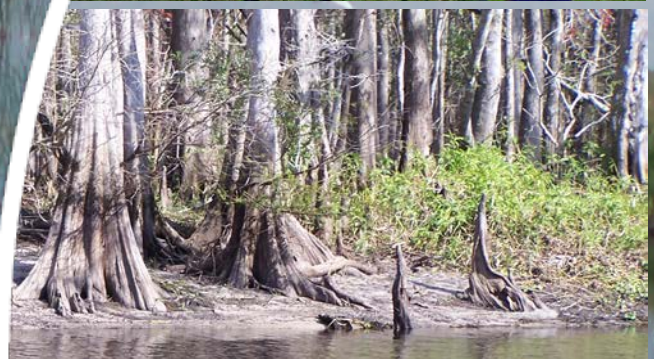
LAKE OKEECHOBEE WATERSHED PROJECT

Modeling Sub-Team

Model Baselines

October 25, 2016



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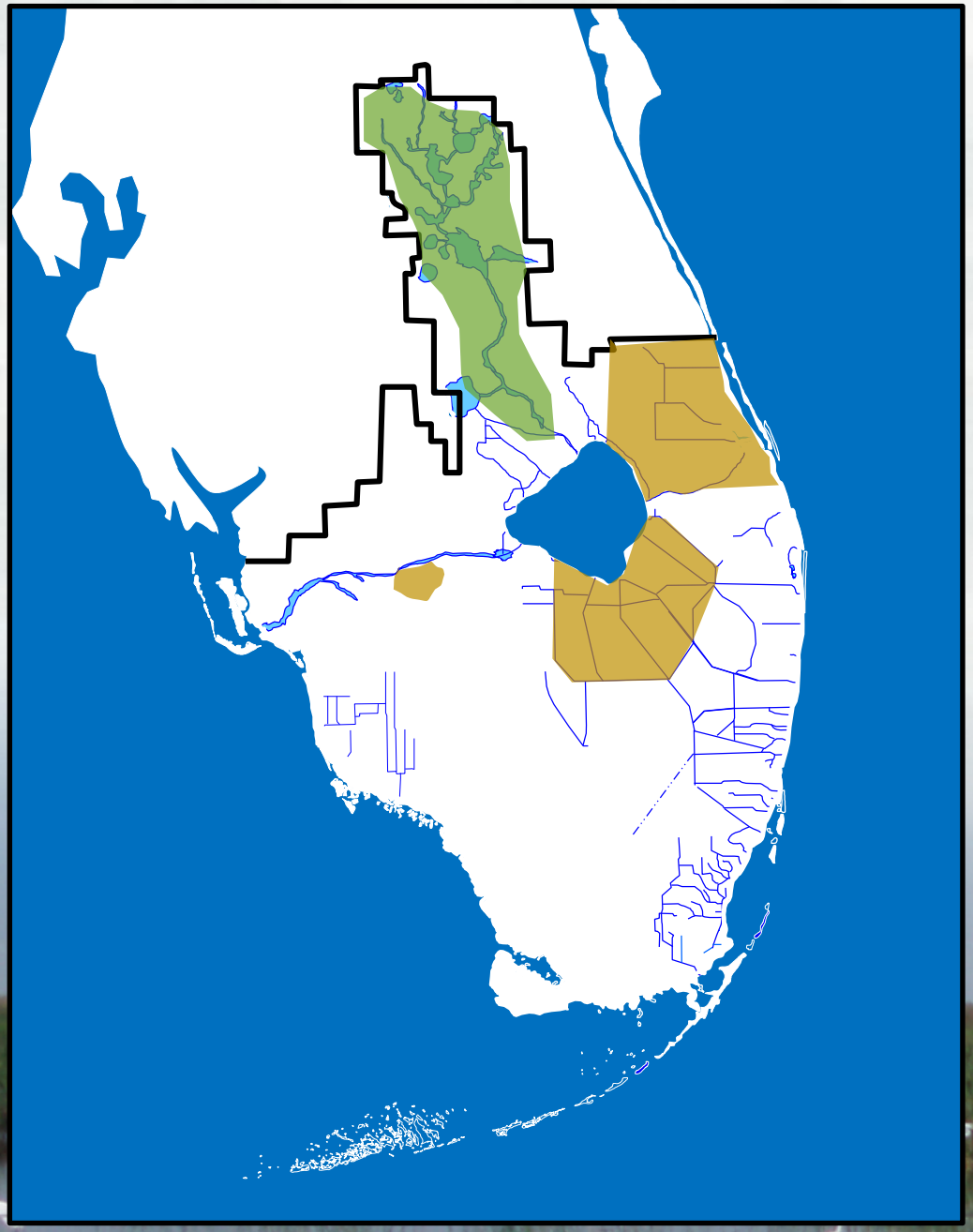
TOPICS

- Review of High-level Assumptions
- 2016 Existing Conditions Baseline (ECB)
  - Current System Features and Operations
  - LORS08 Regulation Schedule
- 2050 Future Without Project Baseline (FWOP)
  - Includes CERP and non-CERP Authorized Projects Anticipated to be Completed by 2050 per the September 2016 Integrated Delivery Schedule (IDS), for example:
    - Central Everglades
    - Indian River Lagoon South
    - C43 West Basin Storage
  - LORS08 Regulation Schedule
- Discussion



Key System Changes From ECB to FWO

- **Kissimmee River Restoration**
- Indian River Lagoon – South
- C-43 Phase I Reservoir
- Everglades Agricultural Area

