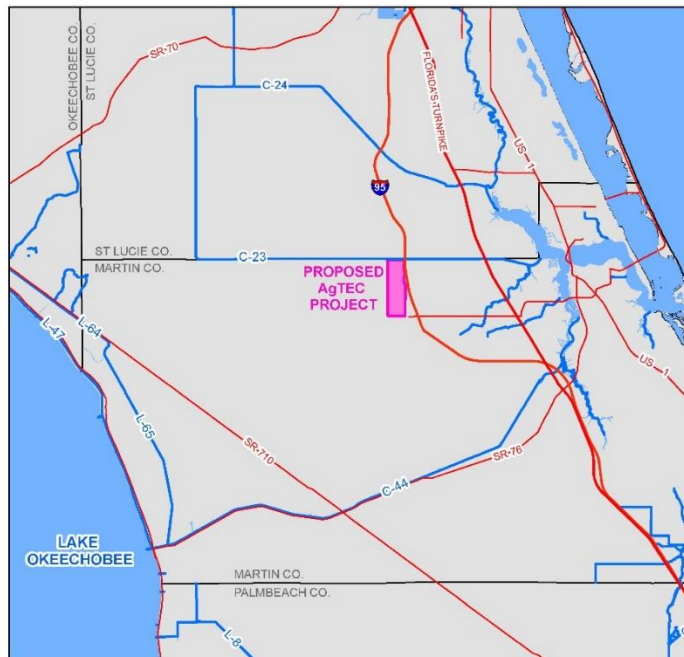


Figure 1. Location of the AgTEC Project.

property. The operational strategy evaluated in this analysis focuses on capturing and treating runoff from the C-23 basin when available and routing it through a STA. After treatment, the water would either be sent back to the C-23 canal or sent south to the St. Lucie River (C-44 canal) and used as make up water for the Savings Clause as described in the Central Everglades Planning Project.

A 400 acre, 600 acre and 1,300 acre treatment area were evaluated for removal of phosphorus and the results indicate the phosphorus load to the St. Lucie Estuary is reduced by 6, 10 and 18 metric tons per year (MT/yr), respectively. Results for the three sizes

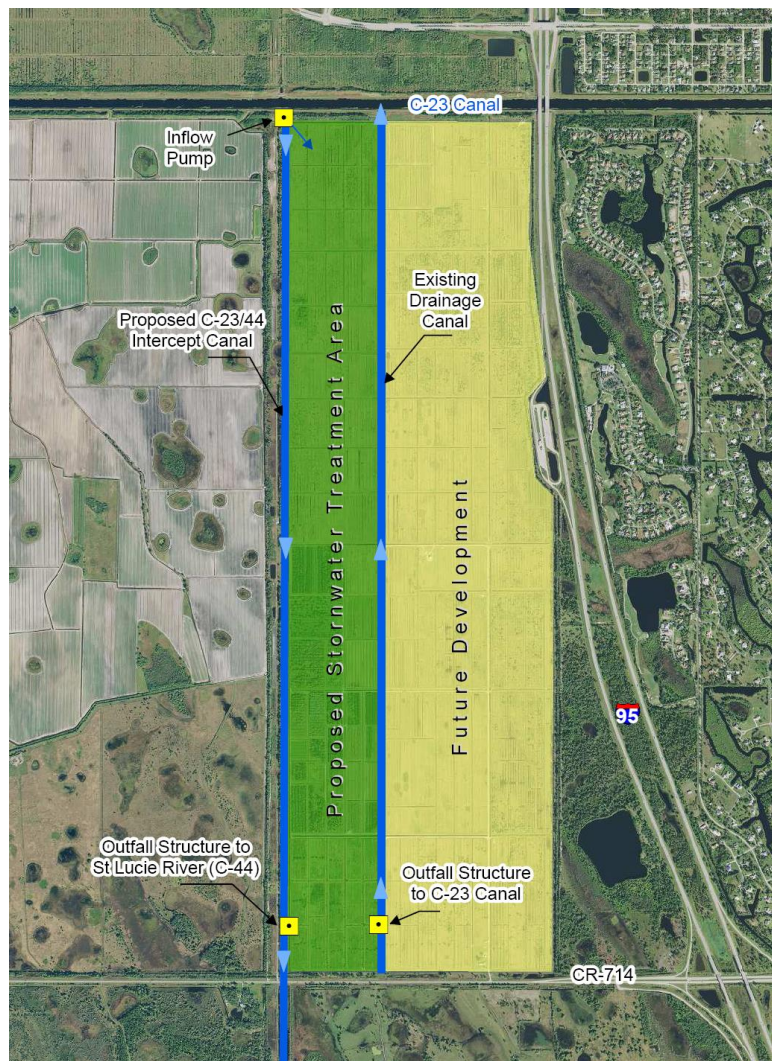
are shown in Table 1. A conceptual layout is shown in Figure 2. The STA model is conceptual and can be applied to any number of site layouts.

Project and modeling details for the proposed options are provided in the Modeling Summary section of this report.

Table 1: AgTEC Analysis Results

	Alt 1	Alt 2	Alt 3
Effective Treatment Area (acres)	400	600	1,300
Inflow Capacity (cfs)	100	150	250
STA Loading (acre feet/year)	20,693	29,549	45,830
STA Loading (MT/yr)	10	15	24
TP Removed (MT/yr)	6	10	18
Inflow TP (ppb)	410	412	421
Outflow TP (ppb)	154	148	101

Figure 2. Conceptual Project Layout (approximately 600 acre STA)



Background

According to the Final St. Lucie River and Estuary Basin Management Action Plan – 2013 (2013 BMAP), the C-23 Basin currently contributes 175,073 lbs/year (over 79 MT/yr) or 29% of the total phosphorus (TP) load to the St. Lucie estuary. The C-23 Basin along with the BMAP extent and other St Lucie basins is shown in Figure 3. Table 2 summarizes the starting loads by entity as described in the 2013 BMAP.

