WELCOME

Robert Shuford
Lead Scientist
Ecosystem Restoration and Capital Projects

18th Annual Public Meeting on the Long-Term Plan for Achieving Water Quality Goals for the Everglades Protection Area Tributary Basins
February 22, 2021
<table>
<thead>
<tr>
<th></th>
<th>AGENDA</th>
<th></th>
</tr>
</thead>
</table>
| 1 | Welcome and Introduction  
    Robert Shuford, Ecosystem Restoration and Capital Projects Bureau | 9:00 |
| 2 | System Conditions  
    Jose Otero, Ecosystem Restoration and Capital Projects Bureau | 9:05 |
| 3 | Everglades Stormwater Treatment Areas (STA) Performance Update  
    Jake Dombrowski, Applied Sciences Bureau | 9:25 |
| 4 | STA Vegetation Management and Enhancement  
    Eric Crawford, Land Resources Bureau | 9:45 |
| 5 | Restoration Strategies: Stormwater Treatment Area (STA) Science Plan Update & Highlights  
    Tom James, Applied Sciences Bureau | 10:05 |
| 6 | Restoration Strategies: Design and Construction Update  
    Lucine Dadrian, Engineering and Construction Bureau | 10:25 |
| 7 | Southern Everglades Nutrient Source Control Program Update  
    Steve Sarley & Youchoa Wang, Ecosystem Restoration and Capital Projects Bureau | 10:45 |
| 8 | Public Use on SFWMD Stormwater Treatment Areas  
    Jerry Krenz, Land Resources Bureau | 11:05 |
| 9 | Public Comment | 11:25 |
System Conditions

Jose Otero, P.E.
Section Administrator
Ecosystem Restoration and Capital Projects

18th Annual Public Meeting on the Long-Term Plan for Achieving Water Quality Goals for the Everglades Protection Area Tributary Basins
February 22, 2021
Rainfall Dry Season Water Year 2020

- Dry Season normal to drier than normal
- Dec 2019 very wet to extremely wet (Lower Kissimmee and Okeechobee)
- Mar 2020 extremely dry, some areas 5% of average
- Wet Season normal to wetter than normal
- May 2020 very wet to extremely wet (WCA 3A)
- Oct 2020 very wet to extremely wet (East EAA, WCA 1, and WCA 2A), Upper Kissimmee drier than normal
Dry Season normal to extremely wet, especially WCA 3A

Nov 2020 very wet to extremely wet (south of Lake Okeechobee)

Jan 2021 extremely dry, some areas 5% or average
Lake Okeechobee Stage

Nov 2019
Dry Season
13.44 ft NGVD

Apr 2020

May 2020
Wet Season
11.00 ft NGVD

Oct 2020

Nov 2020
Dry Season
16.45 ft NGVD

May 2020

Inflow 2.0 M ac-ft

Nov 2020

Feb 2021

15.51 ft NGVD

Presenter: Jose Otero
WCA 3A Stage

Nov 2019
Dry Season
9.93 ft NGVD

Apr 2020

May 2020
Wet Season
8.22 ft NGVD

Oct 2020

Nov 2020
Dry Season
12.79 ft NGVD

Feb 2021
10.32 ft NGVD

Presenter: Jose Otero
Water Year Inflows to STAs

Total STA Inflows & Total Lake Releases to STAs

- Total STA Inflows
- Total Lake Releases to STAs

Volume in Acre-Feet

Water Year

1995: 92
1996: 183
1997: 119
1998: 104
1999: 129
2000: 84
2001: 25
2002: 704
2003: 334
2004: 3
2005: 107
2006: 49
2007: 28
2008: 1
2009: 24
2010: 60
2011: 736
2012: 712
2013: 586
2014: 291
2015: 249
2016: 160
2017: 163
2018: 99
2019: 1,616
2020: 1,438
2021: 987

2021P*: partial data from May 1, 2020 to February 14, 2021.

Presenter: Jose Otero
Everglades Stormwater Treatment Areas Performance Update

18th Annual Public Meeting on the Long-Term Plan for Achieving Water Quality Goals for the Everglades Protection Area Tributary Basins
February 22, 2021

Jake Dombrowski
Scientist 4
Applied Sciences
Introduction

- STA Performance
  - Flow volumes, TP loads and FWMC
    - Flow-weighted Mean Concentration
- Yearly and monthly variation
- Construction and operational restrictions

Presenter: Jake Dombrowski
STA-1E Performance Comparison by WY

<table>
<thead>
<tr>
<th></th>
<th>WY2019</th>
<th>WY2020</th>
<th>Partial WY2021 (05/01/2020 - 12/31/2020)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total inflow (k acre-feet)</td>
<td>131</td>
<td>170</td>
<td>299</td>
</tr>
<tr>
<td>Lake releases (k acre-feet)</td>
<td>46</td>
<td>12</td>
<td>21</td>
</tr>
<tr>
<td>TP FWMC inflow / outflow (μg/L)</td>
<td>214 / 30</td>
<td>96 / 21</td>
<td>141 / 37</td>
</tr>
<tr>
<td>TP load inflow / outflow (tons)</td>
<td>34 / 5</td>
<td>20 / 4</td>
<td>52 / 13</td>
</tr>
<tr>
<td>Reduction in TP FWMC / load</td>
<td>86% / 87%</td>
<td>74% / 76%</td>
<td>74% / 76%</td>
</tr>
</tbody>
</table>

Includes preliminary data
Elevated inflow TP loads, FWMC during WY2021

Outflow TP FWMC has previously been stable in the 15-25 ppb range, rising during WY2021 to the 50-75 ppb range

Includes preliminary data
STA-1E Highlights  

- Western flow-way offline
  - WDC levee repairs, Restoration Strategies earthwork Cells 5 & 7, road removal Cell 6
- Periodic restrictions in all three flow-ways
  - EDC levee repairs
  - Vegetation management activities: spraying, inoculation, and planting
  - Black-necked stilt nesting reported in Cells 4N, 5, 6, and 7

Remnant road removal in Cell 6

Fill staging in Cell 7
STA-1W Performance Comparison by WY

|                        | WY2019 | WY2020 | Partial WY2021  
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total inflow (k acre-feet)</td>
<td>170</td>
<td>130</td>
<td>186</td>
</tr>
<tr>
<td>Lake releases (k acre-feet)</td>
<td>26</td>
<td>17</td>
<td>5</td>
</tr>
<tr>
<td>TP FWMC inflow / outflow (μg/L)</td>
<td>241 / 39</td>
<td>146 / 35</td>
<td>257 / 38</td>
</tr>
<tr>
<td>TP load inflow / outflow (tons)</td>
<td>50 / 8</td>
<td>23 / 5</td>
<td>59 / 10</td>
</tr>
<tr>
<td>Reduction in TP FWMC / load</td>
<td>84% / 84%</td>
<td>76% / 81%</td>
<td>85% / 83%</td>
</tr>
</tbody>
</table>