RSMBN for Upper Kissimmee Basin

Structure S65 Operational Schedule: ECB

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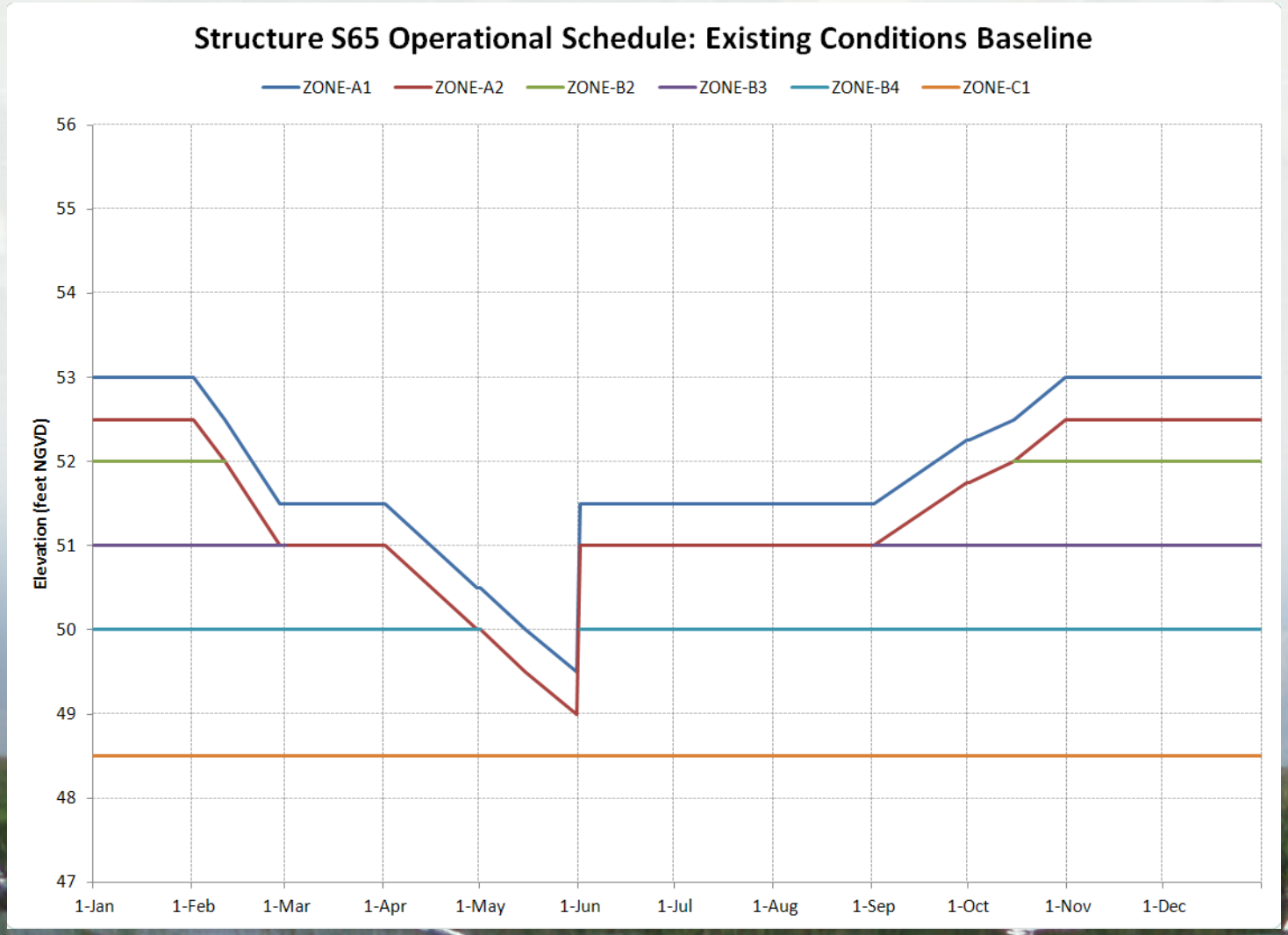
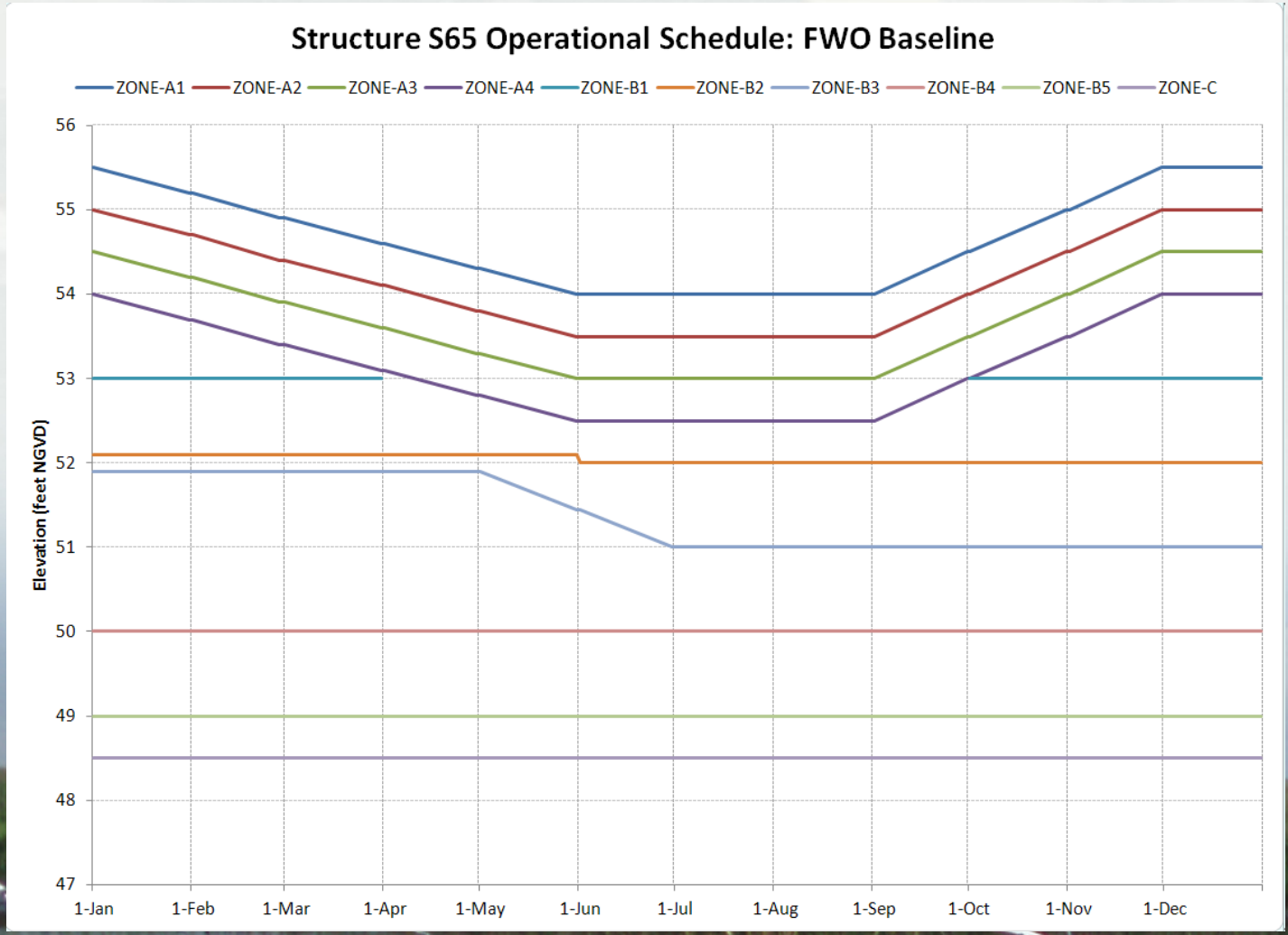