Figure 3 – St. Lucie River and Estuary BMAP Basins (source 2013 BMAP)



Table 2: TP Starting Loads by Entity (source 2013 BMAP)

ENTITY	BASINS 4, 5, AND 6 (LBS/YR)	C-23 (LBS/YR)	C-24 (LBS/YR)	C-44 S-153 (LBS/YR)	NORTH FORK (LBS/YR)	SOUTH FORK (LBS/YR)	TOTAL (LBS/YR)	TOTAL (MT/YR)
Agriculture	3,920	150,255	136,471	66,809	5,988	26,869	390,312	177.04
Copper Creek CDD	-	-	3	-	-	-	3	0.00
FDOT District 4	200	464	226	175	818	659	2,542	1.15
Fort Pierce MS4	-	-	-	-	3,879	-	3,879	1.76
FPL Pond	-	-	-	8,361	-	-	8,361	3.79
Hobe St. Lucie Conservancy District	-	-	-	2,689	-	2,563	5,252	2.38
Martin County MS4	5,930	2,250	-	1,431	4,339	8,419	22,369	10.15
Natural Lands	3,383	19,795	11,341	3,525	9,639	5,054	52,737	23.92
North St. Lucie River WCD	-	-	9,063	-	36,821	-	45,884	20.81
Okeechobee County MS4	-	937	38	-	-	-	975	0.44
Pal Mar WCD	-	-	-	1,008	-	4	1,012	0.46
Port St. Lucie MS4	-	518	2,206	-	32,292	-	35,016	15.88
Sewall's Point MS4	-	-	-	-	384	-	384	0.17
St. Lucie County MS4	-	-	-	-	4,127	-	4,127	1.87
St. Lucie County Non-MS4	-	838	3,961	-	1,273	-	6,072	2.75
Stuart MS4	-	-	-	-	379	2,727	3,106	1.41
Tradition CDD	-	-	1,903	-	7	-	1,910	0.87
Troup-Indiantown WCD	-	-	-	12,623	-	-	12,623	5.73
Turnpike	170	16	-	-	506	233	925	0.42
Verano CDD	-	-	63	-	-	-	63	0.03
TOTAL	13,603	175,073	165,275	96,621	100,452	46,528	597,552	271.03

Table 3 summarizes the total phosphorus allocation and the required reduction by entity. As illustrated in Tables 2 and 3, all agriculture uses in all basin of the 2013 BMAP produce 390,312 lbs/yr (177.04 MT/yr) and the total required phosphorus reduction for agriculture is 307,059 lbs/yr (139.28 MT/yr). These numbers do not include the agricultural use within Special Taxing Districts.

For the 2013 BMAP, stormwater producing entities are required to achieve 30% of the total required reductions which is a total of 104,516 lbs/yr (47.4 MT/yr) for all agriculture, including agricultural land in Special Taxing Districts.

Table 3: TP Allocations and Total Required Reductions (source 2013 BMAP)

ENTITY	TP ALLOCATION (LBS/YR)	TP ALLOCATION (MT/YR)	TOTAL TP REQUIRED REDUCTION (LBS/YR)	TOTAL TP REQUIRED REDUCTION (MT/YR)
Agriculture	83,253	37.76	307,059	139.28
FDOT District 4	833	0.38	1,709	0.78
Fort Pierce MS4	1,186	0.54	2,693	1.22
Hobe St. Lucie Conservancy District	1,732	0.79	3,520	1.60
Martin County MS4	7,779	3.53	14,590	6.62
North St. Lucie River WCD	12,250	5.56	33,634	15.26
Port St. Lucie MS4	11,585	5.25	23,431	10.63
St. Lucie County MS4	1,278	0.58	2,849	1.29
St. Lucie County Non-MS4	1,572	0.71	4,500	2.04
Stuart MS4	1,044	0.47	2,062	0.94
Troup-Indiantown WCD	4,504	2.04	8,119	3.68
Copper Creek CDD – <i>de minimus</i>	-	-	-	-
Okeechobee County MS4 – <i>de minimus</i>	-	-	-	-
Pal Mar WCD – <i>de minimus</i>	-	-	-	-
Sewall's Point MS4 – <i>de minimus</i>	-	-	-	-
Tradition CDD – <i>de minimus</i>	-	-	-	-
Turnpike – <i>de minimus</i>	-	-	-	-
Verano CDD – <i>de minimus</i>	-	-	-	-
TOTAL	127,016	57.61	404,166	183.33

Since the adoption of the 2013 BMAP, there have been annual progress reports as well as a 5-Year Review of the St. Lucie River and Estuary Basin Management Action Plan (5-Year Review) which reported the following:

“Through December 31, 2017, 221 projects were completed and an additional 26 underway or planned projects were added to the BMAP. The activities completed to date, including those finished and credited since 2000, are estimated to achieve total reductions of 532,312 pounds per year (lbs/yr) of TN and 139,736 lbs/yr of TP, or 51 % and 35 %, respectively, of the reductions needed to meet the TMDLs.”

Figure 4 shows progress towards the TP TMDL load reductions and Figure 5 illustrates the estimated progress towards the St. Lucie River and Estuary BMAP TP milestones.

Figure 4: Summary of load reductions through 2017 (source: 5-Year Review)