Includes preliminary data

Presenter: Jake Dombrowski
Elevated inflow TP loads and FWMC during WY2021

Outflow TP FWMC remains relatively stable around 30 ppb

Includes preliminary data
STA-1W Highlights

➢ Periodic restrictions in all three flow-ways
  - Construction activities related to the STA-1W Expansion #1
    • Discharge canal plug construction complete
  - Black-necked stilt nesting reported in Cell 8

SAV recruitment in STA-1W Expansion Cell 6
Discharge canal plugwork

Presenter: Jake Dombrowski
STA-2 Performance Comparison by WY

<table>
<thead>
<tr>
<th></th>
<th>WY2019</th>
<th>WY2020</th>
<th>Partial WY2021 (05/01/2020 - 12/31/2020)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total inflow (k acre-feet)</td>
<td>362</td>
<td>247</td>
<td>370</td>
</tr>
<tr>
<td>Lake releases (k acre-feet)</td>
<td>122</td>
<td>37</td>
<td>27</td>
</tr>
<tr>
<td>TP FWMC inflow / outflow (µg/L)</td>
<td>104 / 23</td>
<td>81 / 18</td>
<td>109 / 21</td>
</tr>
<tr>
<td>TP load inflow / outflow (tons)</td>
<td>46 / 10</td>
<td>25 / 6</td>
<td>50 / 12</td>
</tr>
<tr>
<td>Reduction in TP FWMC / load</td>
<td>78% / 78%</td>
<td>78% / 78%</td>
<td>81% / 76%</td>
</tr>
</tbody>
</table>

Includes preliminary data

Presenter: Jake Dombrowski
Elevated inflow TP loads/FWMC during WY2021
Outflow TP FWMC remains in the 15-20 ppb range and has been stable since March 2019

Includes preliminary data
STA-2 Highlights

➢ Periodic restrictions in all flow-ways
  - Flow-way 2 offline for earthwork project
  - Vegetation management activities: spraying, inoculations, plantings, tussock removal

➢ No monitored avian species nesting reported in STA-2

Cell 6 SAV coverage

Cell 3 plantings

Presenter: Jake Dombrowski
STA-3/4 Performance Comparison by WY

<table>
<thead>
<tr>
<th></th>
<th>WY2019</th>
<th>WY2020</th>
<th>Partial WY2021 (05/01/2020 - 12/31/2020)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total inflow (k acre-feet)</td>
<td>710</td>
<td>328</td>
<td>540</td>
</tr>
<tr>
<td>Lake releases (k acre-feet)</td>
<td>206</td>
<td>56</td>
<td>32</td>
</tr>
<tr>
<td>TP FWMC inflow / outflow (µg/L)</td>
<td>54 / 12</td>
<td>45 / 13</td>
<td>57 / 12</td>
</tr>
<tr>
<td>TP load inflow / outflow (tons)</td>
<td>47 / 10</td>
<td>18 / 5</td>
<td>38 / 8</td>
</tr>
<tr>
<td>Reduction in TP FWMC / load</td>
<td>78% / 79%</td>
<td>70% / 72%</td>
<td>80% / 80%</td>
</tr>
</tbody>
</table>

Includes preliminary data

Presenter: Jake Dombrowski
Compared to other STAs, less variability in inflow TP loads due to A-1 FEB

Outflow TP FWMC remains low and stable in the 10-15 ppb range

Includes preliminary data
All flow-ways were operational

Periodic restrictions
- Installation of energy dissipators at all flow-way inflow structures
- Vegetation management activities: planting, inoculations, spraying, tussock removal
- No monitored avian species nesting observed

Presenter: Jake Dombrowski
STA-5/6 Performance Comparison by WY

<table>
<thead>
<tr>
<th></th>
<th>WY2019</th>
<th>WY2020</th>
<th>Partial WY2021 (05/01/2020 - 12/31/2020)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total inflow (k acre-feet)</td>
<td>138</td>
<td>124</td>
<td>124</td>
</tr>
<tr>
<td>TP FWMC inflow / outflow (μg/L)</td>
<td>161 / 56</td>
<td>226 / 58</td>
<td>289 / 81</td>
</tr>
<tr>
<td>TP load inflow / outflow (tons)</td>
<td>27 / 9</td>
<td>35 / 9</td>
<td>44 / 15</td>
</tr>
<tr>
<td>Reduction in TP FWMC / load</td>
<td>65% / 66%</td>
<td>74% / 73%</td>
<td>72% / 67%</td>
</tr>
</tbody>
</table>

Includes preliminary data

Presenter: Jake Dombrowski
STA-5/6 Monthly TP Load and FWM Concentration

- Inflow TP load spike due to storm events in August 2019 and November 2020
- Frequent dry-out conditions during the dry seasons
- Elevated inflow/outflow TP FWMC following rehydration

Includes preliminary data

Presenter: Jake Dombrowski

➢ All flow-ways were operational
➢ Periodic restrictions
  ▪ Restoration Strategies earthwork project in Flow-ways 2 and 3
    • Project complete, awaiting vegetation rehabilitation before flow-through
  ▪ Black-necked stilt nesting in Cells 1B, 4A, 4B, and 6-2

Cell 2A post-earthwork

Cell 1B SAV coverage

Presenter: Jake Dombrowski
### All STAs Performance Comparison by WY

<table>
<thead>
<tr>
<th></th>
<th>WY2019</th>
<th>WY2020</th>
<th>Partial WY2021 (05/01/2020 - 12/31/2020)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total inflow (k acre-feet)</strong></td>
<td>1510</td>
<td>1000</td>
<td>1519</td>
</tr>
<tr>
<td><strong>Lake releases (k acre-feet)</strong></td>
<td>470</td>
<td>163</td>
<td>97</td>
</tr>
<tr>
<td><strong>TP FWMC inflow / outflow (μg/L)</strong></td>
<td>110 / 23</td>
<td>98 / 24</td>
<td>130 / 28</td>
</tr>
<tr>
<td><strong>TP load inflow / outflow (tons)</strong></td>
<td>206 / 42</td>
<td>121 / 28</td>
<td>243 / 57</td>
</tr>
<tr>
<td><strong>Reduction in TP FWMC / load</strong></td>
<td>79% / 79%</td>
<td>75% / 76%</td>
<td>78% / 77%</td>
</tr>
</tbody>
</table>

Includes preliminary data

**Presenters:** Jake Dombrowski

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**Graphs:**

- **WY2019 Performance**
- **WY2020 Performance**
- **Partial WY2021 Performance**
Contact Information

Jake Dombrowski
jdombrow@sfwmd.gov
STA Vegetation Management and Enhancement

18th Annual Public Meeting on the Long-Term Plan for Achieving Water Quality Goals for the Everglades Protection Area Tributary Basins
February 22, 2021
Objective

Maintain sustainable vegetation-based phosphorus uptake processes

➢ Vegetation Enhancement
  ▪ Establish/maintain appropriate vegetation communities
  ▪ Improve stability and functional redundancy

➢ Selective Management
  ▪ Increase desirable species
  ▪ Control Invasive/Undesirable species
  ▪ Control exotic populations

Presenter: Eric Crawford
Dense native vegetation plantings can be made after treatments to interfere with the continued spread of invasive plants.