RSMBN for Upper Kissimmee Basin

Structure S65 Operational Schedule: FWO

BUILDING STRONG



Kissimmee River Restoration

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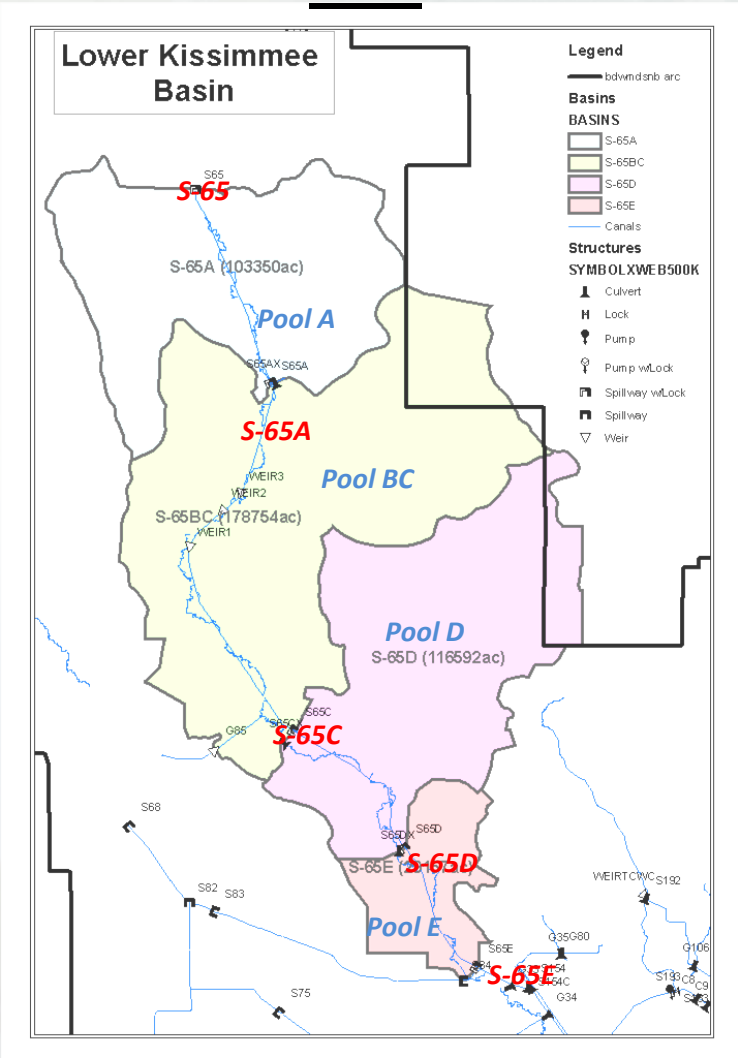
ECB



FWO

- The Lower Kissimmee Basin is partitioned into three major sub-watersheds: Pools A, BCD (Pool BC & Pool D combined into Pool BCD), and E
- Stage-volume and stage-area relationships updated for Pool BCD
- Structure S-65C is removed

Kissimmee Basin Inflows to Lake Okeechobee

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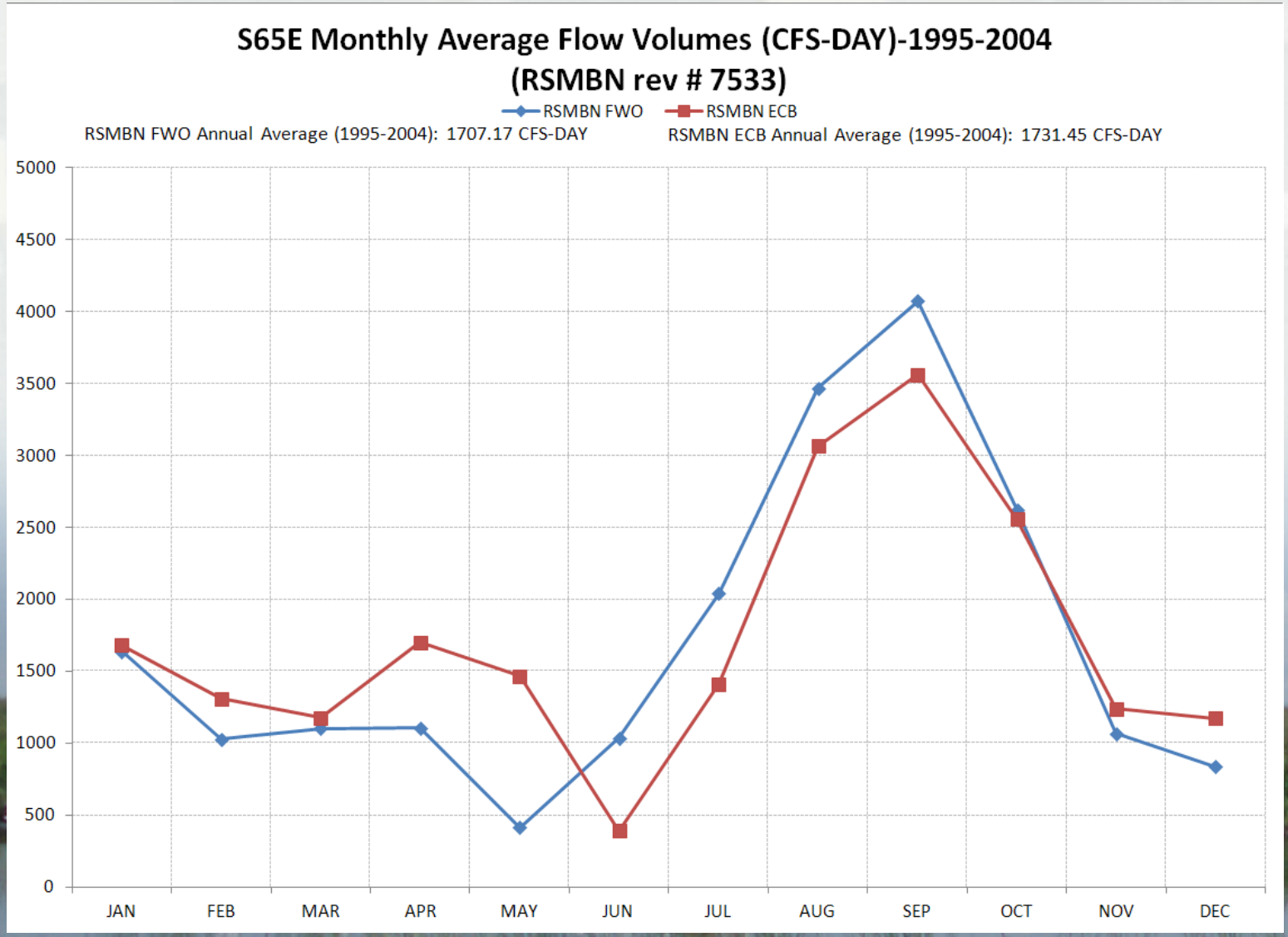