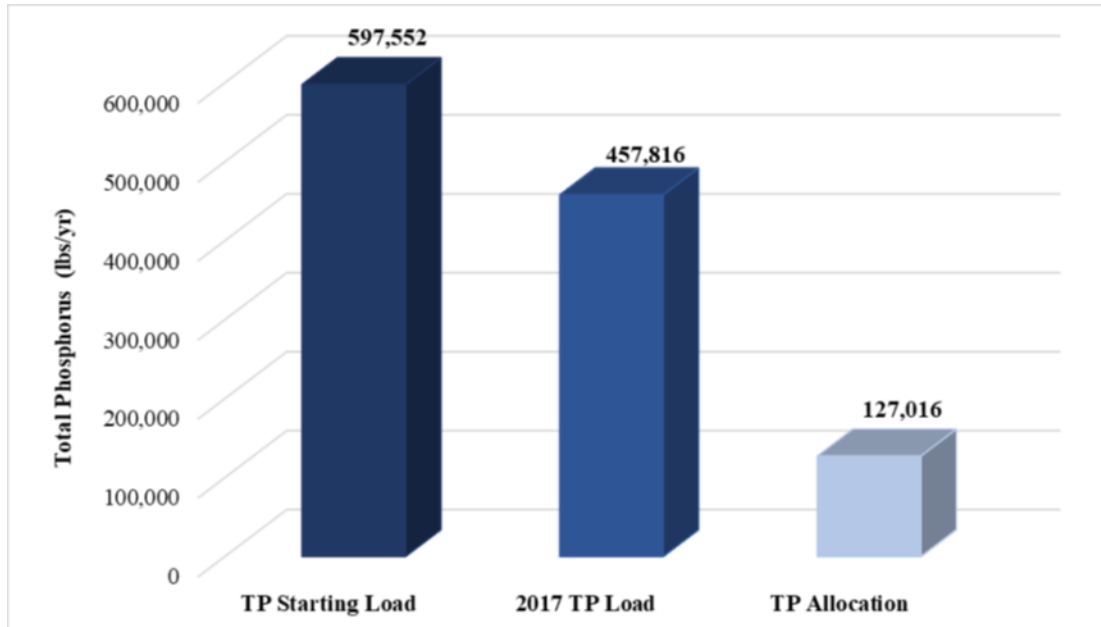
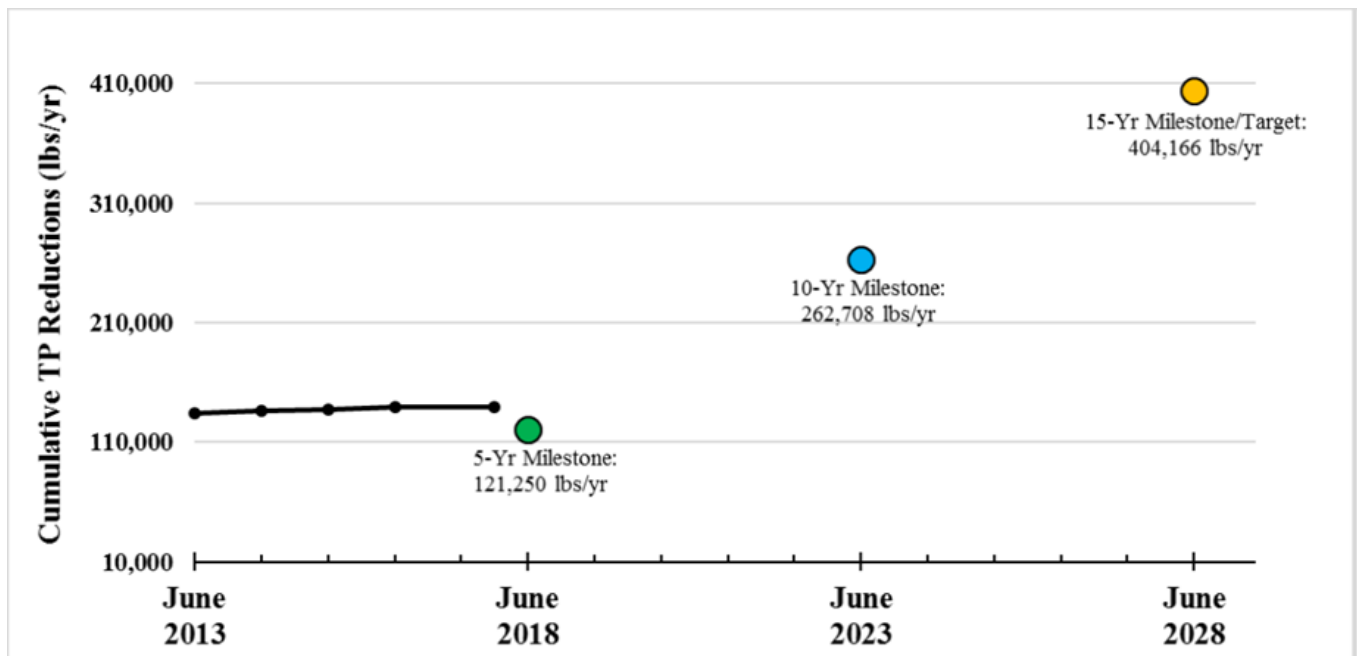


Figure 5: Estimated Progress towards the St. Lucie River and Estuary BMAP TP milestones (source: 5-Year Review)



AgTEC Project Modeling Summary

A daily stormwater routing model was developed to determine the water treatment potential of the AgTEC Project. The model uses C-23 canal flow and concentration, local rainfall, and evapotranspiration. Assumed inflow and outflow rates for each STA size were developed based on optimizing treatment load, outflow concentration and impoundment depth. A daily mass balance approach is applied to the data from May 1, 2007 to April 30 2018 to estimate average annual flow rates and concentration. The average annual data was then applied to the STA model developed for the Comprehensive Everglades Restoration Plan (CERP) Indian River Lagoon South Project Implementation Report to estimate load and concentration reductions. Model results are presented in Figures 6 to 8. Specific data and modeling sources are presented in the STA Model Data and Development section at the end of this memo.

