



# Caloosahatchee Estuary BMAP 2<sup>nd</sup> TECHNICAL MEETING

February 24, 2010 ❖ 1:30 pm

**South Florida Water Management District**  
2301 McGregor Boulevard, Ft. Myers Florida 33901

# Agenda

1. Welcome and Opening Remarks
2. Draft Allocations
3. Nutrient Reduction Projects
4. SFWMD Partnership Projects
5. Next Steps

# Caloosahatchee Estuary BMAP

## DRAFT ALLOCATIONS

# Caloosahatchee Estuary TMDL 3240A, 3240B, 3240C

## ■ TMDL for Nutrients

- ❖ **Causative Pollutant** – Total Nitrogen (TN)
- ❖ **Target** : Seagrass light requirements in San Carlos Bay

- ## ■ TMDL= 23% Reduction in Total Nitrogen (over the entire river basin)

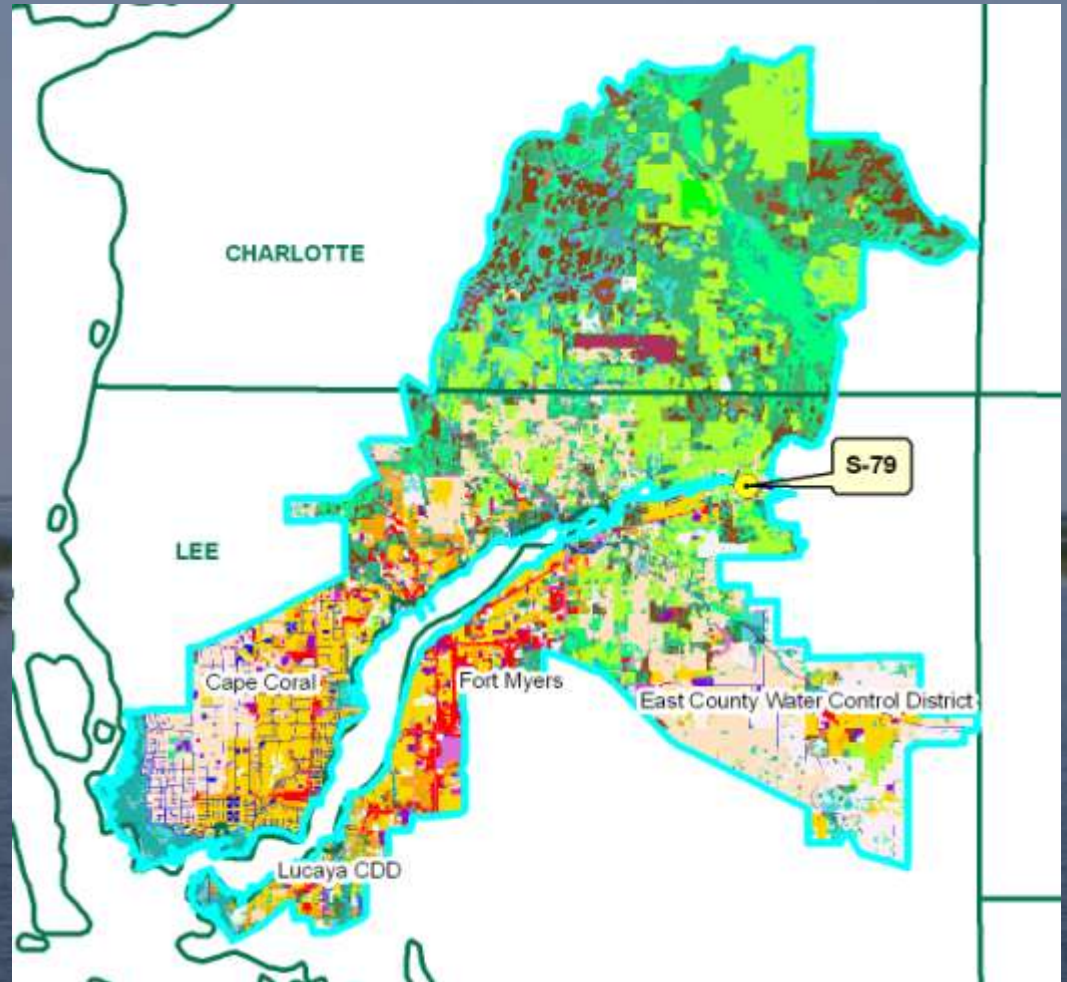
# Caloosahatchee BMAP

- Current Total Load at the Estuary – 11,799,762 lbs/yr
- Current Load from Tidal Portion - 2,063,723 lbs/yr
- Required Reduction – 2.71 million pounds
- Target TN load at Estuary – 9,085,817 lbs/yr

# Key Stakeholders - Tidal Caloosahatchee Basin

- Lee County
- Charlotte County
- City of Cape Coral
- City of Ft. Myers
- East County Water Control District
- Lucaya CDD
- FDOT
- FDACS