District staff have identified several native species to use in varying conditions to maximize resiliency and performance.
Vegetation Function

➢ **Emergent Aquatic Vegetation (EAV)**
  - Re-establish stable soils
  - Re-direct flow
  - Nutrient uptake
  - SAV stabilization
  - Increase diversity/decrease clonal populations

➢ **Submerged Aquatic Vegetation (SAV)**
  - Water column nutrient uptake
  - Replenish seasonal die-off
  - Replenish loss due to predation
  - Repair damage
  - Establish new SAV bed
  - Increase species diversity

Emergent plantings after cattail failure

SAV Inoculation in SAV compartment

Presenter: Eric Crawford
Highly Stressed EAV
Adaptive Management Process

➢ Monitor vegetation health

Short circuits and loss of SAV

Presenter: Eric Crawford
Adaptive Management Process

➢ Monitor vegetation health

➢ Coordinate with water management
  ▪ Stage, flow rates (cfs), redirecting flow

STA 5/6 Cell 1B FAV penetration

Presenter: Eric Crawford
Adaptive Management Process

- Monitor vegetation health
- Coordinate with water management
  - Stage, flow rates (cfs), redirecting flow
- Proactively manage vegetation
  - Increase cover and health of desired species at a specific location
  - Control growth of undesirable species

Presenter: Eric Crawford
Adaptive Management Process

- Monitor vegetation health
- Coordinate with water management
  - Stage, flow rates (cfs), redirecting flow
- Proactively manage vegetation
  - Increase cover and health of desired species at a specific location
  - Control growth of undesirable species
- Repair and restore
  - Emergent vegetation enhancements where vegetation is damaged or undesirable
Rehabilitation: Emergent Plants
Repair and Restoration of STA 2 Cell 3

- Over ten miles of emergent vegetation strips planted to protect and compartmentalize the Cell prior to SAV restoration
- Multiple short circuits and scoured out boat trails filled and planted
- SAV was planted and enhancements continue throughout the cell.
Rehabilitation: SAV Inoculation

Inoculations to enhance growth in bare areas and increase diversity

SAV harvest and transport

Presenter: Eric Crawford
Compartmentalizing the SAV cells with vegetation strips can help protect and stabilize SAV populations.

Smaller, more diverse and compartmentalized SAV beds can be more resistant to short circuiting, disturbance, storm events and seem better at resisting colonization by exotic species.

EAV provides structure, protection, and litter to assist with nutrient uptake.
FAV Control

➢ Dense vegetation strips at the inflows can reduce FAV entering a cell

➢ Inflow strips can be shaped to trap and concentrate FAV decreasing herbicide use in the cells and reducing costs

➢ Repairing damage and short circuits can minimize FAV penetration into the cells

"U" shaped vegetation strips at the inflows of cells helps to trap FAV for more efficient treatment

Presenter: Eric Crawford
Dense vegetation strips at the inflows can reduce FAV entering a cell.

Inflow strips can be shaped to trap and concentrate FAV decreasing herbicide use in the cells and reducing costs.

Repairing damage and short circuits can minimize FAV penetration into the cells.
Coordinate with Engineering and Construction Group on Repairs and New Construction

- STA 1E Cells 5 and 7, fill and regrade
- STA 1E Cell 6, internal Levee degrading and canal filling to improve flow patterns
- STA 2 Cell 2, fill and grade northern section to improve performance
- STA 2 Cell 3, remove portions of remnant levees to improve flow patterns
- STA 1W Expansion 2 design
- A2 STA design
Contact Information

Eric Crawford
ecrawfor@sfwmd.gov
Restoration Strategies Science Plan

18th Annual Public Meeting on the Long-Term Plan for Achieving Water Quality Goals for the Everglades Protection Area Tributary Basins

February 22, 2021

R. Thomas James
Principal Scientist
Applied Sciences
The Science Plan

- Developed in 2013 and updated in 2018
- Specified in Restoration Strategies and required by STA permits and consent orders
- Framework for scientific studies
  - Evaluate key factors and processes that affect phosphorus removal in the STAs
  - Support design, operation, & management of STAs to achieve Water Quality-Based Effluent Limits (WQBEL)
Areas of Investigation

6 Key questions and 18 sub-questions on these topics

1. Design and operation of FEBs
2. Design and operation of STAs
3. Vegetation improvement
4. Internal loading of phosphorus
5. Biogeochemical and physical mechanisms
6. Role of fauna
### Studies Completed

<table>
<thead>
<tr>
<th>Study Title</th>
<th>Major Findings</th>
</tr>
</thead>
</table>
| Development of Operational Guidance for Flow Equalization Basin (FEB) and STA Regional Operation (Operation Study) | • Wave tests within the STAs  
  • Equations for flow, slope and resistance  
  • Equations support STA operations  
  • Developed iModel for Restoration Strategies Operational Protocol  
  • FEB operations can be optimized to meet the WQBEL. |
| Influence of Canal Conveyance Features on STA and FEB Inflow and Outflow P Concentrations (Canal Study)       | • Canals can remove or export TP  
  • Export related to high flow events and increase of particulate P  
  • Use of FEBs to reduced peak flow should reduce TP export. |
| Investigation of STA-3/4 Periphyton-based Stormwater Treatment Area (PSTA) Technology Performance, Design, and Operational Factors (PSTA Study) | • Muck removal low inflow TP concentrations/loads resulted in annual flow weighted mean discharge of TP ≤ 13 ppb for last 13 years.  
  • Continue monitoring to evaluate performance. |
| Evaluation of Sampling Methods for TP (Sampling Study)                      | • Time-based autosampler, grab sample and flow-based auto samplers  
  • Time and grab more reliable for low flow gated structures,  
  • Autosamplers vulnerable to plant and animal contamination. |
| Evaluation of the Role of Rooted Floating Aquatic Vegetation (rFAV) in STAs (rFAV Study)                        | • rFAV does not enhance P reduction in outflow region Compared to submerged aquatic vegetation |
### Studies Completed