Figure 6 – Model results for Alternative 1

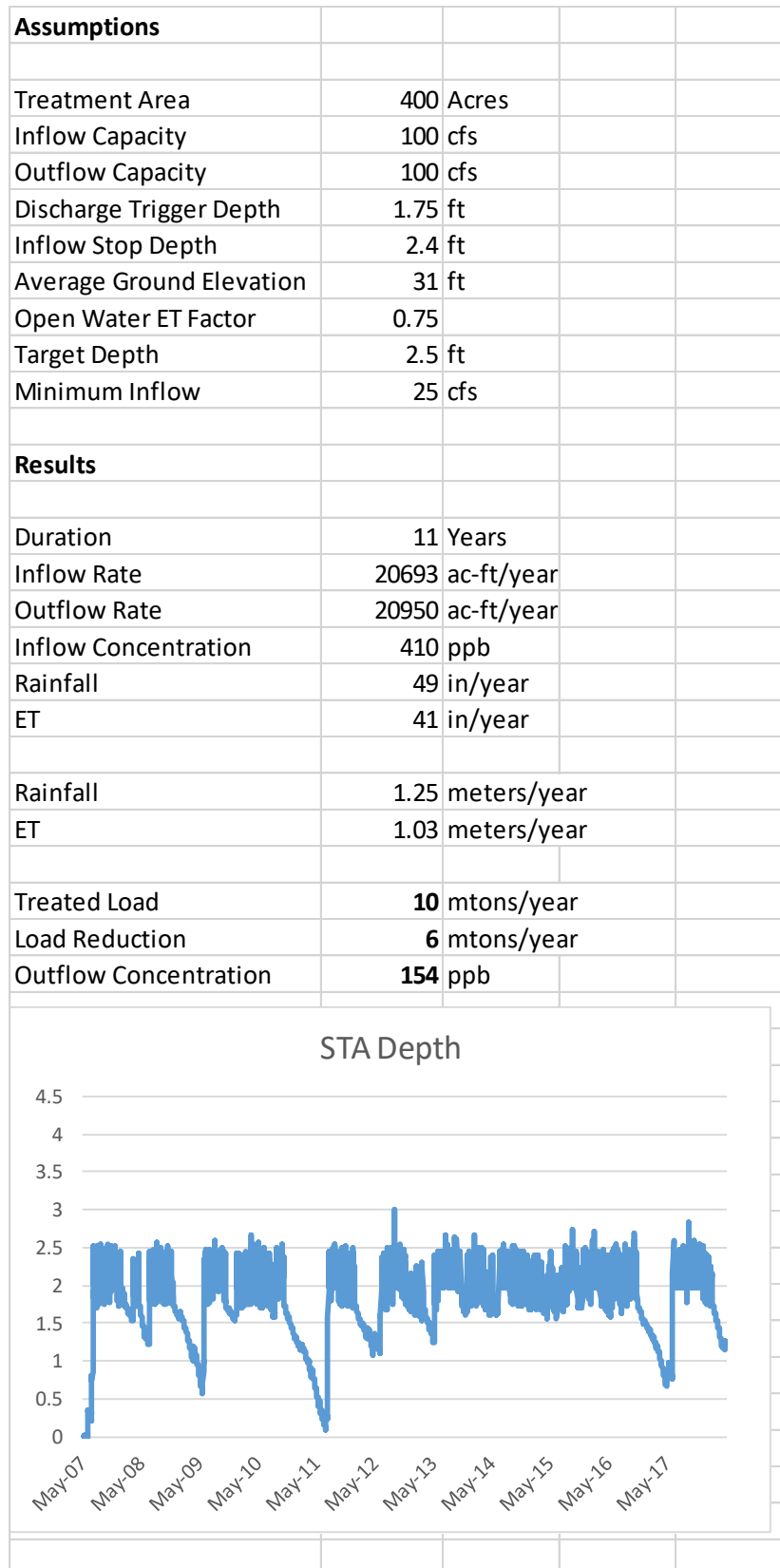


Figure 7 – Model results for Alternative 2

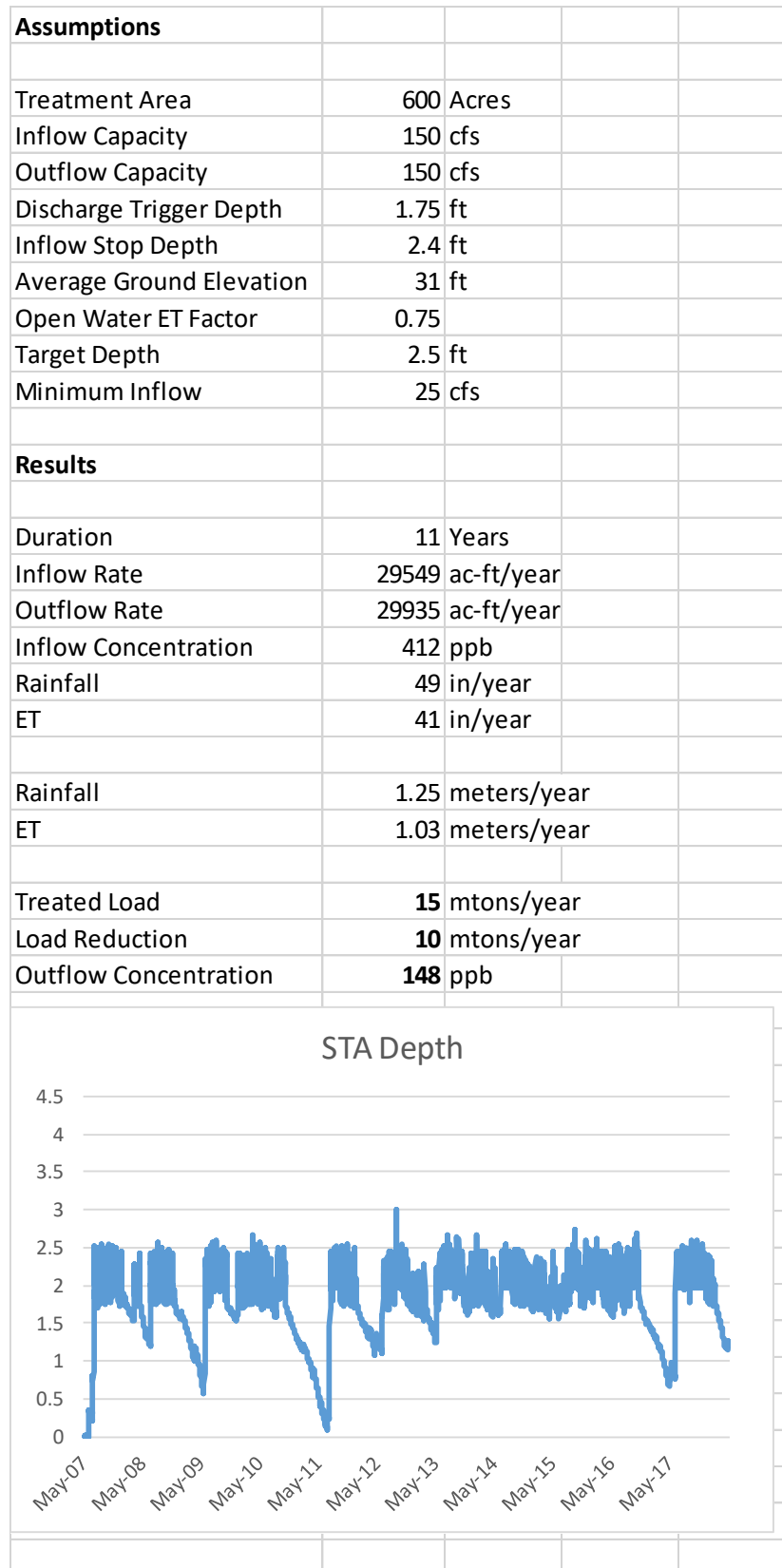
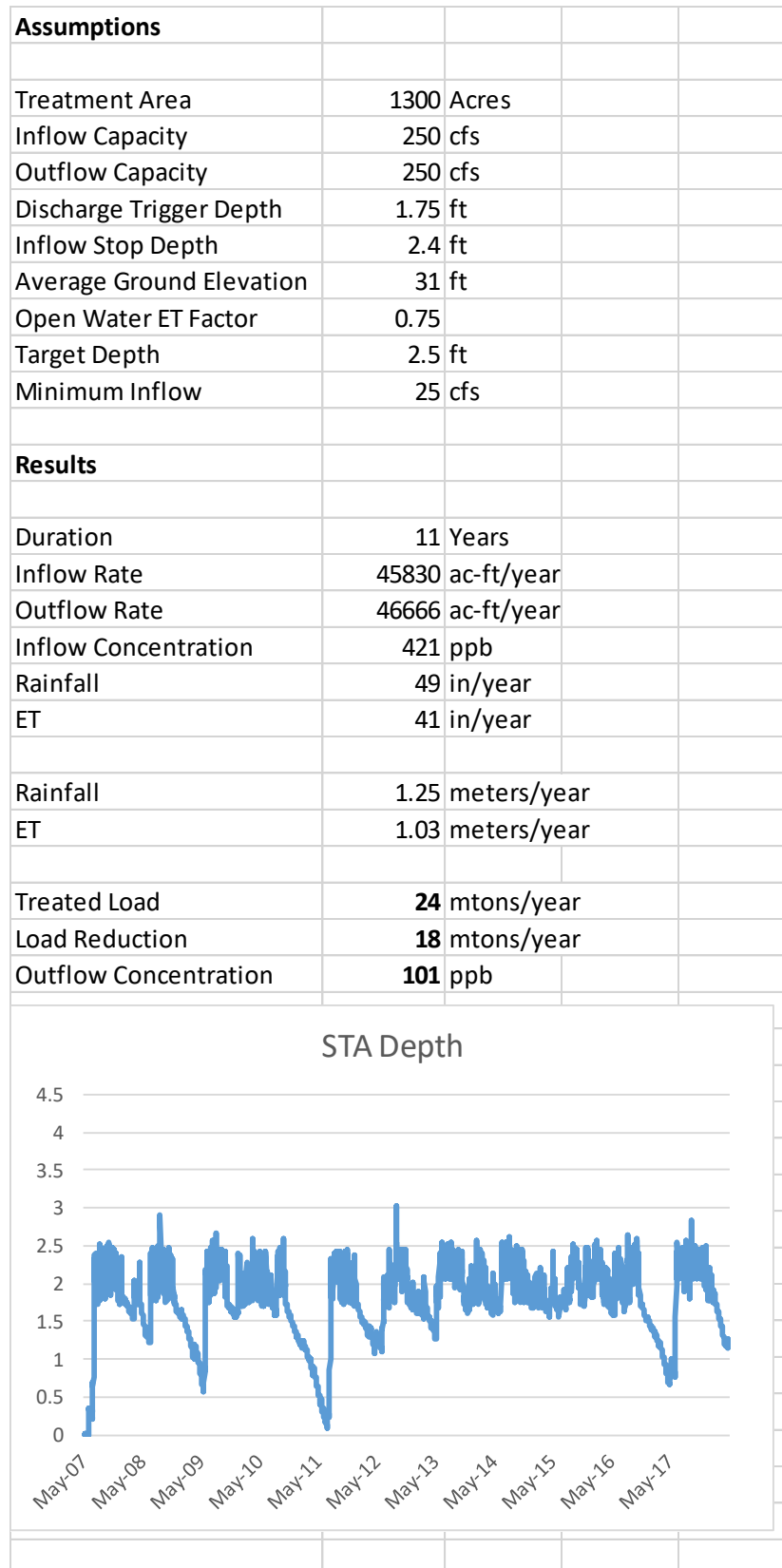