## ■ GIS Processing Steps

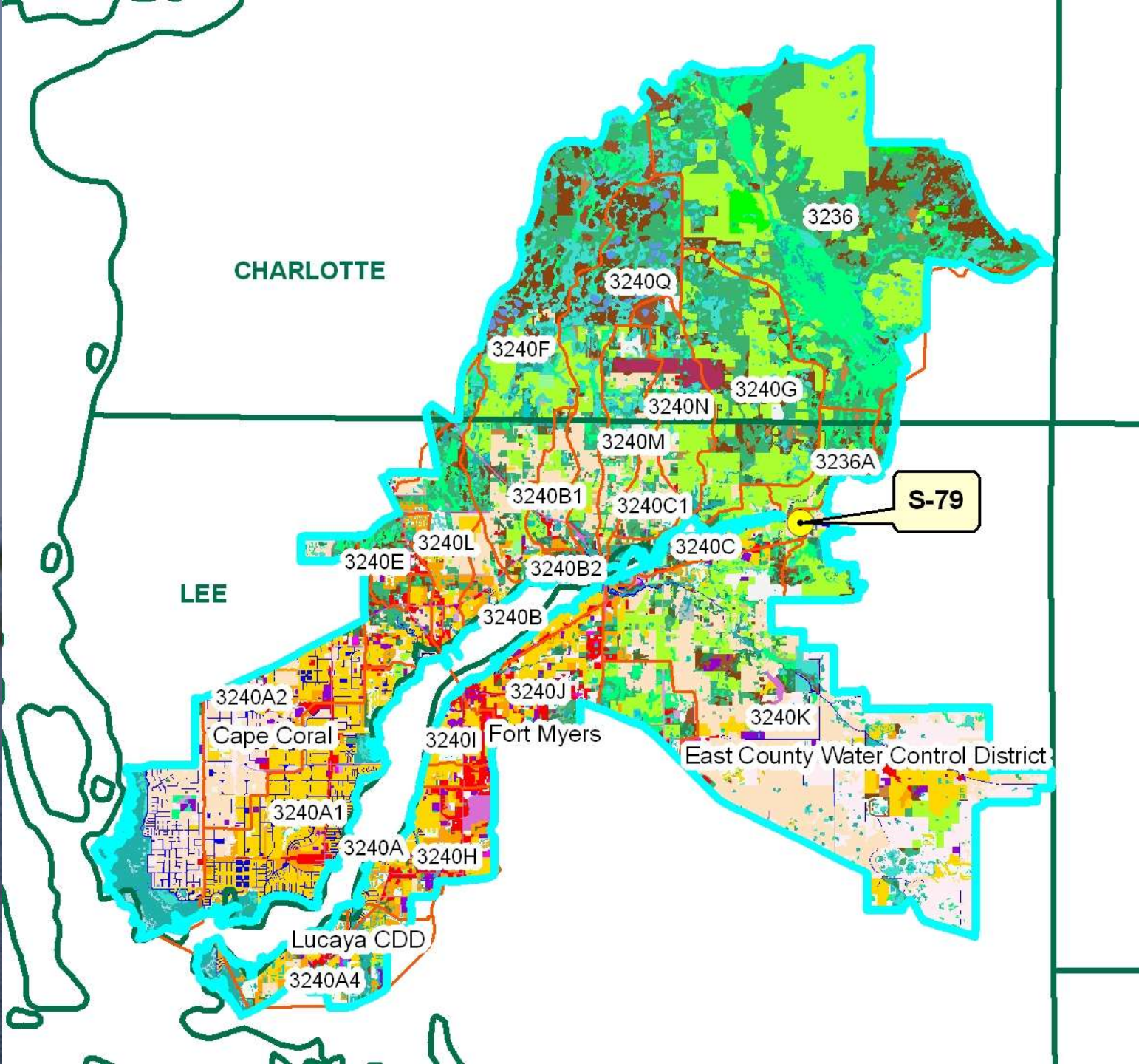


# Methodology for Calculations

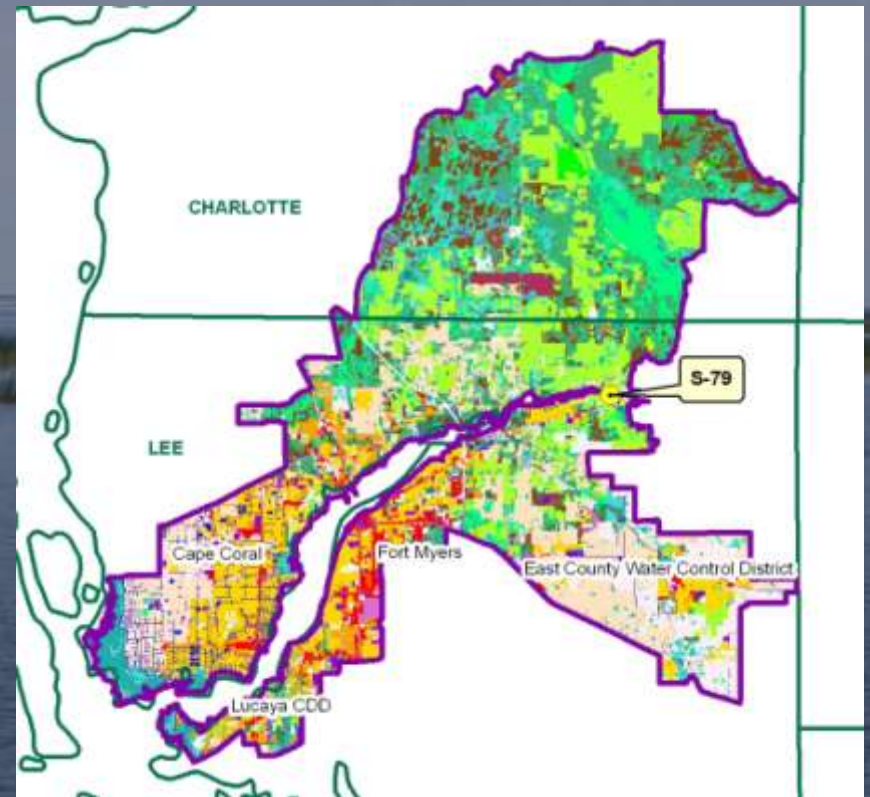
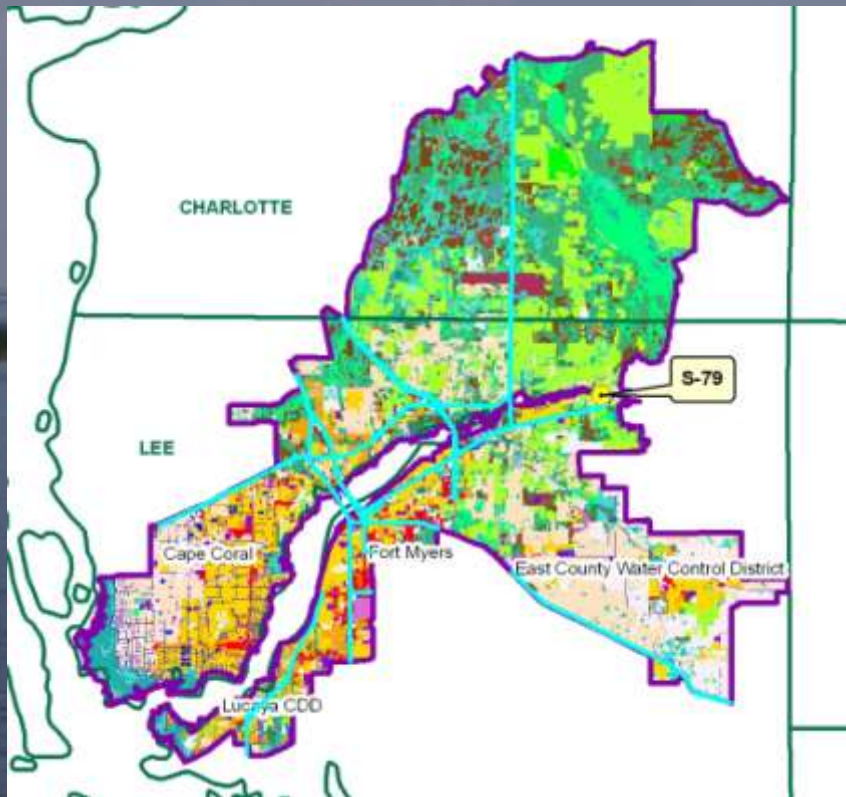
## ■ Base Map

- Tidal Basin – Landuse 2004 - Sub-Basins – Jurisdictions.