<table>
<thead>
<tr>
<th>Study Title</th>
<th>Major Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaluation of P Sources, Forms, Flux and Transformation Processes in the STAs (P Flux Study)</td>
<td>• P removal in EAV is primarily organic in SAV primarily mineral</td>
</tr>
<tr>
<td></td>
<td>• Decreasing P Gradients from inflow to outflow</td>
</tr>
<tr>
<td></td>
<td>• Non flow conditions result in increased water column TP in SAV regions, especially after high load events</td>
</tr>
<tr>
<td></td>
<td>• Internal loading affects STA performance</td>
</tr>
<tr>
<td>STA Water and P Budget Improvements (Water and P Budget Study)</td>
<td>• Improved Period of Record flow data at all structures of STA-2 Flow-ways 1, 2, 3 and STA-3/4 all flow-ways</td>
</tr>
<tr>
<td></td>
<td>• Greatly improved water budgets (reduced residuals)</td>
</tr>
<tr>
<td></td>
<td>• Rainfall, ET, change in storage, and seepage are minor contributors</td>
</tr>
<tr>
<td></td>
<td>• More accurate Water and TP budgets were developed for STA-2 Flow-ways 1, 2 and 3, and all cells of STA-3/4</td>
</tr>
</tbody>
</table>
## Current Studies

<table>
<thead>
<tr>
<th>Study Title</th>
<th>Year Initiated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaluation of Inundation Depth and Duration Threshold for Cattail Sustainability (Cattail Study)</td>
<td>2013</td>
</tr>
<tr>
<td>Use of Soil Amendments and/or Management to Control P Flux (Soil Management Study)</td>
<td>2013</td>
</tr>
<tr>
<td>Evaluation of Factors Contributing to the Formation of Floating Tussocks in the STAs (Tussock Study)</td>
<td>2018</td>
</tr>
<tr>
<td>Improving Resilience of SAV in the STAs (SAV Resilience Study)</td>
<td>2018</td>
</tr>
<tr>
<td>Investigation of the Effects of Abundant Faunal Species on P Cycling in the STAs (Faunal Study)</td>
<td>2018</td>
</tr>
<tr>
<td>Periphyton and Phytoplankton P Uptake and Release (Periphyton Study)</td>
<td>2019</td>
</tr>
<tr>
<td>L-8 FEB Operational Guidance (L8-FEOB Study)</td>
<td>2019</td>
</tr>
</tbody>
</table>
## New Studies

<table>
<thead>
<tr>
<th>Study Title</th>
<th>Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data Integration and Analyses (Data Integration Study)</strong></td>
<td>• Review and compile RSSP and STA study reports and publications&lt;br&gt;• Evaluate data sets for relationships among variables&lt;br&gt;• Develop and/or update models&lt;br&gt;• Analyze for data gaps&lt;br&gt;• Write guidance document to improve STA performance</td>
</tr>
<tr>
<td><strong>Quantifying the Recalcitrance and Lability of Phosphorus (P) to Optimize P Retention Within STAs (Biomarker Study)</strong></td>
<td>• Use biomarkers to determine relative source contribution from&lt;br&gt;  o Inflow sources&lt;br&gt;  o Vascular plants&lt;br&gt;  o Algae/periphyton&lt;br&gt;  o Fish&lt;br&gt;  o Degradation products of litter</td>
</tr>
<tr>
<td><strong>Phosphorus Dynamics in the Everglades Stormwater Treatment Areas (P Dynamics Study)</strong></td>
<td>• Evaluate under-performing STA flowways&lt;br&gt;• Use methods of the P-Flux study</td>
</tr>
<tr>
<td><strong>Assess Feasibility and Benefits of Consolidating Accrued Marl in the Everglades Stormwater Treatment Areas (Marl Study)</strong></td>
<td>• Determine if marl consolidation can be improved&lt;br&gt;• Determine if improvement results in lower water column P concentration</td>
</tr>
</tbody>
</table>
Cattail Study

Objective
Identify water depth, duration of inundation, and frequency affecting the health of cattail communities in selected STA cells.

Results
- **In-situ study**
  - Given water depths of 3 feet or greater for more than 100 consecutive days
    - Cattail density and below ground biomass declined
    - Leaf elongation in deeper conditions increased
- **Test Cell Study**
  - Five water depths: 1.3 (control), 2.0, 2.75 (moderate) 3.4 and 4.1 feet (deep)
  - Deep waters compared to controls
    - Reduced density of adult and juvenile cattail
    - Increased leaf elongation
    - No significant differences for photosynthesis, water use efficiency and stomatal conductance

Status
- Field sampling complete
- Nutrient analyses complete
- Final report is pending
Objective
• Investigate whether internal loading of phosphorus can be reduced by application of soil amendments and/or soil management techniques

Results
• Technologies exist that could improve STA performance
  • High costs and unknown effects to downstream Everglades
  • No further testing of chemical amendments planned
• Soil inversion study of Cell 7 of STA-1W Expansion Area
  • Soils in Cell 7 inverted, not in Cell 8
• Post flooding results
  • Water column TP concentrations have declined over time
  • Cell 7 SAV is sparse throughout even months after flooding
  • Cell 8 SAV is high throughout
  • Soil TP in top 10 cm similar in both Cells but more heterogenous in Cell 7

Status
• Sampling at inflow and outflow structures will begin when flow-through operations begin
Objective
- Determine factors that cause the formation of floating cattail (Typha sp.) communities and tussocks

Results
- Unmanned aerial vehicle (UAV) with multispectral scanner found tussocks not found in satellite imagery
- Nomenclature developed
  - Tussock vs wetland vs complex
  - Island vs mat complex
- Predictors of historical tussock formation
  - High-water levels
  - Past land use (agriculture)
  - TP content of soils

Status
- Methods to improve UAV imagery processing underway
- Buoyancy model to be developed
Objective

- Quantify abundant fauna and evaluate their effects on outflow STA cell P-cycling and loading

Results

- Fish in STAs contain a greater proportion of P in body tissues than fish in Everglades
- STAs support 2 to 15 x higher biomass of fish & invertebrates than Everglades
- In STA-2, 10 of the most abundant fish species store one metric ton of P within their body tissues
- Bioturbation can double the TP content in enclosures
- Excretion by fish can reprocess over 100% of external loading

Status

- Calibration of electrofishing in enclosures is planned
- Herbivory study will be carried out
- Biomass sampling, bioturbation experiments and excretion rate studies to continue
SAV Resilience Study