Figure 8 – Model results for Alternative 3



STA Model Data and Development

DBHYDRO Data:

Daily Flow at S-48, DBKey JM106

S48 TP sample concentration, station C23S48

Daily rainfall at S97, DBKey K8698.

Missing S97 rainfall filled in with rainfall at ACRAWX, DBKey UA568.

Evapotranspiration at ACRAWX, DBKey UA588 (missing data filled by interpolation)

Open water ET = $0.75 * ET$

The analysis period of WY 2008 through 2018 was selected based on the availability of a complete record of ET at ACRAWX.

Daily Load Calculation:

FORTTRAN LOAD program adapted from SFWMD C139TPLD.

Water Quality Treatment:

Adapted from RESSTA C23C24 Model (version 2.3).

Treatment parameters from *SFWMD Development of Design Criteria for Stormwater Treatment Areas (STAs) in the Northern Lake Okeechobee Watershed* (2009) for emergent marsh constructed on impacted soils ($k = 16.8 \text{ m/yr}$).

Conceptual Mass Balance:

Stage = Prior Day Stage + (Inflow – Outflow) / STA Acres + Rainfall – ET

Inflow limited by C-23 Flow, STA Stage, and Inflow Capacity.

Outflow limited by STA Stage and Outflow Capacity

Water Quality Improvement Calculations:

Water quality calculations are shown in the following Figures 9 to 11.