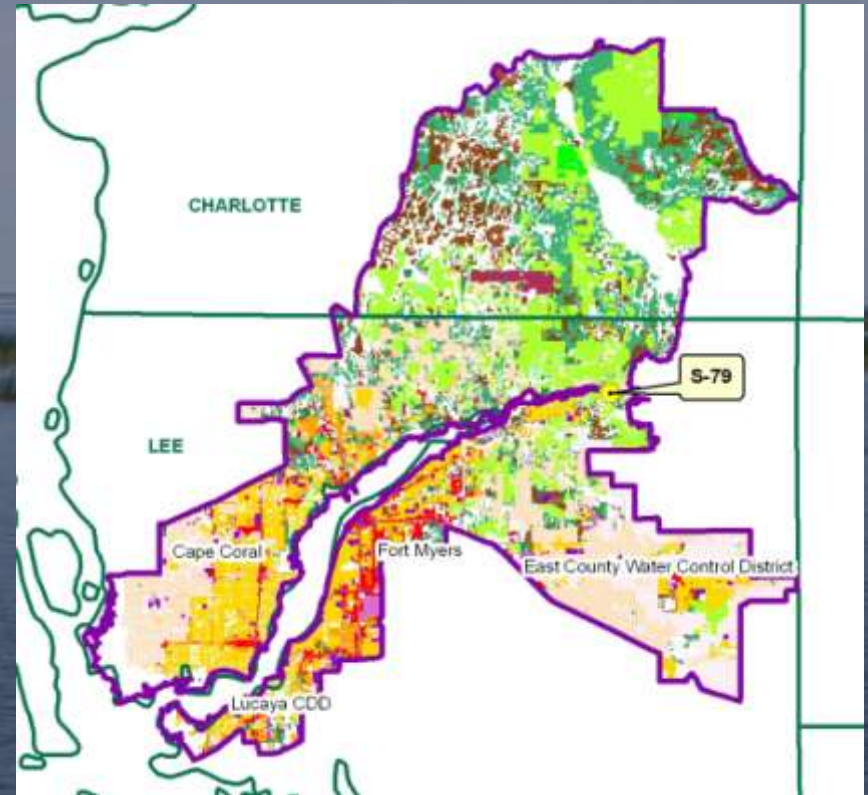
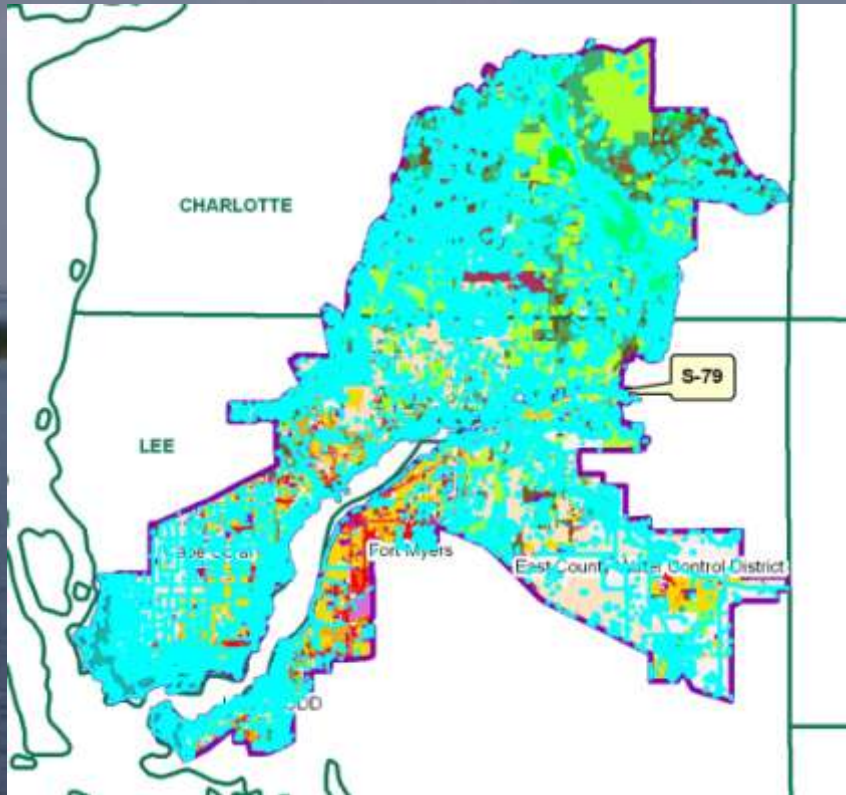