➢ **Objective**
  ▪ Investigate the effects of operational and natural environmental conditions on SAV health

➢ **Results**
  ▪ Factors influencing SAV sustainability include: P loading, soil type, and water depth
  ▪ SAV standing crop biomass and tissue P contents decrease from inflow to outflow regions of STAs
  ▪ SAV grew well on aged muck, farmed, and marl soils in mesocosms
  ▪ SAV density was higher at higher P load rates in mesocosms
  ▪ SAV germinated faster on previously dried soils, no differences in growth
  ▪ SAV growth reduced in enclosures with fish

➢ **Status**
  ▪ P load experiments ongoing, added a mesocosm with higher P soils to determine if high loads can lead to SAV collapse
Periphyton Study

➢ **Objective**
  - Estimate growth, senescence, P uptake and release rates from periphyton and phytoplankton in downstream STA treatment flow ways under various flow conditions

➢ **Status**
  - Literature review and report completed (Phase I)
  - Bioavailability study of dissolved organic P and N from the STAs underway (Phase II)
  - Metagenomics study to evaluate metabolism is being developed (Phase III)
Objective

- Provide insight into the relationships between L-8 FEB water quality, stage, and flow conditions, along with potential for groundwater interaction

Results

- P concentrations are considerably lower in groundwater than L-8 FEB surface water
- Groundwater not responsible for periods of elevated P in surface water
- Large inflows
  - Contribute significant loads of nutrients and suspended materials
  - Inflow induced resuspension of benthic sediments may be major contributors to periods of elevated P in surface water at low stages

Status

- Monitoring response of L-8 FEB to large inflow events at low stage
- Spatial sampling and characterization of benthic sediments to be analyzed for nutrients and minerals
Contact Information

Tom James
tjames@sfwmd.gov

For more information:
Restoration Strategies: Engineering & Construction Update

Lucine Dadrian, P.E.
Project Management Section Administrator
Ecosystem Restoration and Capital Projects

18th Annual Public Meeting on the Long-Term Plan for Achieving Water Quality Goals for the Everglades Protection Area Tributary Basins
February 22, 2021
# Restoration Strategies Project Status

**Completed Construction:**
- STA2 Expansion Compartment B
- STA 5/6 Expansion Compartment C
- S-5AS Modifications
- L-8 FEB *Multi-Use Operation*
- A-1 FEB
- L-8 Divide Structure (G-541)
- S-375 Expansion (G-716)
- STA 5/6 Earthwork *Optimization*
- STA-1W Expansion #1
- G-341 Segments 1 – 3

**Ongoing:**
- STA-1E Repair *Construction*
- STA-1W Expansion #2 *Construction*
- G-341 Conveyance Seg 4 *Construction*
- G-341 Conveyance Seg 5 *Design*
- C-139 FEB *Construction*

**Presenter:** Lucine Dadrian
Raise and regrade ~990 acres in Cells 5 and 7 to achieve sustainable Emergent Aquatic Vegetation

USACE Designed and Constructed STA-1E
- Adjacent to northeast side of WCA-1 (Loxahatchee National Wildlife Refuge)
- Flood control by stormwater retention
- Stormwater treatment
- Re-establish WCA-1 hydro-periods

Transferred to SFWMD in October 2005
- Cells 5 & 7 experienced performance issues related to excessive water depths
- Complete regrading of Cells 5 & 7 by December 31, 2022
➢ Regrade Cells 5 & 7 to ~11.75-ft NAVD
➢ Cell 5
  ▪ Level and redistribute existing material
➢ Cell 7
  ▪ Entire cell is below target elevation
  ▪ Imported sandy soil required to raise & regrade Cell 7
➢ District awarded two Contracts to support project
  ▪ Palm Beach Aggregates - Imported Soil awarded at Feb 2020 GB for $10,091,280
  ▪ Thalle Construction Co - Regrading awarded at April 2020 GB for $13,078,500

Source: 2012 Degrove Surveyors, Inc. (200 ft x 200 ft grid)
Presenter: Alan Shirkey

STA-1E Repairs & Modifications Project

RED = LOW TARGET ELEVATION
BLUE = HIGH

Palm Beach Aggregates - Imported Soil awarded at Feb 2020 GB for $10,091,280
Thalle Construction Co - Regrading awarded at April 2020 GB for $13,078,500

Presenter: Lucine Dadrian
STA-1E Repairs & Modifications Project

Cell 5 - Level and Redistribute Existing Material

Cell 5 – Leveling and Canal Reshaping

Presenter: Lucine Dadrian
STA-1E Repairs & Modifications Project

➢ Additive Change Order
  ▪ WDC: Excavate 300,000 cubic yards of sandy soil (current Contract includes 150,000)
  ▪ Cell 7: Transport and fill
  ▪ Total Change Order $1.2M

➢ Palm Beach Aggregates Deductive Change Order
  ▪ $460,000 net savings to District
  ▪ Net schedule improvements will allow for replanting earlier in the dry season for improved root establishment prior to the wet season operations

Presenter: Lucine Dadrian
STA-1W Expansion No. 2

- Purpose is to extend treatment flow-ways for STA-1W
- Overall Construction Cost $214M
- Features 1,600 acres of additional treatment area
- Inflows from S-5A and C-51 West Basins via STA-1W
- Outflow to Water Conservation Area 1

Presenter: Lucine Dadrian
STA-1W Expansion No. 2 – Schedule of Bid Packages

➢ Package A - Underground Piping
  ▪ Complete Design - December 2019
  ▪ Start Construction - February 2020
  ▪ Complete Construction - December 2020

➢ Package B – STA and Connector Canal
  ▪ Complete Design - June 2020
  ▪ Start Construction - September 2020
  ▪ Complete Construction - December 2022

➢ Package C - Inflow Pump Stations (G780 & G781)
  ▪ Complete Design – October 2020
  ▪ Start Construction – November 2020
  ▪ Complete Construction – December 2022

➢ Package D - Outflow Pump Station (G782)
  ▪ Complete Design – October 2020
  ▪ Start Construction – November 2020
  ▪ Complete Construction – December 2022

Presenter: Lucine Dadrian
➢ Restoration Strategies requires STA-1W to discharge to Expansion #1 and #2 separately
➢ Expansion #2 inflow is from the south end of STA-1W discharge canal, pipe installation is to cross under Expansion #1 discharge canal and route STA-1W water south along a lined channel to the Expansion #2 footprint
➢ Construction contract required excavation and installation of four 60-inch by 310 feet long steel pipes purchased through separate Contract for $812,720
➢ Construction was completed by Loren Jock Trucking, Inc. in December 2020 for a total Contract Cost with Change Orders of $2,802,353
STA-1W Expansion #2 consists of 2,071 acres and is connected to the existing STA-1W complex by a new canal. This connection canal encompasses approximately 100 acres of land running north-south parallel and adjacent to the existing L-7 levee.