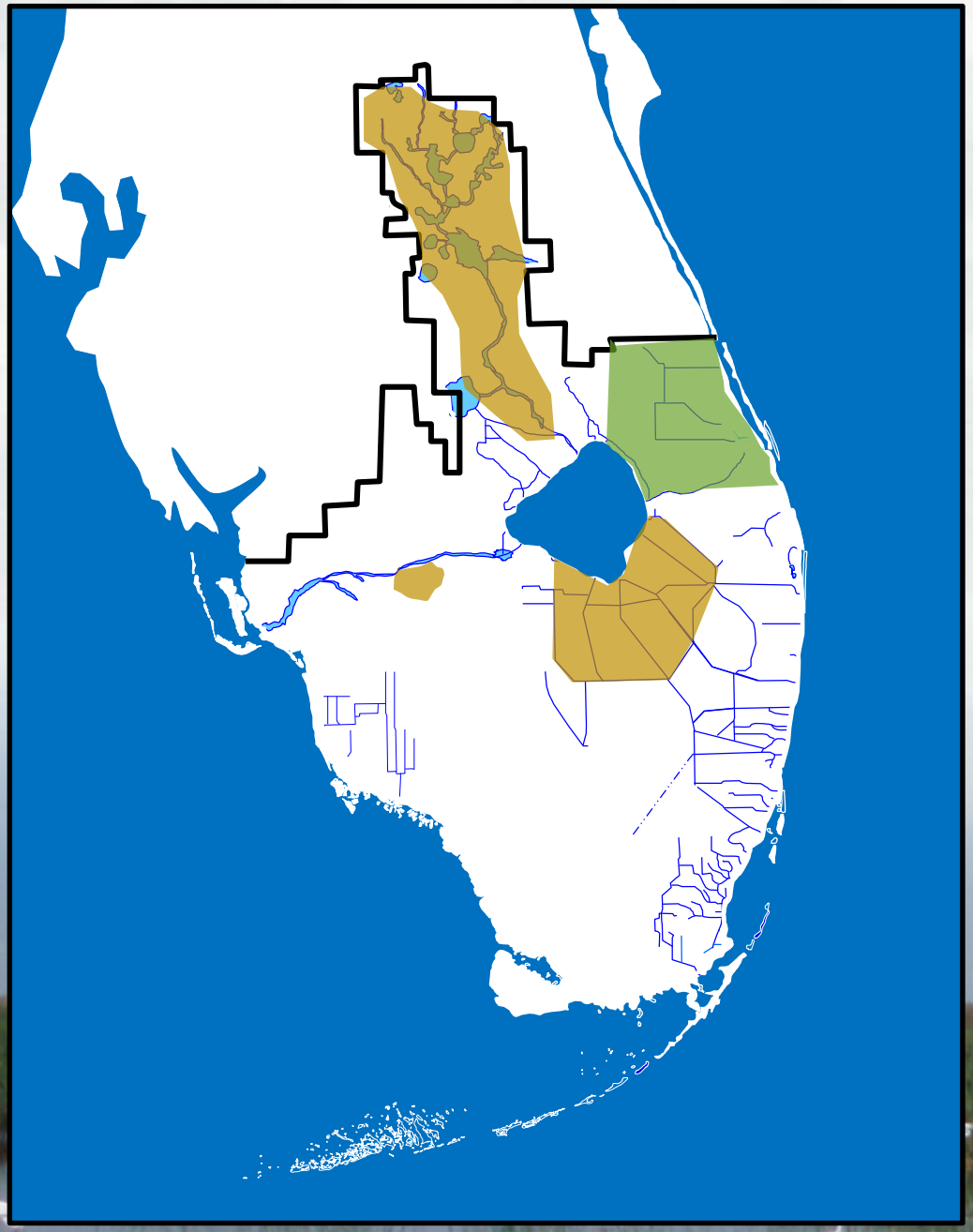

Key System Changes From ECB to FWO

- Kissimmee River Restoration
- **Indian River Lagoon – South**
- C-43 Phase I Reservoir
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Indian River Lagoon ECB