Figure 9 – Water quality calculations for 400 acre STA

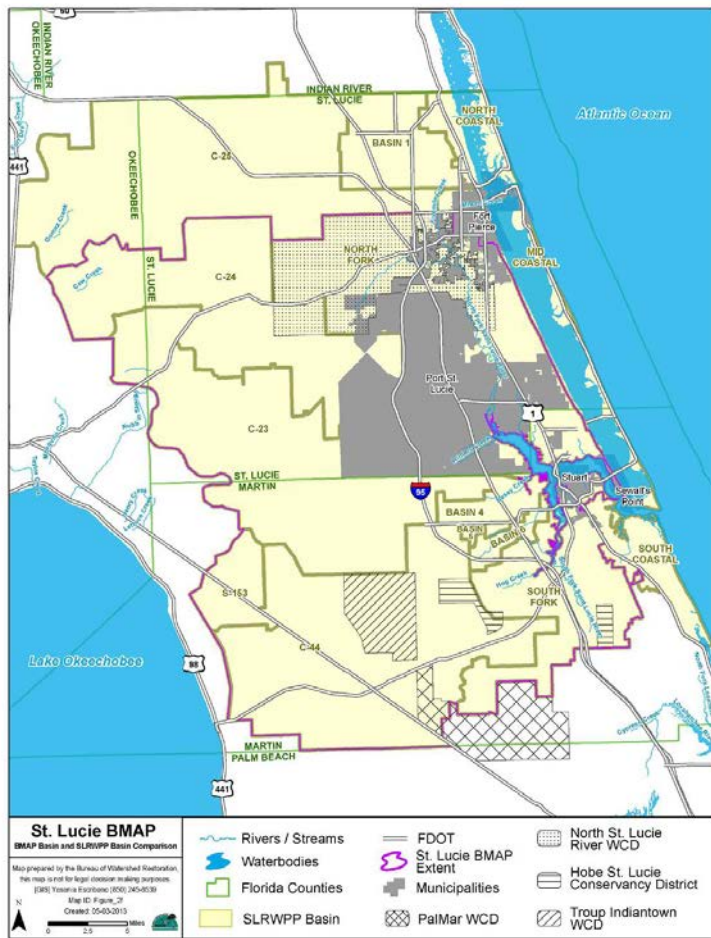
ESTIMATING THE PHOSPHOROUS LOAD REDUCTION CAUSED BY RESERVOIRS AND STORMWATER TREATMENT AREAS			
Adapted from RESSTA C23C24 Model (version 2.3)			STA
Variables	Description	Units	
d	= Depth	m	
		ft	
HLR	= Hyd. Loading Rate	m/yr	15.99
K	= Coefficient		
PP	= Flux		
N	= Coefficient		
Cr	= Rain Phosphorus Conc.	ppb	34
Cs	= Seep. Phosphorus Con.	ppb	10
R	= Rainfall	m/yr	1.25
ET	= Evapotranspiration	m/yr	1.03
Ci	= Inflow Con	ppb	410
Co	= Outflow Con	ppb	154.0
Ke	= Settling Rate	m/yr	16.8
Fw	= Wet Fraction		0.92
Qi	= Inflow Rate	m ³ /yr	25,525,084
		ac-ft/yr	20,693
Qo	= Outflow Rate	m ³ /yr	25,883,867
		ac-ft/yr	20,950
Us	= Seep. Rate In	m/yr	0
Uo	= Seep. Rate Out	m/yr	0.00
		m ³ /yr	0
		ac-ft/yr	0
r	= Water Balance + Settling Rate	m/yr	15.73
b	= Water Balance	m/yr	0.22
Cb	= Background Concentration	ppb	2.71
Ci-Cb	= Inflow - Background Conc.	ppb	407.55
Co-Cb	= Outflow - Background Conc.	ppb	151.34
Coefficient1	= $(-b/r) * \ln((Co-Cb)/(Ci-Cb))$		0.01
A	= Area	m ²	1,618,800
		acres	400
	Outflow Concentration	ppb	154
	Total P Load Entering Reservoir	Kg/yr	10,472
	Load entering from Salinity Pumping	Kg/yr	
	Load entering from WQ Pumping	Kg/yr	
	P load in rainfall	Kg/yr	69
	Seepage P Loading	Kg/yr	0
	Outflow P Loading	Kg/yr	3,987
	Annual P Load Reduction	Kg/yr	6,485
note: Value is a model input parameter if BOLD			
note: Value is calculated by reservoir/sta model if BRIGHT YELLOW			
WATER QUALITY EQUATIONS FOR STA (Walker's Equation)			
	$Co = Cb + (Ci - Cb) * ((Qi + A * b) / Qi)^{(-r/b)}$		
	$r = R - ET + Us + Fw * Ke$		
	$b = R - ET + Us - Uo$		
(Fw is defined as the percentage of time when the STA depth is greater than 1 ft)			

Figure 10 – Water quality calculations for 600 acre STA

ESTIMATING THE PHOSPHOROUS LOAD REDUCTION CAUSED BY RESERVOIRS AND STORMWATER TREATMENT AREAS			
Adapted from RESSTA C23C24 Model (version 2.3)			STA
Variables	Description	Units	
d	= Depth	m	
		ft	
HLR	= Hyd. Loading Rate	m/yr	15.23
K	= Coefficient		
PP	= Flux		
N	= Coefficient		
Cr	= Rain Phosphorus Conc.	ppb	34
Cs	= Seep. Phosphorus Con.	ppb	10
R	= Rainfall	m/yr	1.25
ET	= Evapotranspiration	m/yr	1.03
Ci	= Inflow Con	ppb	412
Co	= Outflow Con	ppb	147.5
Ke	= Settling Rate	m/yr	16.8
Fw	= Wet Fraction		0.92
Qi	= Inflow Rate	m ³ /yr	36,449,101
		ac-ft/yr	29,549
Qo	= Outflow Rate	m ³ /yr	36,987,276
		ac-ft/yr	29,935
Us	= Seep. Rate In	m/yr	0
Uo	= Seep. Rate Out	m/yr	0.00
		m ³ /yr	0
		ac-ft/yr	0
r	= Water Balance + Settling Rate	m/yr	15.73
b	= Water Balance	m/yr	0.22
Cb	= Background Concentration	ppb	2.71
Ci-Cb	= Inflow - Background Conc.	ppb	409.75
Co-Cb	= Outflow - Background Conc.	ppb	144.83
Coefficient1	= $(-b/r) * \ln((Co-Cb)/(Ci-Cb))$		0.01
A	= Area	m ²	2,428,200
		acres	600
	Outflow Concentration	ppb	148
	Total P Load Entering Reservoir	Kg/yr	15,034
	Load entering from Salinity Pumping	Kg/yr	
	Load entering from WQ Pumping	Kg/yr	
	P load in rainfall	Kg/yr	103
	Seepage P Loading	Kg/yr	0
	Outflow P Loading	Kg/yr	5,457
	Annual P Load Reduction	Kg/yr	9,577
note: Value is a model input parameter if BOLD			
note: Value is calculated by reservoir/sta model if BRIGHT YELLOW			
WATER QUALITY EQUATIONS FOR STA (Walker's Equation)			
	$Co = Cb + (Ci - Cb) * ((Qi + A * b) / Qi)^{(-r/b)}$		
	$r = R - ET + Us + Fw * Ke$		
	$b = R - ET + Us - Uo$		
(Fw is defined as the percentage of time when the STA depth is greater than 1 ft)			