Project includes the construction of three (3) new STA cells, a 6-mile concrete lined connection canal, perimeter and interior levees, canals, structures, culverts, boat ramps, maintenance ramps, and all other associated appurtenances.

Awarded at August 13, 2020 Governing Board meeting to Thalle Construction Company, Inc. for $96,800,000. NTP was on September 28, 2020.
The STA Expansion #2 is located approximately 6-miles south of the existing STA 1 W complex. A new Connection Canal, to be constructed as part of Package B, will connect the existing STA 1W facility to the STA Expansion #2.

Project includes two (2) new pump stations: a North Inflow Pump Station, G-780, to send water from the STA 1W discharge canal to the proposed Connection Canal, a South Inflow Pump Station, G-781, to lift the water from the proposed Connection Canal into the new Inflow Canal.

Awarded at November 12, 2020 Governing Board meeting to Harry Pepper and Associates, Inc. for $76,122,514. NTP was on December 18, 2020.
The STA Expansion #2 is located approximately 6-miles south of the existing STA 1 W complex. A new Connection Canal, to be constructed as part of Package B, will connect the existing STA 1W facility to the STA Expansion #2.

Project includes one (1) new Outflow Pump Station, G-782, to lift water from the Outflow canal to WCA –1.

Awarded at November 12, 2020 Governing Board meeting to Harry Pepper and Associates, Inc. for $37,418,195. NTP was on December 18, 2020.
➢ Project boundary between Hillsboro Canal and North New River
➢ Deepening and widening of the L-16 Bolles Canal to construct largest possible cross-section within District right of way to increase operational flexibility
➢ Replace impacted farm ditches and roads outside of right of way
➢ Relocation of existing electrical services
➢ Replace canal crossings impacting the increased canal cross section
G-341 Related Conveyance Improvements
Bolles East Canal

- Segment 1 & 2 complete
- Segment 3 substantially complete
- Segment 4 in construction 11/15/19 NTP
- Boca Chica Bridge added to Segment 4 to expedite overall project
- Segment 5 and remaining bridges in design
Excavation of Segment 4

Dewatering Activities - Looking East

Dewatered Segment - Looking West towards SR7

Presenter: Lucine Dadrian
C-139 Flow Equalization Basin

Presenter: Lucine Dadrian
Inflow Pump Station captures runoff from the C-139 Basin
FEB provides approximately 10,500 acre-feet of storage and pre-treatment at its maximum storage of 4-feet deep
Discharges stored water to STA-5/6 for treatment
Includes 690 cfs inflow pump station and 690 cfs outflow structure
Awarded at December 10, 2020 Governing Board meeting to Condotte-Ryan JV for $79,933,411. NTP was on February 1, 2021
STA Refurbishments – STA-1E

STA-1E Cell 6 – Berm Degradation Facing East

STA-1E Cell 6 – Berm Degradation Plan

Presenter: Lucine Dadrian
STA Refurbishments – STA-1W

STA-1W Schematic

STA-1W Cell 3 – Dewatering Berm (Regrade Prep)

Presenter: Lucine Dadrian
STA Refurbishments – STA-1W

STA-1W Schematic

STA-1W Cell 5B/2A Levee Extension - Facing West

STA-1W Cell 5B/2A Levee Extension - Start

Presenter: Lucine Dadrian
STA Refurbishments – STA-2

STA-2 Schematic

STA-2 Cell 2 Dewatering Berm Facing East

Presenter: Lucine Dadrian
### Eastern Flow Path

<table>
<thead>
<tr>
<th>Activity</th>
<th>Deadline</th>
<th>Status</th>
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<tbody>
<tr>
<td>STA-1W Expansion #2 (100864)</td>
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</tr>
<tr>
<td>Complete land acquisition</td>
<td>3/31/2018</td>
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<tr>
<td>Initiate design</td>
<td>10/1/2018</td>
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<tr>
<td>Submit state and federal permit applications</td>
<td>3/31/2019</td>
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<tr>
<td>Complete land acquisition (if required)</td>
<td>7/31/2020</td>
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<td>Initiate construction</td>
<td>11/30/2020</td>
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<tr>
<td>Construction status report</td>
<td>3/1/2021</td>
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<tr>
<td>Construction status report</td>
<td>8/1/2022</td>
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<td>12/31/2022</td>
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#### G-341 Related Conveyance Improvements (100802)

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<td>Complete design</td>
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<td>Complete construction</td>
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### Central Flow Path

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<tr>
<td>STA-2 Expansion: Compartment B</td>
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<td>COMPLETE</td>
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<tr>
<td>Initial flooding and optimization period complete</td>
<td>5/31/2014</td>
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#### A-1 FEB (100706)

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<td>Submit state and federal permit applications</td>
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<td>Complete design</td>
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<td>Initiate construction</td>
<td>6/30/2014</td>
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<td>Construction status report</td>
<td>3/1/2015</td>
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<td>Construction status report</td>
<td>3/1/2016</td>
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<tr>
<td>Complete construction</td>
<td>7/30/2016</td>
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<tr>
<td>Operational monitoring and testing period complete</td>
<td>7/29/2018</td>
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### Western Flow Path

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<thead>
<tr>
<th>Activity</th>
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<td>STA-5/6 Internal Improvements (100868)</td>
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<td>Submit state and federal permit applications</td>
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<tr>
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<tr>
<td>Construction status report</td>
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#### STA-5/6 Expansion: Compartment C

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<th>Activity</th>
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<td>Initial flooding and optimization period complete</td>
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### L-8 Divide Structure (100817)

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<th>Activity</th>
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<td>STA-1W Expansion #2 (100881)</td>
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<tr>
<td>Complete land acquisition</td>
<td>9/30/2013</td>
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<td>Submit state and federal permit applications</td>
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<tr>
<td>Complete construction</td>
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<td>Construction status report</td>
<td>3/1/2018</td>
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### S-375 Expansion (100819)

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<td>STA-1W Expansion #2 (100881)</td>
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<tr>
<td>Complete land acquisition</td>
<td>9/30/2013</td>
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<tr>
<td>Initiate design</td>
<td>9/30/2014</td>
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<td>Complete construction</td>
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### S-5SAS Modifications (100822)

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<td>STA-1W Expansion #2 (100881)</td>
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<td>Complete design</td>
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### L-8 FEB (100813)