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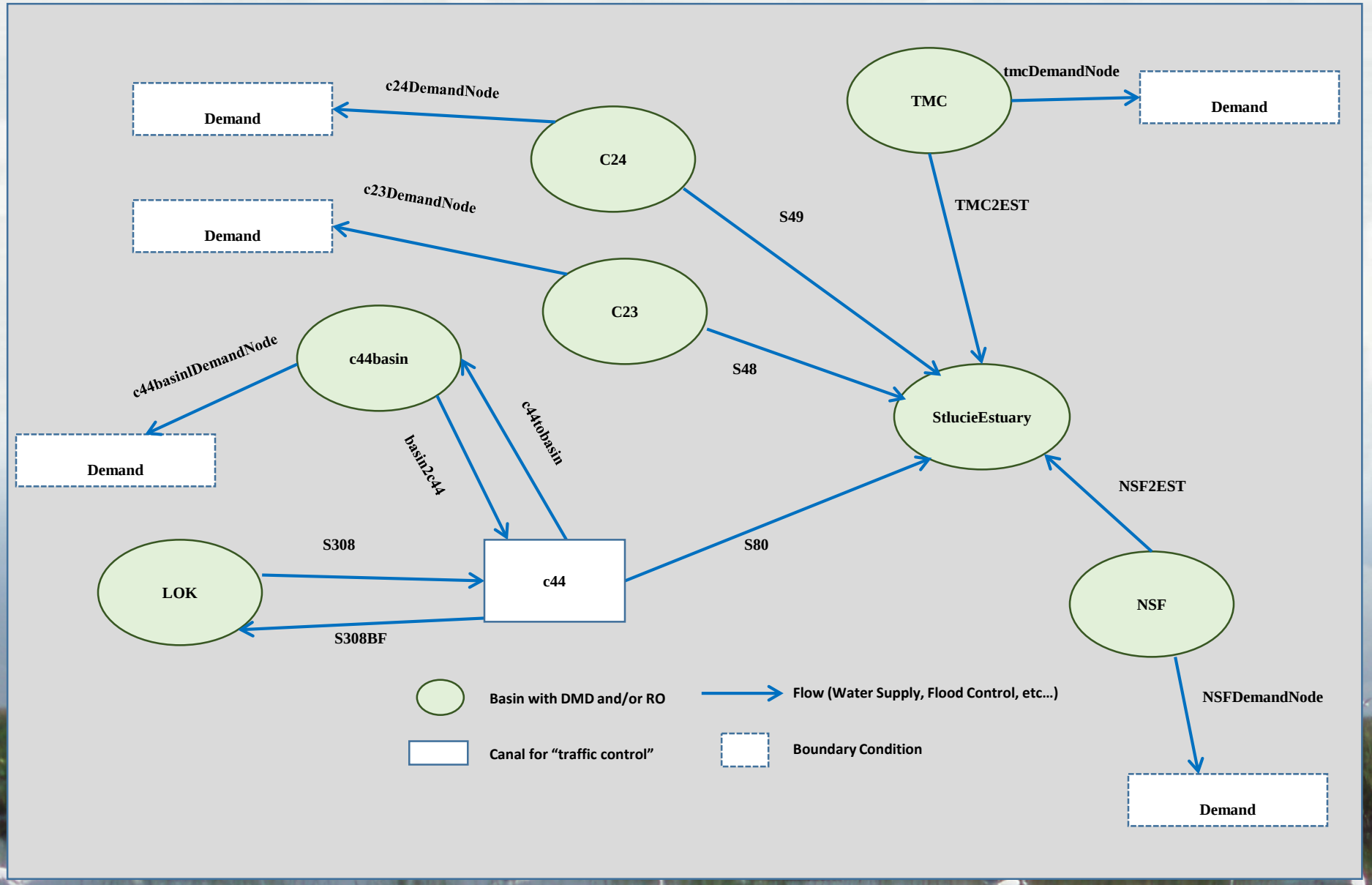
- C44 Basin
  - S-80 discharges into the St. Lucie Estuary.
  - C44 Basin runoff has potential to backflow into Lake Okeechobee when Lake stage is below the LORS08 Baseflow zone.
  - C44 Basin supplemental demands for surface water irrigation are met by Lake Okeechobee.
- C23, C24, TMC and NF-SF-B456 (NSF) Sub-watersheds
  - Three outlet structures discharge from each of the basins into the St. Lucie Estuary.
  - Structure capacity is assumed to be limited only by available basin runoff.
  - No regional deliveries to meet demands.

Indian River Lagoon ECB in RSMBN



Indian River Lagoon FWO

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- FWO Project Features
  - Consistent with latest CERP Indian River Lagoon – South DDRs that update the authorized 2004 PIR.
  - Includes latest operational intent (Opti6) per St Lucie River Watershed Protection Plan (January 2009).
  - Basin demands can be met by project features.
- C44 Reservoir and STA
  - Storage capacity: 50,246 acre-feet
  - Footprint: 12,125 acres (assumed 9700 effective acres / 80%)
  - Inlet: 1060 cfs capacity, modeled as pump; source: C44 Basin
  - Inlet: 250 cfs capacity, modeled as pump; source: C23 Basin
  - Outlet: 550 cfs capacity, modeled as pump; destination: C44 Basin

Indian River Lagoon FWO

BUILDING STRONG

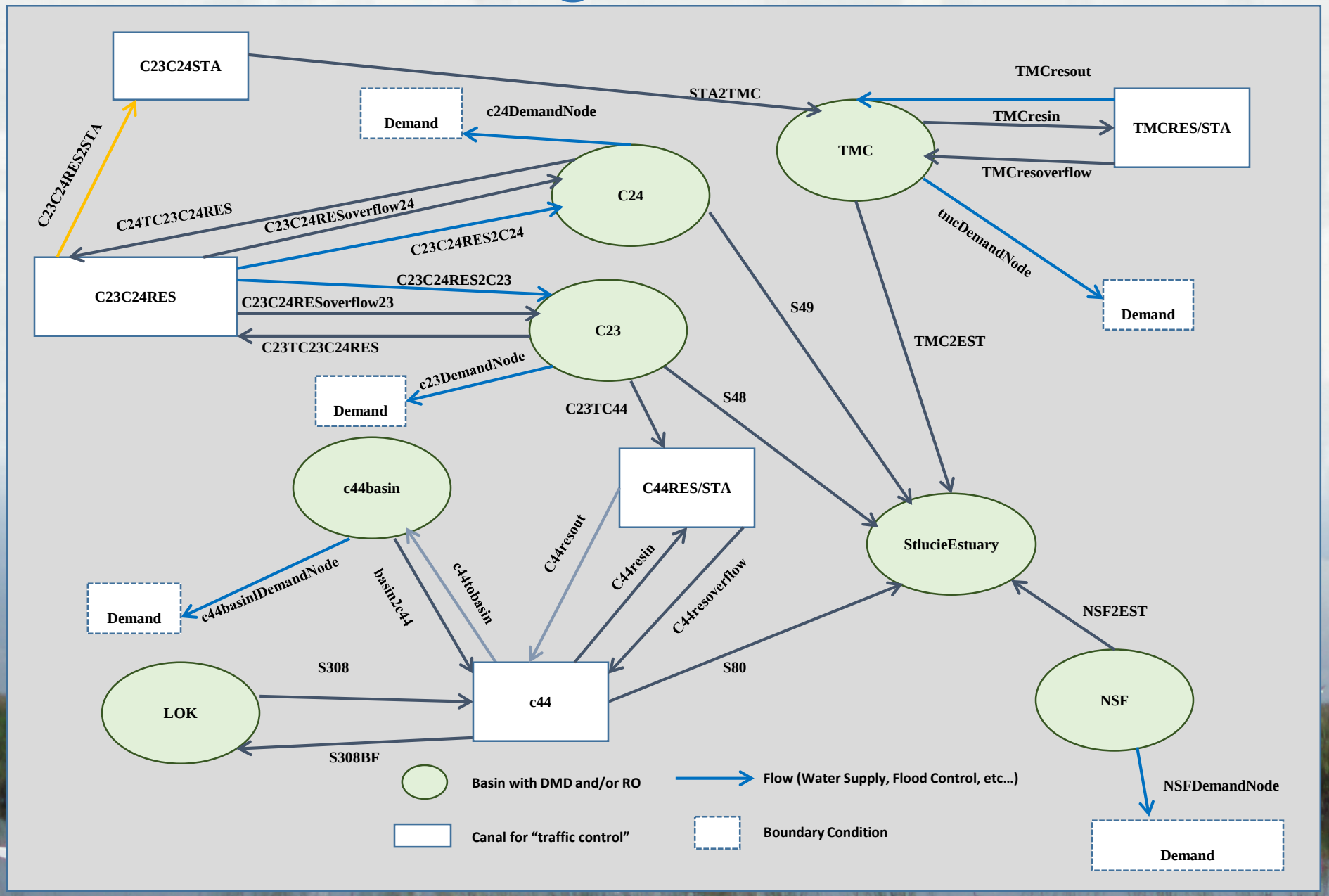
- C23/24 Reservoir
  - Storage capacity: 92,094 acre-feet
  - Footprint: 8675 acres (assumed 6940 effective acres / 80%)
  - Inlet: 900 cfs capacity, modeled as pump; source: C23 Bas
  - Inlet: 900 cfs capacity, modeled as pump; source: C24 Basin
  - Outlet: 300 cfs capacity, modeled as pump; destination: C23 Basin
  - Outlet: 300 cfs capacity, modeled as pump; destination: C24 Basin
  - Outlet: 200 cfs capacity, modeled as pump; destination: C23/C24 STA