Figure 11 – Water quality calculations for 1,300 acre STA

ESTIMATING THE PHOSPHOROUS LOAD REDUCTION CAUSED BY RESERVOIRS AND STORMWATER TREATMENT AREAS			
Adapted from RESSTA C23C24 Model (version 2.3)			STA
Variables	Description	Units	
d	= Depth	m	
		ft	
HLR	= Hyd. Loading Rate	m/yr	10.97
K	= Coefficient		
PP	= Flux		
N	= Coefficient		
Cr	= Rain Phosphorus Conc.	ppb	34
Cs	= Seep. Phosphorus Con.	ppb	10
R	= Rainfall	m/yr	1.25
ET	= Evapotranspiration	m/yr	1.03
Ci	= Inflow Con	ppb	421
Co	= Outflow Con	ppb	101.0
Ke	= Settling Rate	m/yr	16.8
Fw	= Wet Fraction		0.92
Qi	= Inflow Rate	m^3/yr	56,531,656
		ac-ft/yr	45,830
Qo	= Outflow Rate	m^3/yr	57,697,701
		ac-ft/yr	46,666
Us	= Seep. Rate In	m/yr	0
Uo	= Seep. Rate Out	m/yr	0.00
		m^3/yr	0
		ac-ft/yr	0
r	= Water Balance + Settling Rate	m/yr	15.72
b	= Water Balance	m/yr	0.22
Cb	= Background Concentration	ppb	2.71
Ci-Cb	= Inflow - Background Conc.	ppb	417.94
Co-Cb	= Outflow - Background Conc.	ppb	98.25
Coefficient1	= (-b/r)*ln((Co-Cb)/(Ci-Cb))		0.02
A	= Area	m^2	5,261,100
		acres	1,300
	Outflow Concentration	ppb	101
	Total P Load Entering Reservoir	Kg/yr	23,780
	Load entering from Salinity Pumping	Kg/yr	
	Load entering from WQ Pumping	Kg/yr	
	P load in rainfall	Kg/yr	224
	Seepage P Loading	Kg/yr	0
	Outflow P Loading	Kg/yr	5,825
	Annual P Load Reduction	Kg/yr	17,955
note: Value is a model input parameter if BOLD			
note: Value is calculated by reservoir/sta model if BRIGHT YELLOW			
WATER QUALITY EQUATIONS FOR STA (Walker's Equation)			
	Co = Cb + (Ci - Cb)*((Qi + A*b)/Qi)^(-r/b)		
	r = R - ET + Us + Fw *Ke		
	b = R - ET + Us -Uo		
(Fw is defined as the percentage of time when the STA depth is greater than 1 ft)			



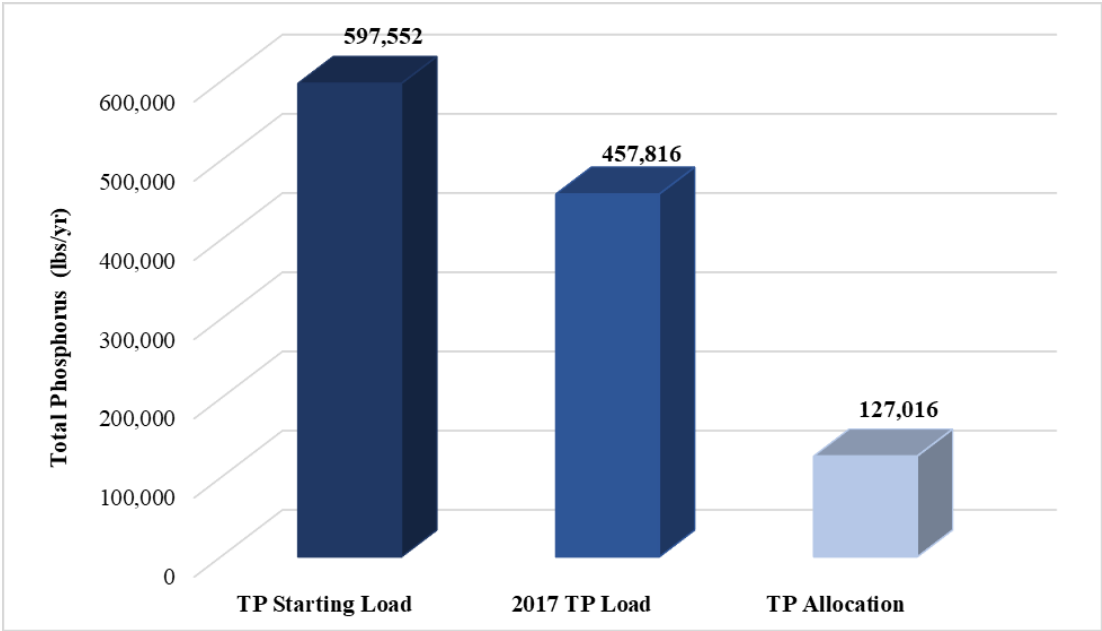
Source: 2013 BMAP

- 2013 BMAP states that the starting load of TP into the St. Lucie Estuary is 597,552 lbs/yr (271.03 MT/yr)
- The C-23 Basin currently contributes 175,073 lbs/year (79 MT/yr) TP to St. Lucie Estuary
 - 29% of the TP load to the St. Lucie Estuary
- The Total TP Required Reduction by Entity is illustrated below

- = Empty cell/no data

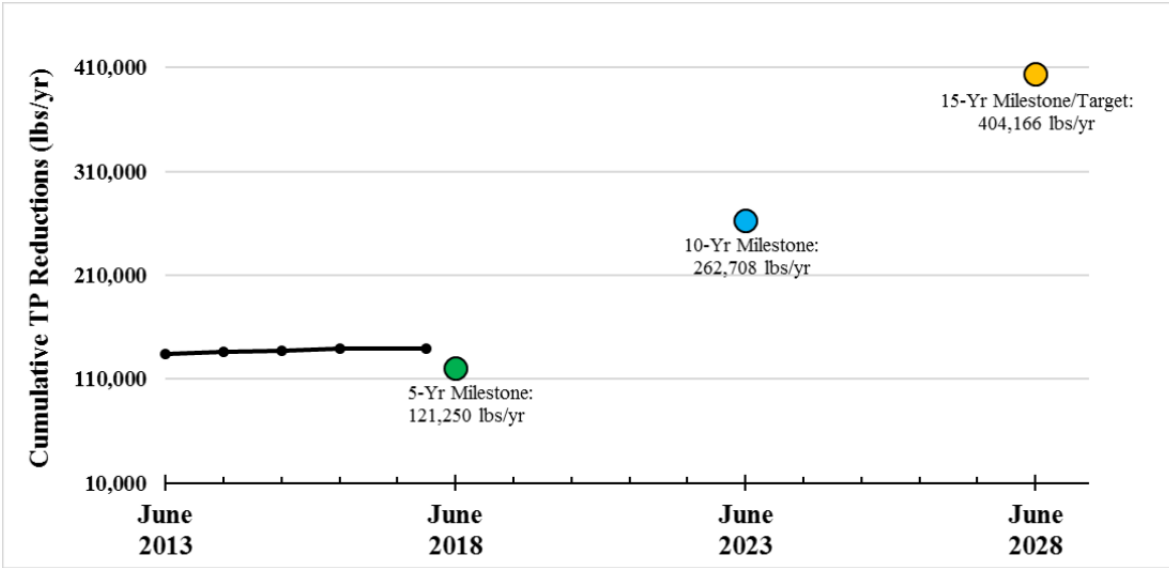
ENTITY	TP ALLOCATION (LBS/YR)	TP ALLOCATION (MT/YR)	TOTAL TP REQUIRED REDUCTION (LBS/YR)	TOTAL TP REQUIRED REDUCTION (MT/YR)
Agriculture	83,253	37.76	307,059	139.28
FDOT District 4	833	0.38	1,709	0.78
Fort Pierce MS4	1,186	0.54	2,693	1.22
Hobe St. Lucie Conservancy District	1,732	0.79	3,520	1.60
Martin County MS4	7,779	3.53	14,590	6.62
North St. Lucie River WCD	12,250	5.56	33,634	15.26
Port St. Lucie MS4	11,585	5.25	23,431	10.63
St. Lucie County MS4	1,278	0.58	2,849	1.29
St. Lucie County Non-MS4	1,572	0.71	4,500	2.04
Stuart MS4	1,044	0.47	2,062	0.94
Troup-Indiantown WCD	4,504	2.04	8,119	3.68
Copper Creek CDD – <i>de minimus</i>	-	-	-	-
Okeechobee County MS4 – <i>de minimus</i>	-	-	-	-
Pal Mar WCD – <i>de minimus</i>	-	-	-	-
Sewall's Point MS4 – <i>de minimus</i>	-	-	-	-
Tradition CDD – <i>de minimus</i>	-	-	-	-
Turnpike – <i>de minimus</i>	-	-	-	-
Verano CDD – <i>de minimus</i>	-	-	-	-
TOTAL	127,016	57.61	404,166	183.33