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<tbody>
<tr>
<td>STA-1W Expansion #1 (100881)</td>
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<tr>
<td>PSTA Decommissioning complete</td>
<td>12/31/2022</td>
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<tr>
<td>Culvert repairs complete</td>
<td>12/31/2022</td>
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<tr>
<td>Cell 5 and 7 improvements complete</td>
<td>12/31/2022</td>
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### L-8 FEY (100813)

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<tr>
<td>Complete land acquisition</td>
<td>1/31/2014</td>
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<tr>
<td>Construction status report</td>
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### C-139 FEB (100867)

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<tr>
<td>Complete land acquisition</td>
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<td>Construction status report</td>
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</tr>
<tr>
<td>Construction status report</td>
<td>12/31/2017</td>
<td></td>
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</table>

### LEGEND

- **Flow Equalization Basin**
- **Stormwater Treatment Area**
- **Conveyance Improvement**
- **Complete**

**Projects Complete = 7 of 13**

**Activities Complete = 57 of 74**

**% Activities Complete = 77%**

**% Time Complete = 63%**

**Last 4 Projects are in Construction**

Presenter: Lucine Dadrian
SFWMD Southern Everglades Nutrient Source Control Program Update

Youchao Wang, P.E.
Steve Sarley, P.E.
Ecosystem Restoration and Capital Projects

18th Annual Public Meeting on the Long-Term Plan for Achieving Water Quality Goals for the Everglades Protection Area Tributary Basins
February 22, 2021
Basins Tributary to the Everglades Protection Area

Presenters: Youchao Wang & Steve Sarley
The Long-Term Plan recommends activities designed to:

"Maintain and improve upon the contribution of source controls to overall water quality improvement goals."

Specifically:
- **Identify** discharges that are candidates for implementation of **cost-effective** source controls
- Characterize management practices on lands or processes tributary to those discharges
- Implement these source controls **in concert with** landowners or municipalities
Contents

- EAA and C-139 Basins
  - Regulatory activities
  - Research and demonstration projects
  - Sub-regional source control projects
- Other Tributary Basins
  - Regulatory and cooperative activities
  - Permit integration

Presenters: Youchao Wang & Steve Sarley
## WY2020 Phosphorus Data by Basin

**Presenters:** Youchao Wang & Steve Sarley

<table>
<thead>
<tr>
<th>Basin</th>
<th>Receiving Water Body</th>
<th>WY2020 TP Load (metric tons)</th>
<th>WY2020 TP FWMC (µg/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Everglades Agricultural Area (EAA)</td>
<td>STAs and Lake Okeechobee</td>
<td>73</td>
<td>86</td>
</tr>
<tr>
<td>C-139</td>
<td>STA 5/6 and EAA</td>
<td>36</td>
<td>217</td>
</tr>
<tr>
<td>C-51 West and ACME</td>
<td>STA-1E and C-51 East Basin</td>
<td>12</td>
<td>87</td>
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<tr>
<td>L-28</td>
<td>Water Conservation Area (WCA) 3A</td>
<td>4</td>
<td>54</td>
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<tr>
<td>C-11 West</td>
<td>WCA-3A</td>
<td>3</td>
<td>13</td>
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<tr>
<td>Feeder Canal</td>
<td>WCA-3A</td>
<td>3</td>
<td>78</td>
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<td>C-111</td>
<td>Everglades National Park</td>
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<tr>
<td>North Springs Improvement District (NSID)</td>
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<td>North New River (NNR)</td>
<td>Coastal Broward County</td>
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<tr>
<td>Boynton Farms</td>
<td>Lake Worth Drainage District</td>
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### EAA and C-139 Basin Source Control Programs

<table>
<thead>
<tr>
<th>Chapter 40E-63</th>
<th>EAA</th>
<th>C-139 Basin</th>
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<tbody>
<tr>
<td>Permit-level compliance</td>
<td>• Comprehensive BMPs</td>
<td>• Comprehensive BMPs</td>
</tr>
<tr>
<td></td>
<td>• Permittee water quality monitoring</td>
<td>• Sub-basin water quality monitoring</td>
</tr>
<tr>
<td></td>
<td>• Post-permit compliance activities</td>
<td>• Post-permit compliance activities</td>
</tr>
<tr>
<td>Basin-level water quality</td>
<td>Reduce TP Loads by 25% in comparison to pre-BMP period levels</td>
<td>Maintain TP Loads below pre-BMP period levels</td>
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<tr>
<td>compliance</td>
<td></td>
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<tr>
<td>Research and Demonstration</td>
<td>EAA Everglades Protection District (EAAEPD) Research Master Permit</td>
<td>Demonstration projects in partnership with landowners</td>
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<tr>
<td>Supplementary Projects</td>
<td>Restoration Strategies EAA Eastern Flow path source control projects</td>
<td>Upstream monitoring initiatives</td>
</tr>
</tbody>
</table>

Presenters: Youchao Wang & Steve Sarley
EAA Basin-Level Compliance

25% Reduction in TP Load

Presenters: Youchao Wang & Steve Sarley
The EFA requires a comprehensive program of research, testing and implementation of BMPs.

A 5-year Master Research Permit was issued on September 15, 2020.

- Qualified experts
- Identify appropriate BMPs
- BMPs field-tested in representative sites
- Soil, crops, other factors affecting BMP design and effectiveness
- Outreach and Training

Photos:
1. Soil Testing Research at UF-IFAS Belle Glade
2. Controlled application
3. Aquatic vegetation and sediments research at UF-IFAS
4. Discharge pump diagram at UF-IFAS

Presenters: Youchao Wang & Steve Sarley
Scope: Implementation and Verification of BMPs to Reduce Everglades Agricultural Area Farm P Loads: Evaluation of performance differences of EAA farm basins with similar BMPs

Hypotheses: TP in discharges is higher with:
- Certain prior crops/land uses;
- Deeper soils; and
- Soils that do not promote high P retention due to native properties or prior cropping activities

Objective 1: Evaluate the effect of organic soils chemistry and properties, and land management on Total Phosphorus (TP) in farm discharges.

Objective 2: BMP Education and Extension Activities: Use the information from this research to determine what BMPs work most effectively on farms in the EAA with similar soil, crop, and management conditions

Presenters: Youchao Wang & Steve Sarley
Six permit basins were identified in the EAA as priority based on greater contribution in EAA Restoration Strategies flow paths.

Voluntary consultations by UF IFAS in the five agricultural basins.

Preliminary report for Task 1 is expected at the end of February 2021.

Task 1
Site visit, interview with grower, review of documentation. Produce Preliminary Report

Task 2
UF IFAS provides recommendations for reducing phosphorus. IFAS with growers identify farm units to implement recommendations.