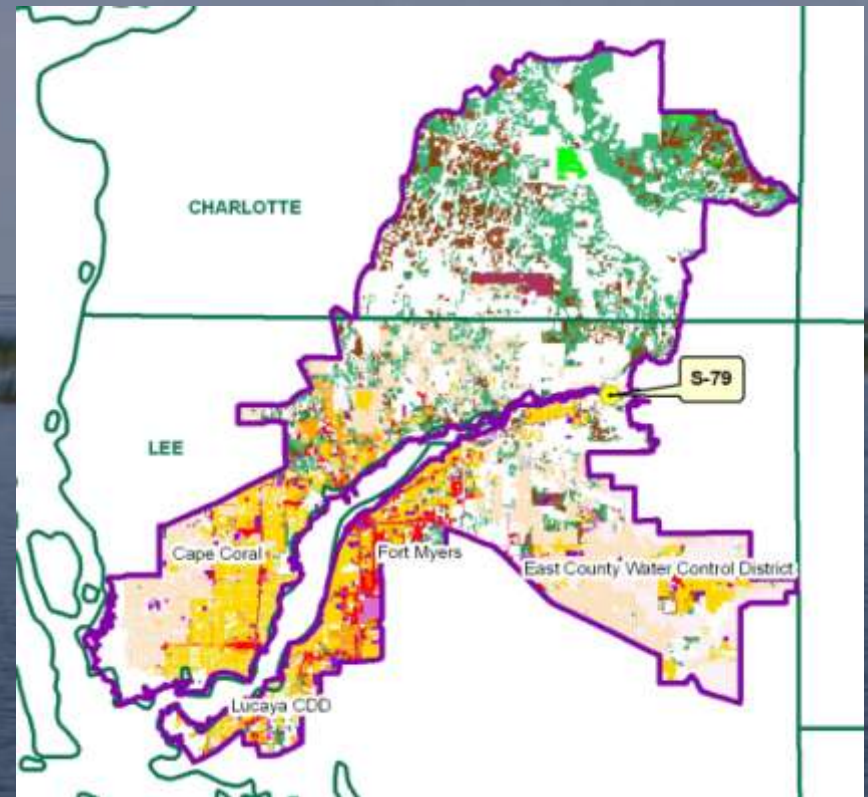
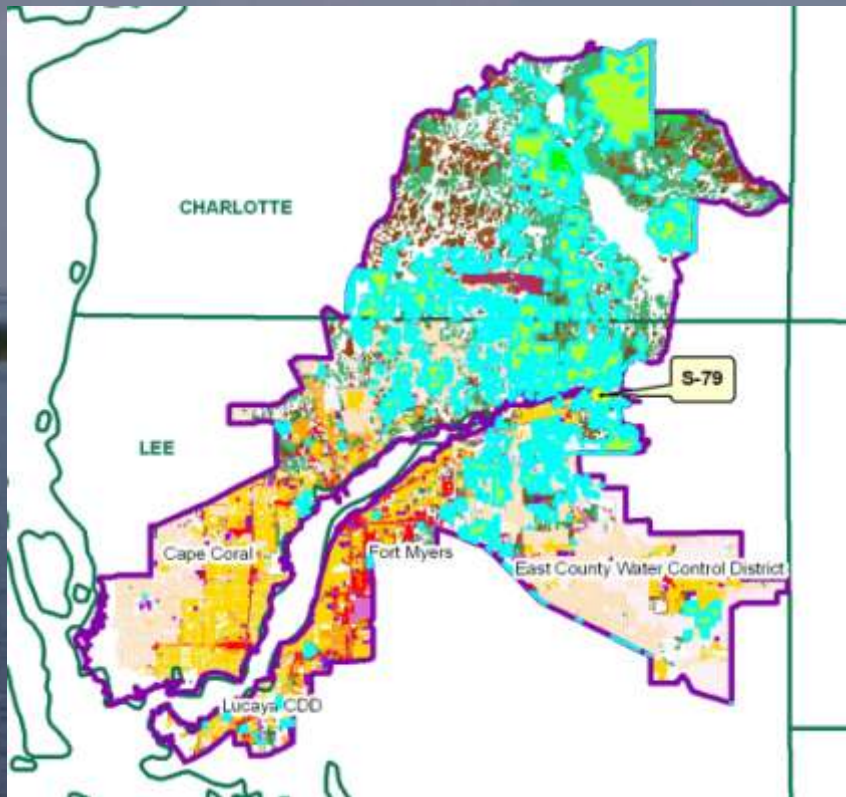
# Base Map with FDOT Removed



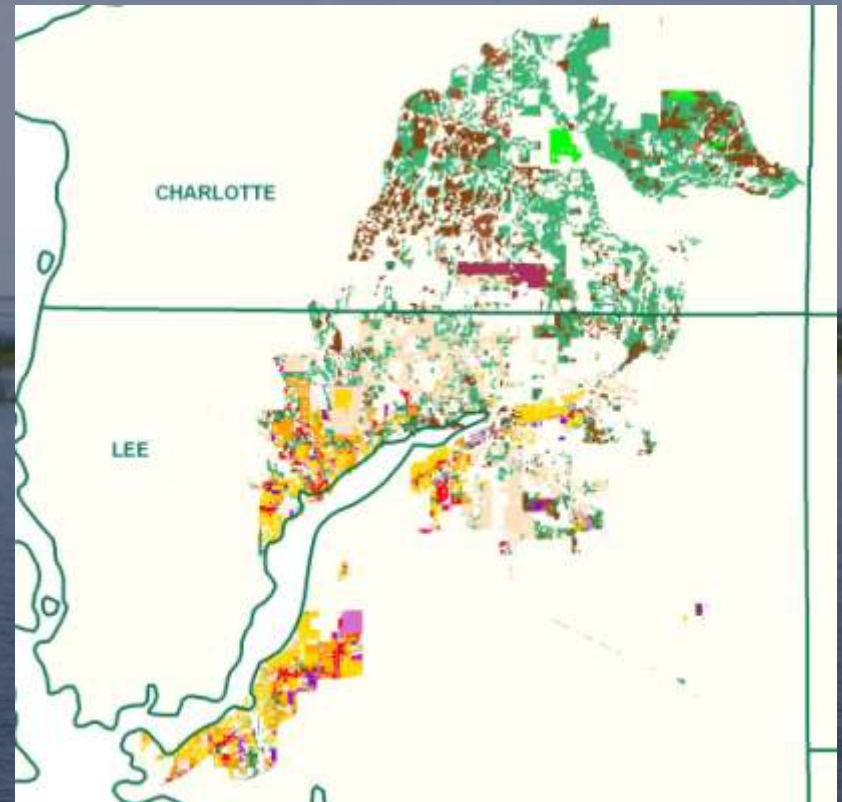
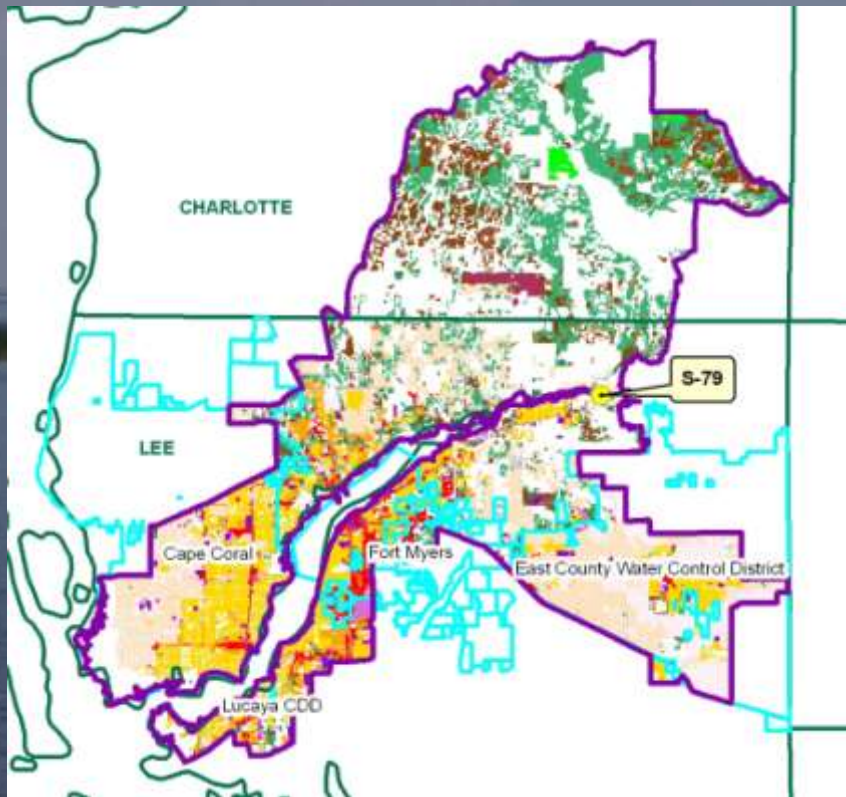
# Base Map with Water and Wetlands Removed