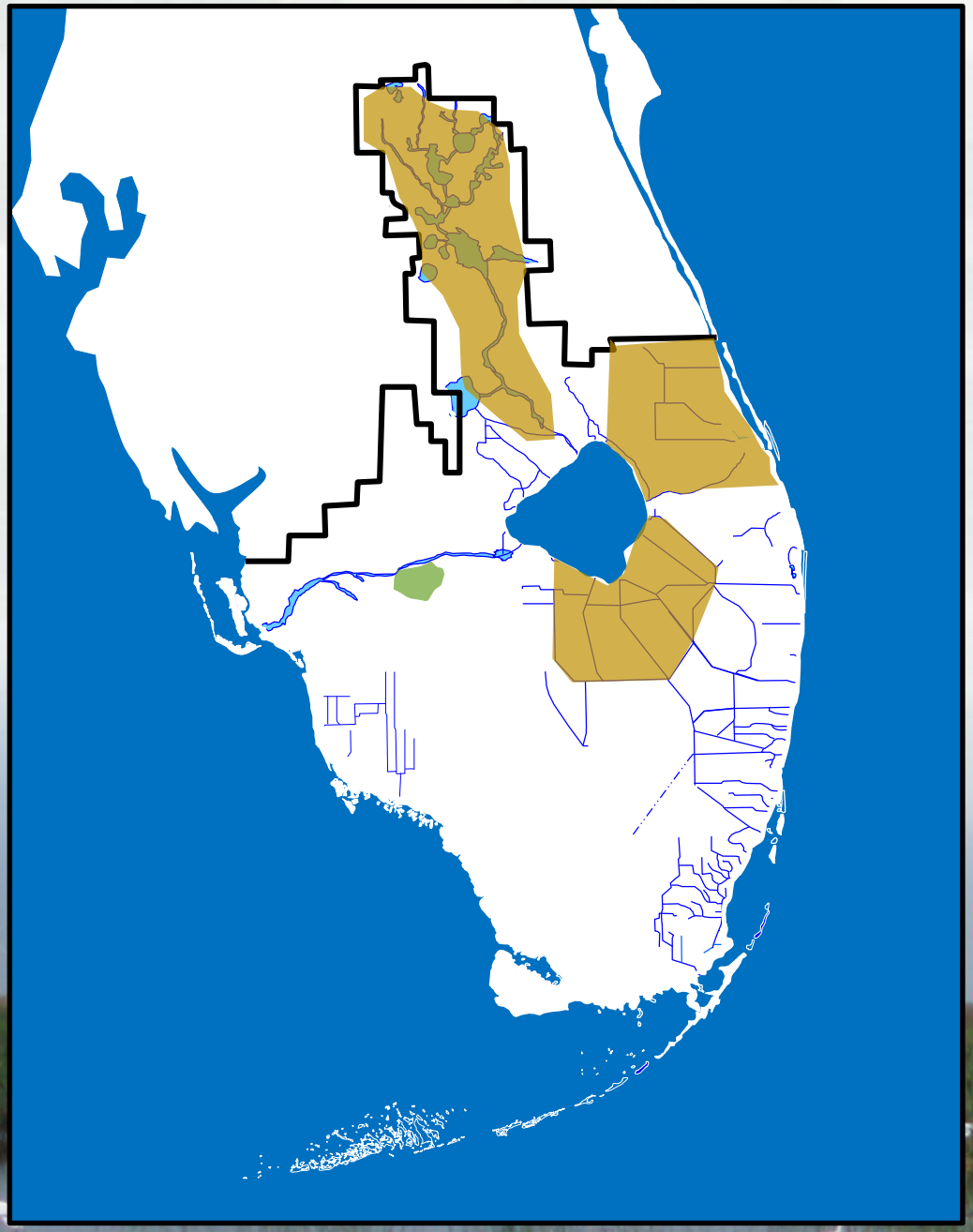
Indian River Lagoon FWO

BUILDING STRONG

- C23/C24 STA
  - Storage capacity: 3852 acre-feet
  - Footprint: 3323 acres (assumed 2568 effective acres / 80%)
  - Inlet: 200 cfs capacity, modeled as pump; source: C23/C24 Reservoir
  - Outlet: 200 cfs capacity, modeled as pump; destination: TMC Basin
- Ten Mile Creek Reservoir and STA
  - Storage capacity: 7078 acre-feet
  - Footprint: 820 acres (assumed 656 effective acres / 80%)
  - Inlet: 360 cfs capacity, modeled as pump; source: TMC Basin
  - Outlet: 200 cfs capacity, modeled as pump; destination: TMC Basin