Source: 2013 BMAP

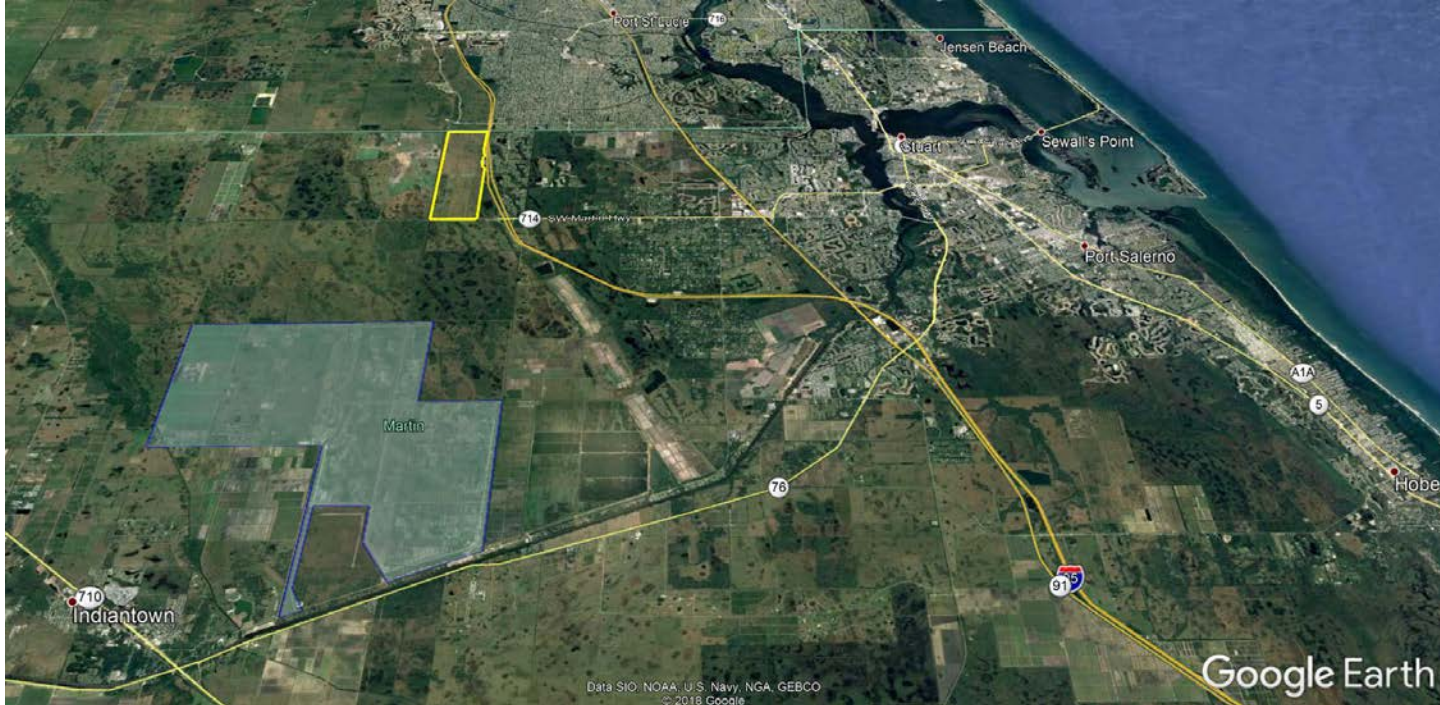


Source: 5-Year Review of the St. Lucie River and Estuary Basin Management Action Plan, June 2018

- **The 5-year review of the 2013 BMAP explained that 221 projects were completed and an additional 26 underway or planned projects were added to the BMAP.**
- **The activities completed to date are estimated to achieve total reduction of 139,736 lbs/yr of TP, or 35% of the reduction to meet TMDL.**
- **There will need to be more projects to meet the future goals.**



Source: 5-Year Review of the St. Lucie River and Estuary Basin Management Action Plan, June 2018



- **AgTEC (Sunrise Grove) Property, Martin County, Florida**
 - Approximately 1,700 acres
 - C-23 Canal is northern boundary
 - SR-714 is southern boundary
 - I-95 is Eastern Boundary
- **C-44 Reservoir and STA is directly south**



Operational Strategy

- Treat runoff from C-23 Canal in STA
- After treatment, water would either be sent back to C-23 Canal or sent south to C-44 Canal and used as make-up water for Savings Clause as described in CEPP

	Alt 1	Alt 2	Alt 3
Effective Treatment Area (acres)	400	600	1,300
Inflow Capacity (cfs)	100	150	250
STA Loading (acre feet/year)	20,693	29,549	45,830
STA Loading (MT/yr)	10	15	24
TP Removed (MT/yr)	6	10	18
Inflow TP (ppb)	410	412	421
Outflow TP (ppb)	154	148	101

Summary of Results

- Summary of 3 different Alternatives – 400 acre, 600 acre and 1,300 acre
- Removed, 6 MT/yr, 10MT/yr and 18 MT/yr, respectively
- Treats 20,693, 29,549 and 45,830 acre-feet/year, respectively