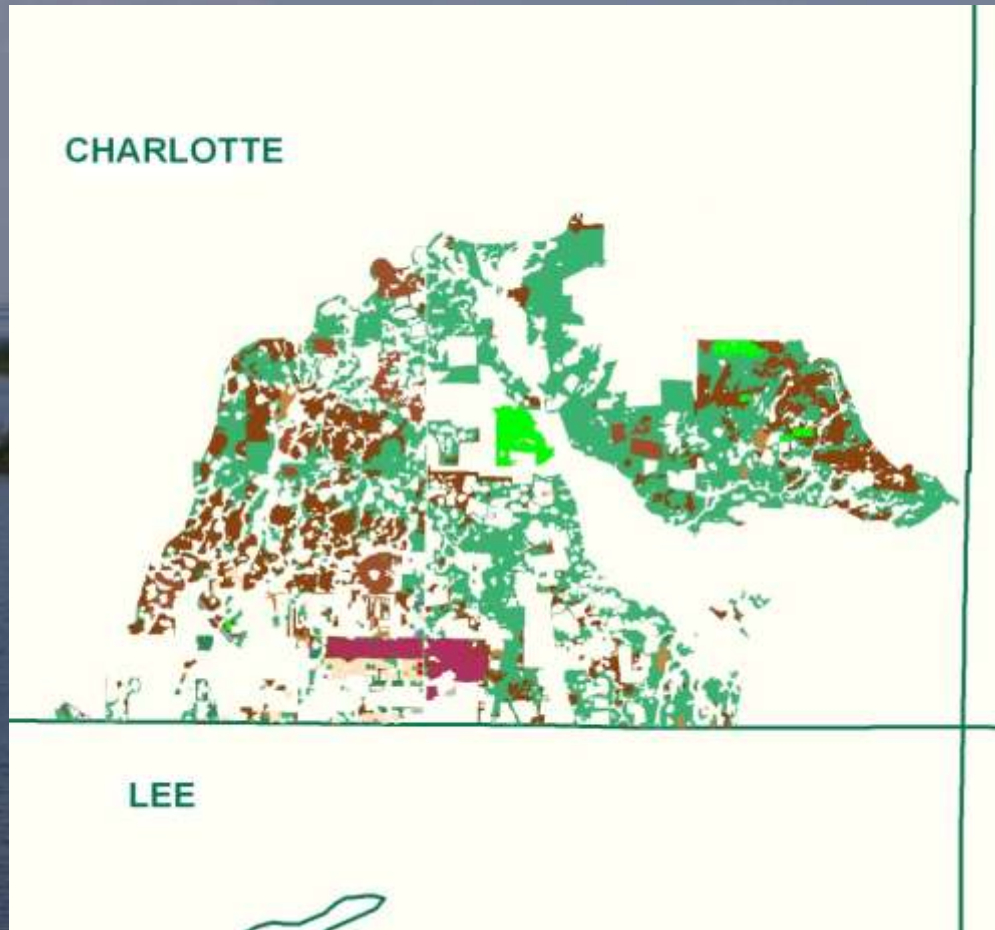
# Base map with Agriculture Removed



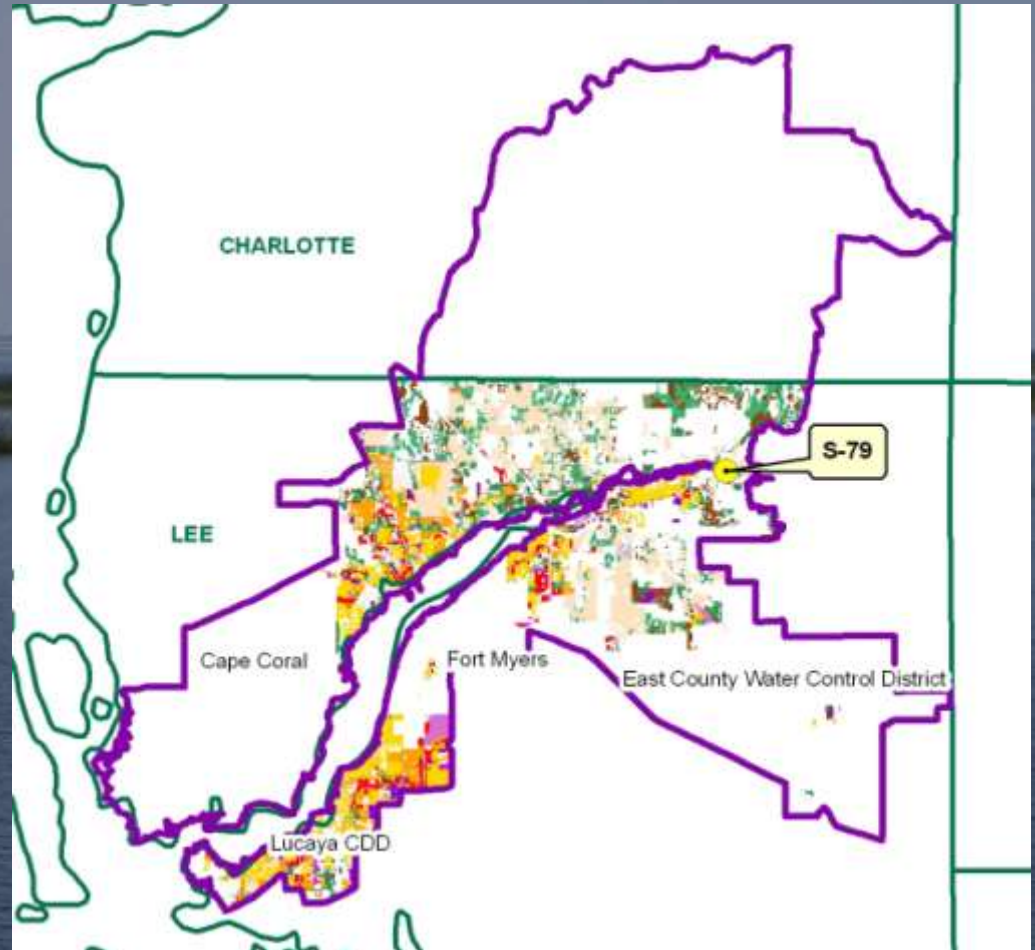
# Base map with Jurisdictions Removed



# Remainder – Charlotte County



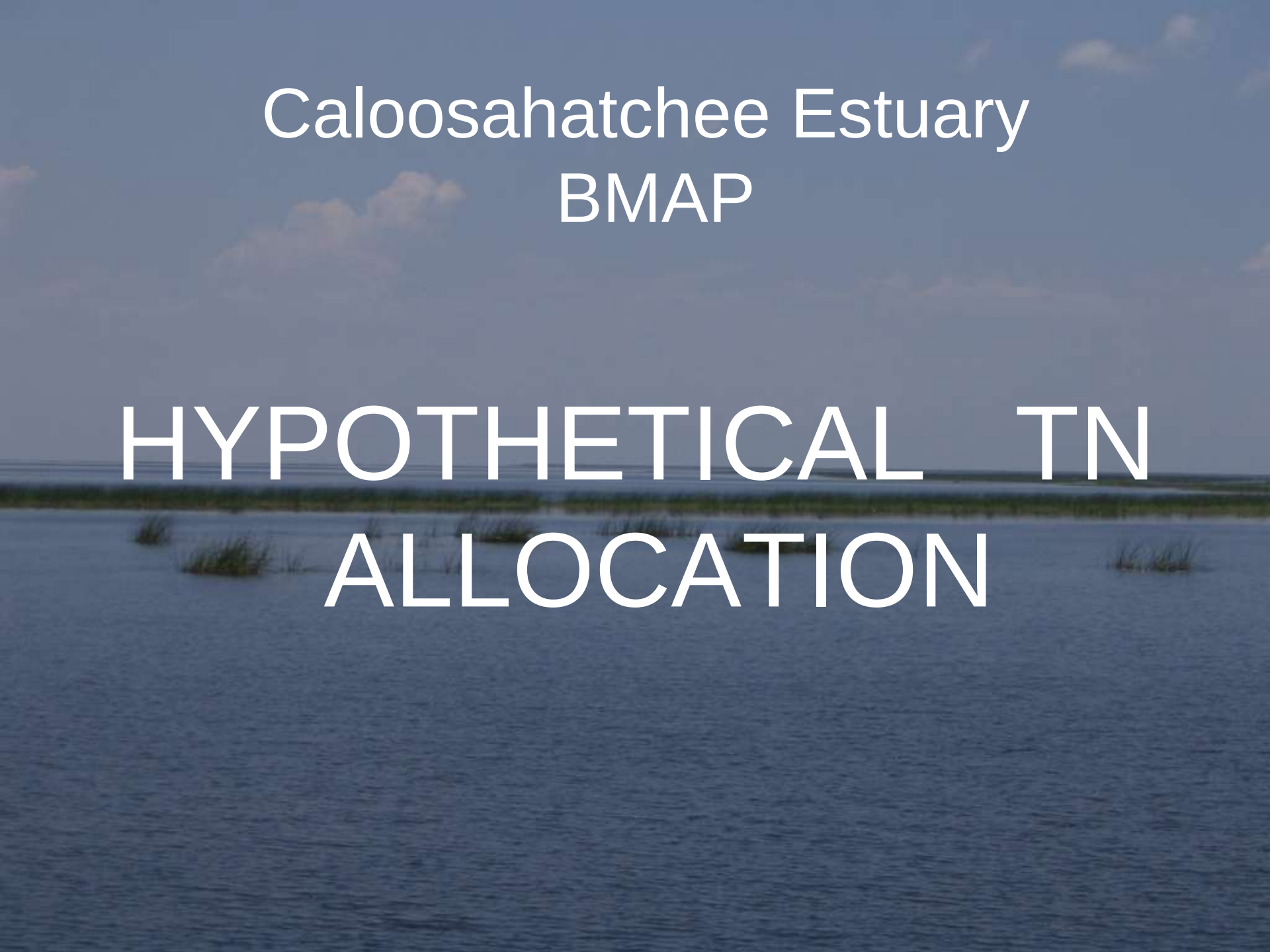
# Remainder – Lee County



# Calculation of Current Loading

## ■ City of Ft. Myers:

- **14,653** acres after roads, water/wetland, agriculture removed from Base Map.
- Land use code and its associated loading is summed **239422** lbs/yr



# Caloosahatchee Estuary BMAP

## HYPOTHETICAL TN ALLOCATION

# Hypothetical Allocation

## Annual TN Loadings Analysis

| Stakeholder              | Annual TN Load (lbs) | Percentage of Annual Load |
|--------------------------|----------------------|---------------------------|
| City of Sparkling Waters | 200                  | 10%                       |
| Village of Sandy Beach   | 300                  | 15%                       |
| Mossy Oaks County        | 500                  | 25%                       |
| FDOT                     | 50                   | 3%                        |
| Agriculture              | 600                  | 30%                       |
| wetlands                 | 350                  | 18%                       |
| <b>Annual TN Loading</b> | <b>2,000</b>         | <b>100%</b>               |

# Hypothetical Allocation

## Required Annual TN Load Reduction

| Stakeholder               | Annual TN Load (lbs) | Percentage of Annual Load |
|---------------------------|----------------------|---------------------------|
| City of Sparkling Waters  | 200                  | 10%                       |
| Village of Sandy Beach    | 300                  | 15%                       |
| Mossy Oaks County         | 500                  | 25%                       |
| FDOT                      | 50                   | 3%                        |
| Agriculture               | 600                  | 30%                       |
| Wetlands                  | 350                  | 18%                       |
| <b>Annual TN Loading</b>  | <b>2,000</b>         | <b>100%</b>               |
| <b>Adopted TN TMDL</b>    | <b>1,200</b>         | <b>60%</b>                |
| <b>Required Reduction</b> | <b>800</b>           | <b>40%</b>                |