Indian River Lagoon FWO in RSMBN





Key System Changes From ECB to FWO

- Kissimmee River Restoration
- Indian River Lagoon – South
- **C-43 Phase I Reservoir**
- Everglades Agricultural Area

Caloosahatchee ECB

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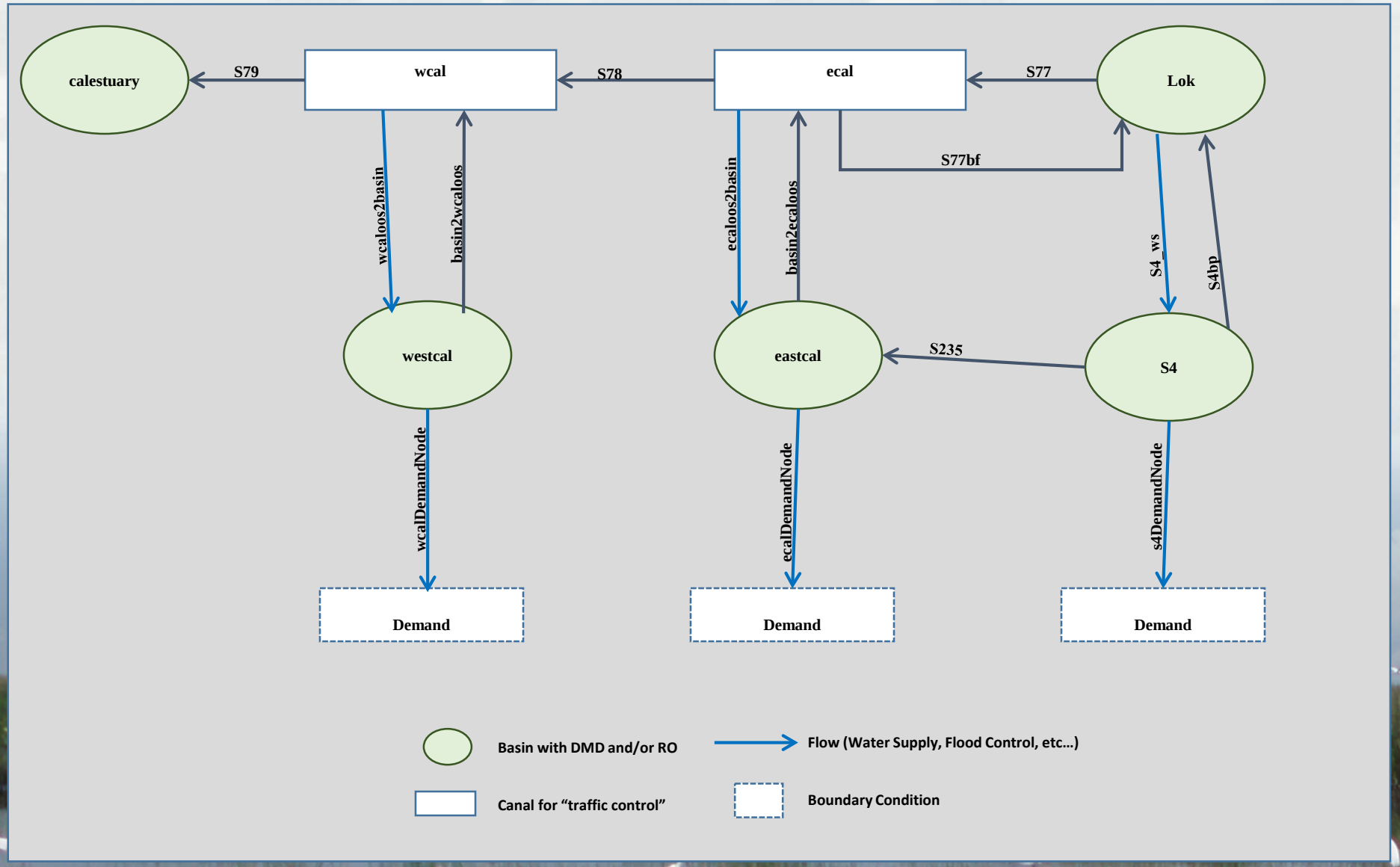
- C43 Basin
  - S-79 discharges into the Caloosahatchee Estuary.
  - C43 Basin runoff has potential to backflow into Lake Okeechobee when Lake stage is below 11.1 feet NGVD.
  - C43 Basin supplemental demands for surface water irrigation are met by Lake Okeechobee.