Task 3
Implementation for 3 years. As needed phosphorus speciation data may be collected to evaluate if the recommendations have reduced phosphorus.

Task 4
IFAS produces a final report.

Presenters: Youchao Wang & Steve Sarley
Restoration Strategies Sub-regional Source Controls

- Build on the SFWMD regulatory BMP program
- Projects…
  - Strategic on-site locations or sub-regional source control projects in series with on-site BMPs
  - Focus on areas and projects with the greatest potential to improve water quality
  - Designed to increase retention or detention of TP above what is currently required
- Evaluating the feasibility of more flexible water management approaches in the East Beach Water Control District
C-139 Basin Level Compliance

TP Load below historic levels

Presenters: Youchao Wang & Steve Sarley
C-51 West and ACME Basin

➢ Environmental Resource Permits issued to Village of Wellington (VOW) and Pine Tree WCD (PTWCD) and VOW ordinance require:
  ▪ BMPs and livestock waste storage and disposal
  ▪ FDACS BMP program for livestock waste
  ▪ Water quality monitoring (markers) and reporting

➢ 2019 Expanded monitoring network (markers) north of the C-51 West Canal
  ▪ 12 active sampling sites

Presenters: Youchao Wang & Steve Sarley
Environmental Resource Permit to Southern Gardens Groves includes conditions for Best Management Practices

Other projects: C-139 Flow Equalization Basin and Sam Jones Abiaki Prairie Restoration

CERP Big Cypress/L-28 Interceptor Modification (WERP)
C-11W Basin

➢ Environmental Resource Permits to WCDs including optimized detention and water quality reporting
➢ Ongoing CERP Project: Broward Co Preserve Area

Presenters: Youchao Wang & Steve Sarley
Feeder Canal Basin

➢ Feeder Canal Basin
➢ CERP Big Cypress / L-28 Interceptor Modification (WERP) – Planning
➢ North Feeder: Required BMPs, water quality monitoring and TP goals under Environmental Resource Permits. Voluntary FAV tilling projects
➢ West Feeder: Landowners can enroll in the FDACS BMP program.

Presenters: Youchao Wang & Steve Sarley
NSID Basin

Environmental Resource Permits issued to NSID include requirements for BMP implementation, water quality reporting, and TP load limits for discharges to WCA-3A.

CERP Project: Hillsboro 1 Impoundment (on hold)

Presenters: Youchao Wang & Steve Sarley
### Summary

**Key Topics**

- **Regulatory programs**
  - Verification of implementation
  - Water quality monitoring to ensure effectiveness
  - BMP research and demonstration projects
  - Data collection and supplemental evaluations
  - Restoration Strategies source control projects
  - CERP and others

- **Cooperative agreements**
  - Program improvement
  - Data collection and supplemental evaluations

- **Integration with ERP conditions**
  - Synergize benefits with regional and sub-regional projects

**Presenters:** Youchao Wang & Steve Sarley
Additional Information

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Public Use on SFWMD
Stormwater Treatment Areas

Jerry Krenz
Sr. Project Manager
Land Resources

18th Annual Public Meeting on the Long-Term
Plan for Achieving Water Quality Goals for the
Everglades Protection Area Tributary Basins
February 22, 2021
Public Use On STAs

- Public Use on District Lands
  - Why have Public Use?
  - Policy and Rules
  - Recreation Partnerships
  - STA

Presenter: Jerry Krenz
Why Have Public Use?

- 373.4592 “the district shall allow these areas to be used by the public for recreational purposes… unless such uses are incompatible with the restoration goals of the Everglades Construction Project."

SFWMD Created

- Public Use Policy, 2004
- Public Use Rules, 2006
Public Use Program
Background Information

- Public Use Policy
  - Public Participation
    - Recreation Issues Forum
  - Project Purposes First
    - Different rules for different types of lands
    - Not interfere with intent of the project
  - Project Planning, Design and Construction
    - Incorporate recreation facilities
Public Use Rule 40E-7

- Rules provide commitment for public access and nature-based recreation on District lands consistent with state statutes and District policy
- Types of Land include
  - Conservation
  - Interim
  - Right of Way
  - Project Lands
STA Activities and Facilities

- Public access, open on “extended weekends” Friday – Monday
- Daylight hours
- Bird watching, hiking, biking
- Fishing
- FWC hunting alligator and waterfowl
  - Friday waterfowl hunts
    - STA-1W and STA-3/4

Presenter: Jerry Krenz
Public Use Program Partnerships – Audubon, Florida Trail

- Audubon Society - Cooperative guided bird-watching tours on the STAs.
  - 1st Audubon tour in 2005 at STA-5, now 3 Chapters leading over 65 tours with 1,600+ participants at STA-1E, STA-2 and STA-5/6
- Florida Trail Association

Presenter: Jerry Krenz
Public Use Program Partnerships- FWC

- Florida Fish & Wildlife Conservation Commission
  - Waterfowl & alligator, quotas
  - Specialty hunts
    - Youth and wounded warrior
  - Enforce all public use rules

STA-2 Youth Hunts

STA-2 Wounded Warrior Outdoors

STA-5 Boardwalk

Presenter: Jerry Krenz
Public Use on STAs

- Project / Constructed Wetlands
  - Stormwater Treatment Areas

STA-1W

STA-3/4
Project Purposes First

- Waterfowl and alligator quotas
- Noticed FWC and stakeholder to prepare for changes and uncertainty
- Alligator hunters noticed season may end early
- Coordinated with FWC to offer waterfowl quotas, only early portion of season
- Closed southern STA 1W and northern STA 2
- Changed check station locations and access routes
- As construction progressed offered additional waterfowl quotas at end of season
Public Use Program
Project Planning, Design and Construction

- Public Use Facilities
  - STA 1W E1
    - Public access vehicle parking
    - Bike trail connection east and south bound
  - STA 1W E2
    - No vehicle parking on site
    - FWC check station vehicle access to be off site
    - Public access boat landing, camping on NWR side
    - Bike trail connection north and south bound

Presenter: Jerry Krenz
Public Use Program
Project Planning, Design and Construction

- Public Use Facilities
- A-1 FEB
  - Creating new SE access point to avoid current construction access routes to A-2 STA and A-2 Reservoir
- A-2 STA
  - Road to be along north side of A-1 FEB and A-2 Reservoir
  - Public access vehicle parking,
  - Trail shelter in SE corner
Public Use Facilities
- C-139 FEB
  - Public vehicle parking
- Lake Hicpochee FEB
  - Public vehicle parking
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Loxahatchee River

Presenter: Jerry Krenz
18th Annual Public Meeting on the Long-Term Plan for Achieving Water Quality Goals for the Everglades Protection Area Tributary Basins