# Hypothetical Allocation

## Adjusted TN Basis (No Allocation to Conservation Lands)

| Stakeholder               | Annual TN Load (lbs) | Percentage of Annual Load | Basis of Allocation |
|---------------------------|----------------------|---------------------------|---------------------|
| City of Sparkling Waters  | 200                  | 10%                       | 200                 |
| Village of Sandy Beach    | 300                  | 15%                       | 300                 |
| Mossy Oaks County         | 500                  | 25%                       | 500                 |
| FDOT                      | 50                   | 3%                        | 50                  |
| Agriculture               | 600                  | 30%                       | 600                 |
| Wetlands                  | 350                  | 18%                       | -                   |
| <b>Annual TN Loading</b>  | <b>2,000</b>         | <b>100%</b>               | <b>1,650</b>        |
| <b>Adopted TN TMDL</b>    | <b>1,200</b>         | <b>60%</b>                |                     |
| <b>Required Reduction</b> | <b>800</b>           | <b>40%</b>                |                     |

# Hypothetical Allocation

## Calculated Allocation Rate to Remaining Lands

| Stakeholder                     | Annual TN Load (lbs) | Percentage of Annual Load | Basis of Allocation |
|---------------------------------|----------------------|---------------------------|---------------------|
| City of Sparkling Waters        | 200                  | 10%                       | 200                 |
| Village of Sandy Beach          | 300                  | 15%                       | 300                 |
| Mossy Oaks County               | 500                  | 25%                       | 500                 |
| FDOT                            | 50                   | 3%                        | 50                  |
| Agriculture                     | 600                  | 30%                       | 600                 |
| Wetlands                        | 350                  | 18%                       | -                   |
| <b>Annual TN Loading</b>        | <b>2,000</b>         | <b>100%</b>               | <b>1,650</b>        |
| <b>Adopted TN TMDL</b>          | <b>1,200</b>         | <b>60%</b>                |                     |
| <b>Required Reduction</b>       | <b>800</b>           | <b>40%</b>                |                     |
| Reduction = $\frac{800}{1,650}$ |                      | <b>48.48%</b>             |                     |

# Hypothetical Allocation

## Calculated Allocation Rate to Remaining Lands

| Stakeholder                     | Annual TN Load (lbs) | Percentage of Annual Load | Basis of Allocation | Required Reduction |
|---------------------------------|----------------------|---------------------------|---------------------|--------------------|
| City of Sparkling Waters        | 200                  | 10%                       | 200                 | 97                 |
| Village of Sandy Beach          | 300                  | 15%                       | 300                 | 145                |
| Mossy Oaks County               | 500                  | 25%                       | 500                 | 242                |
| FDOT                            | 50                   | 3%                        | 50                  | 24                 |
| Agriculture                     | 600                  | 30%                       | 600                 | 291                |
| Wetlands                        | 350                  | 18%                       | -                   | 0                  |
| Annual TN Loading               | 2,000                | 100%                      | 1,650               | 800                |
| Adopted TN TMDL                 | 1,200                | 60%                       |                     |                    |
| Required Reduction              | 800                  | 40%                       |                     |                    |
| Reduction = $\frac{800}{1,650}$ |                      | 48.48%                    |                     |                    |

# Hypothetical Allocation

## Allowable Annual TN Load Discharge

| Stakeholder                  | Annual TN Load (lbs) | Percentage of Annual Load | Basis of Allocation | Required Reduction | Allowable Annual TN Load |
|------------------------------|----------------------|---------------------------|---------------------|--------------------|--------------------------|
| City of Sparkling Waters     | 200                  | 10%                       | 200                 | 97                 | 103                      |
| Village of Sandy Beach       | 300                  | 15%                       | 300                 | 145                | 155                      |
| Mossy Oaks County            | 500                  | 25%                       | 500                 | 242                | 258                      |
| FDOT                         | 50                   | 3%                        | 50                  | 24                 | 26                       |
| Agriculture                  | 600                  | 30%                       | 600                 | 291                | 309                      |
| Agency Conservation Holdings | 350                  | 18%                       | -                   | 0                  | 350                      |

|                   |       |      |       |     |       |
|-------------------|-------|------|-------|-----|-------|
| Annual TN Loading | 2,000 | 100% | 1,650 | 800 | 1,200 |
|-------------------|-------|------|-------|-----|-------|

|                 |       |     |
|-----------------|-------|-----|
| Adopted TN TMDL | 1,200 | 60% |
|-----------------|-------|-----|

|                    |     |     |
|--------------------|-----|-----|
| Required Reduction | 800 | 40% |
|--------------------|-----|-----|

Reduction =  $\frac{800}{1,650}$  **48.48%**

# Caloosahatchee Estuary BMAP

## NUTRIENT REDUCTION PROJECTS

# BMAP Project Credits

- Eligibility Dates for BMAP Load Reduction Credits are Based on the Data Period Preceding the TMDL
- Pounds reduced will be subtracted from the total allocation for those projects completed **July 1, 2005** and later.
- Credit only counts for treatment above and beyond any permitted requirements.

# BMAP Project Credits

- Projects Must be Operated and Properly Maintained as Permitted.
- Operation and Maintenance records may be Requested as part of the Project Review process.
- Projects not operated as permitted, including older projects not included for specific credit, could result in additional reduction requirements by the responsible entity.

# Stakeholder Projects and Management Activities

## PROJECTS

- Structural BMPs
  - ❖ Quantifiable Load Reductions
  - ❖ Reductions Not Currently Quantified
- Restoration and WQ Improvement Projects
- Basic Stormwater Management Program Implementation

## ACTIVITIES

- Regulations, Ordinances, and Guidelines
- Special Studies and Planning Efforts
- Streetsweeping
- Enhanced O&M Program
- Certain Agricultural BMPs
- Public Education and Outreach Efforts

# Assessment of Stakeholder Projects & Practices Information

## ■ Goals

- ❖ Transparent Assessment Process
- ❖ Realistic Estimates of Nutrient Load Reductions
- ❖ Consistency Between the BMAPs

## ■ Process

- ❖ Stakeholders Complete the Matrix for Their Individual Projects
- ❖ FDEP Assembles the Master Project Matrix for Each BMAP
- ❖ FDEP Conducts Completeness Checks
- ❖ FDEP Confirms the Estimates
- ❖ FDEP Calculates the Initial Estimate of Reductions
- ❖ Stakeholders Review the Projects Matrix

# Master Stakeholder Projects & Practices Listing

## ■ General Project Information

- Owner, Partners and Contacts
- Location and any Permits
- Project Description
- Expected Pollutant Reductions/Discharges
- Anticipated Costs and Funding
- Schedule Milestones

## ■ Specific Project Information

- Retention Projects
- Wet Detention Project Info
- Alum Injection Projects Info
- Second Generation Baffle Box Project Info

# Standardizing Removal Estimates

## Evaluation of Treatment Facilities

- Location and Physical Setting
- Upstream Watershed Characteristics
- Facility Design Basis
- Constructed Characteristics
- O&M Practices

# Standardizing Removal Estimates

## ■ Evaluation of Treatment Facilities

- ❖ Location and Physical Setting
- ❖ Upstream Watershed Characteristics
- ❖ Facility Design Basis
- ❖ Constructed Characteristics
- ❖ O&M Practices

## ■ Standardizing Removal Rates

- ❖ Literature Values vs. Monitoring Results
- ❖ Adjustments Based on Actual Experiences
- ❖ Sidebar Conferences When Required

# Structural BMPs

## Reported TN Removal Rates

| Management Practice                                                               | Mean      | FDEP Approved<br>TN Reduction Value |
|-----------------------------------------------------------------------------------|-----------|-------------------------------------|
| Dry Detention                                                                     | 10%-20%   | TBD                                 |
| Wet Detention                                                                     | 20%-45%   | TBD                                 |
| Retention                                                                         | 80%-90%   | TBD                                 |
| Swales                                                                            | 30%-50%   | TBD                                 |
| Infiltration Trenches                                                             | Variable* | TBD                                 |
| Porous Pavement Systems                                                           | Variable* | TBD                                 |
| G1 Baffle Boxes                                                                   | 1%        | TBD                                 |
| G2 Nutrient Baffle Boxes                                                          | 38%-63%   | TBD                                 |
| Proprietary Wet Cyclonic Treatment<br>Technologies <i>CDS Units, Stormceptors</i> | Variable* | TBD                                 |

\*Depends on Specific Location, Design, Operation and Maintenance Factors

# Structural BMPs

## Reported TN Removal Rates

| Management Practice     | Minimum | Mean      | Maximum | FDEP<br>Approved<br>Value |
|-------------------------|---------|-----------|---------|---------------------------|
| Wet Detention           | 12%     | 37%       | 63%     | TBD                       |
| Off-Line Dual Ponds     | 30%     | 58%       | 85%     | TBD                       |
| Alum/Coagulant Systems  |         | Variable* |         | TBD                       |
| PAM Logs                |         | Variable* |         | TBD                       |
| Flow-way Filter Marsh   | 36%     |           | 68%     | TBD                       |
| Manmade Wetlands        |         | Variable* |         | TBD                       |
| Modular Wetland Systems |         | Variable* |         | TBD                       |
| Floating Gardens        |         | Variable* |         | TBD                       |
| Stormwater Reuse        |         | Variable* |         | TBD                       |
| Solarbees               |         | Variable* |         | TBD                       |

\*Depends on Specific Location, Design, Operation and Maintenance Factors

# Non-Structural Management Practices

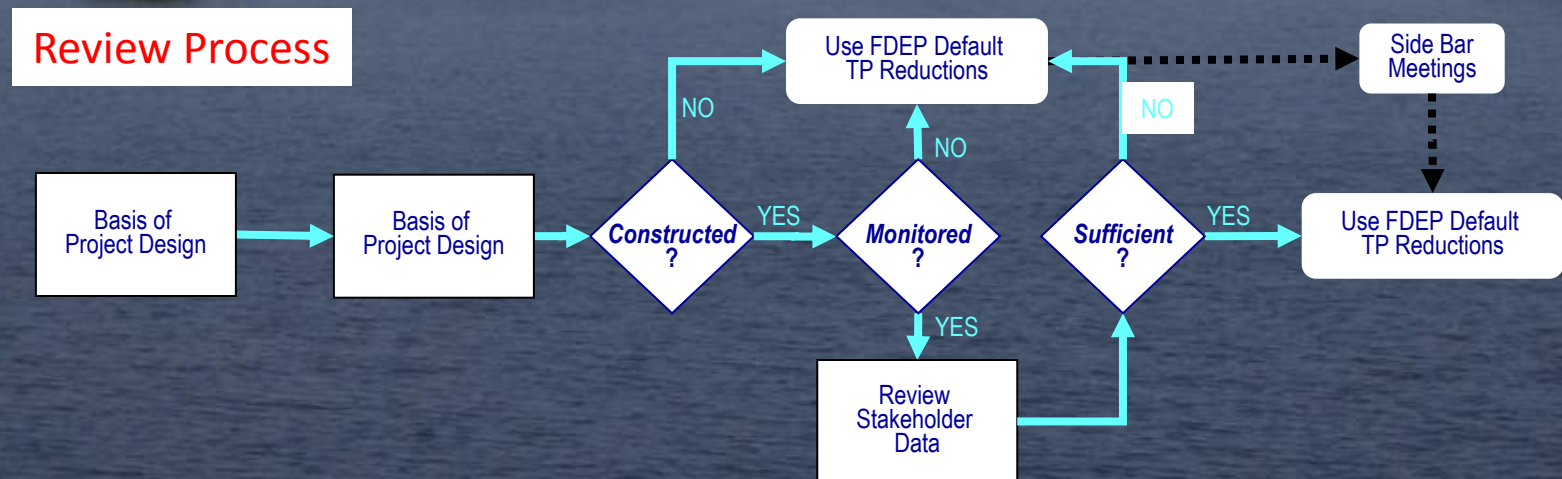
## Published TN Removal Rates

| Management Practice                       | Minimum | Mean      | Maximum | FDEP<br>Approved<br>Value |
|-------------------------------------------|---------|-----------|---------|---------------------------|
| Street Sweeping                           |         |           |         | TBD                       |
| Enhanced Annual<br>Maintenance Activities |         | Variable* |         | TBD                       |
| LID Practices                             |         | Variable* |         | TBD                       |
| Florida Yards and<br>Neighborhoods        |         | Variable* |         | TBD                       |
| Public Education Programs                 |         | Variable* |         | TBD                       |

\*Depends on Specific Location, Design, Operation and Maintenance Factors

# Determination of BMAP Credits

- Project Setting
- Basis of Project Design
- FDEP Default TP Reduction Values
- Project Specific Monitoring Results





Caloosahatchee Estuary BMAP

SFWMD

Partnership Projects

# Caloosahatchee Estuary BMAP

NEXT  
STEPS

# Stakeholder Action Items

- ✓ Summarized Your Candidate Projects and Management Actions Information
  - Project Name and Location
  - Anticipated Reductions
  - Availability of Local Performance Data

Deadline for submittal – 30 March, 2010

# Next Meetings

## ■ Technical Meeting No. 3

- ❖ Finalization of Watershed Loads and Stakeholder Allocations
- ❖ FDEP Standardized TN Reduction Rates
- ❖ Initial Matrix Presentation

# Questions & Comments?



Never Give Up.