RSMBN for Caloosahatchee Basin ECB

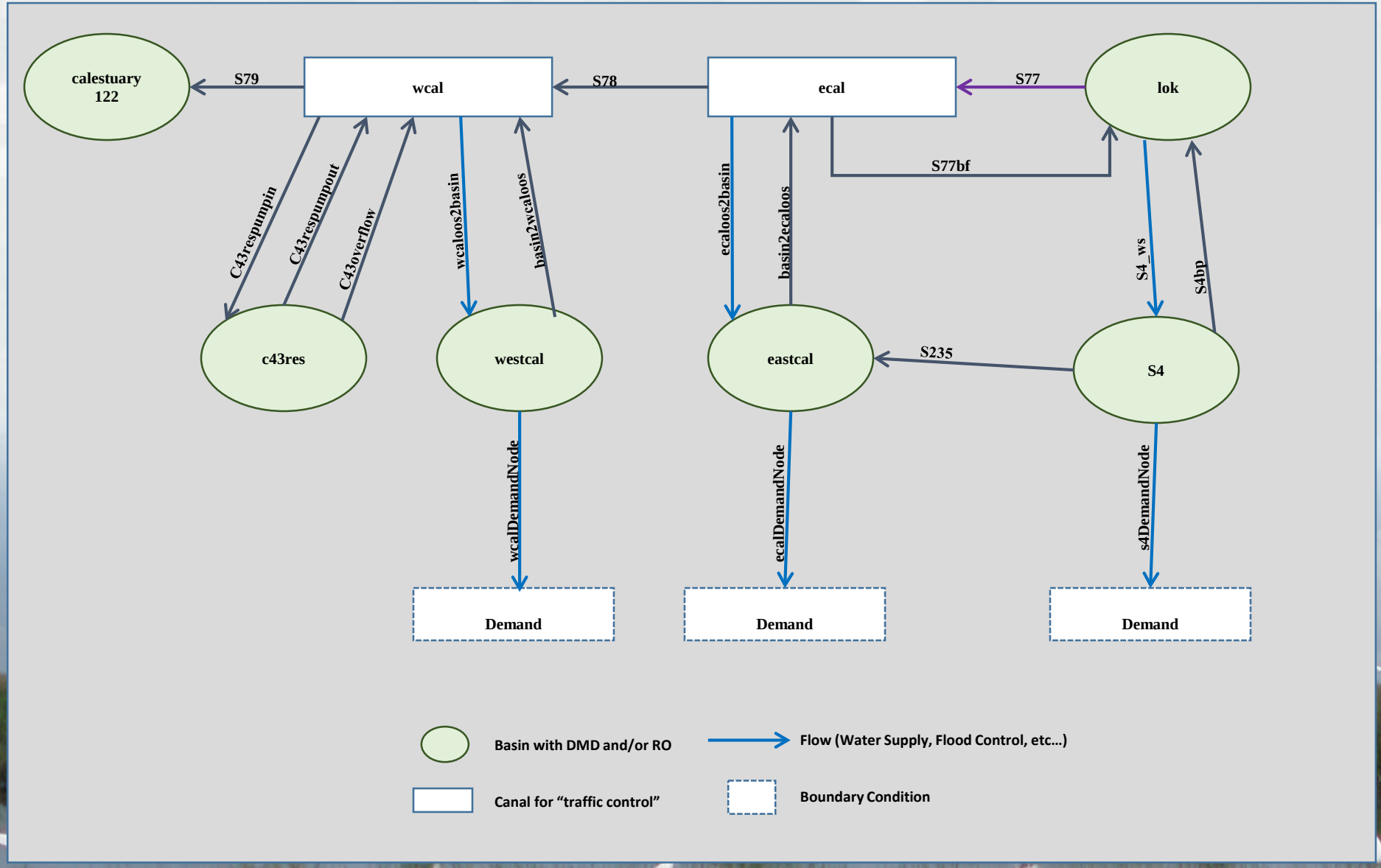


Caloosahatchee FWO

BUILDING STRONG

- C43 Reservoir
  - Modeled consistent with September 2007 PIR
  - Storage capacity: 175,800 acre-feet
  - Maximum footprint: 9,379 acres
  - Inflow, capacity 1500 cfs, modeled as pump; destination: C43 Reservoir
  - Outflow, capacity 1200 cfs modeled as pump; destination: C43 Canal
  - Operates to meet estuary environmental target time-series (EST05)

RSMBN for Caloosahatchee Basin FWO



Caloosahatchee Estuary Performance

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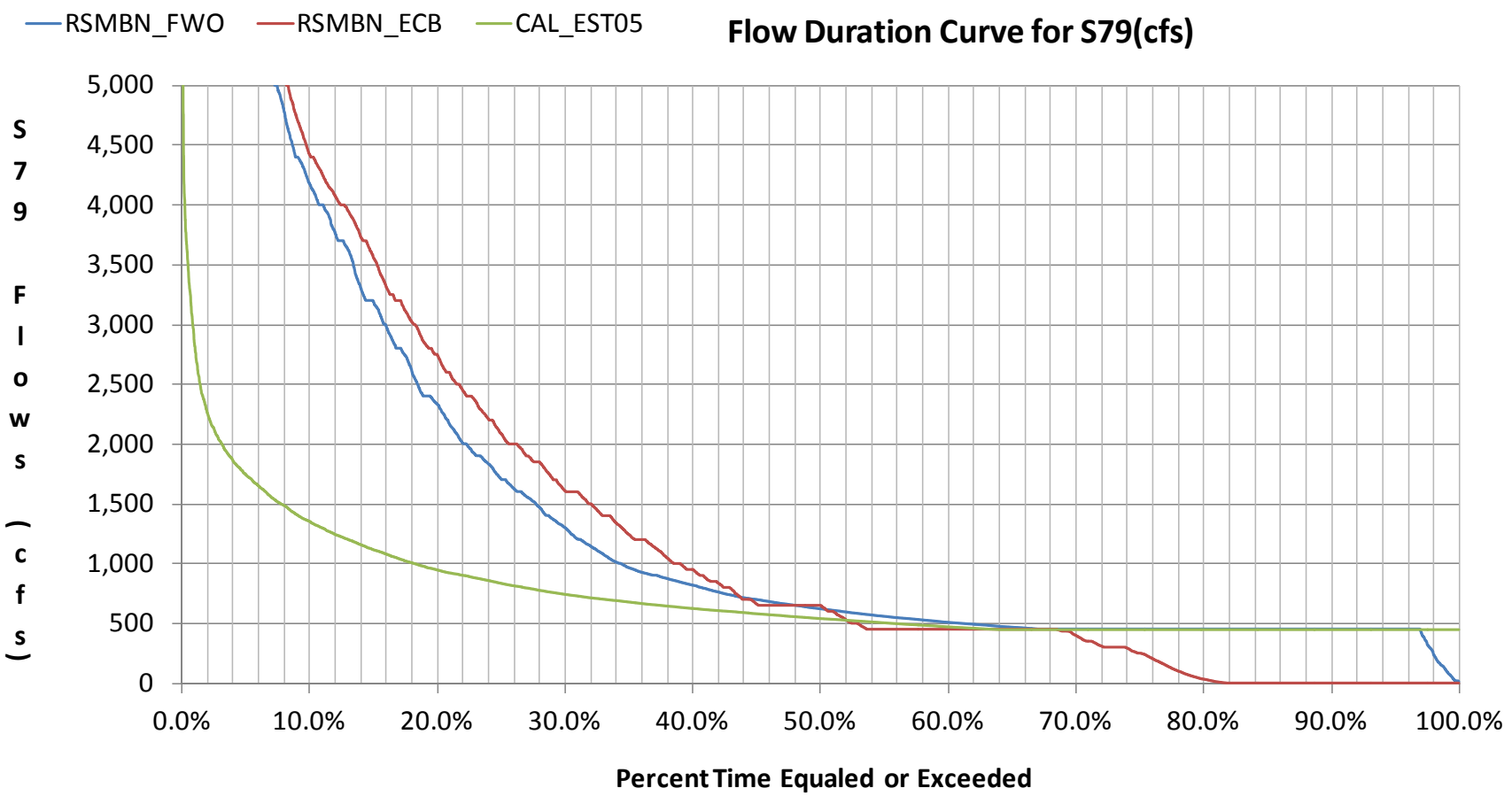
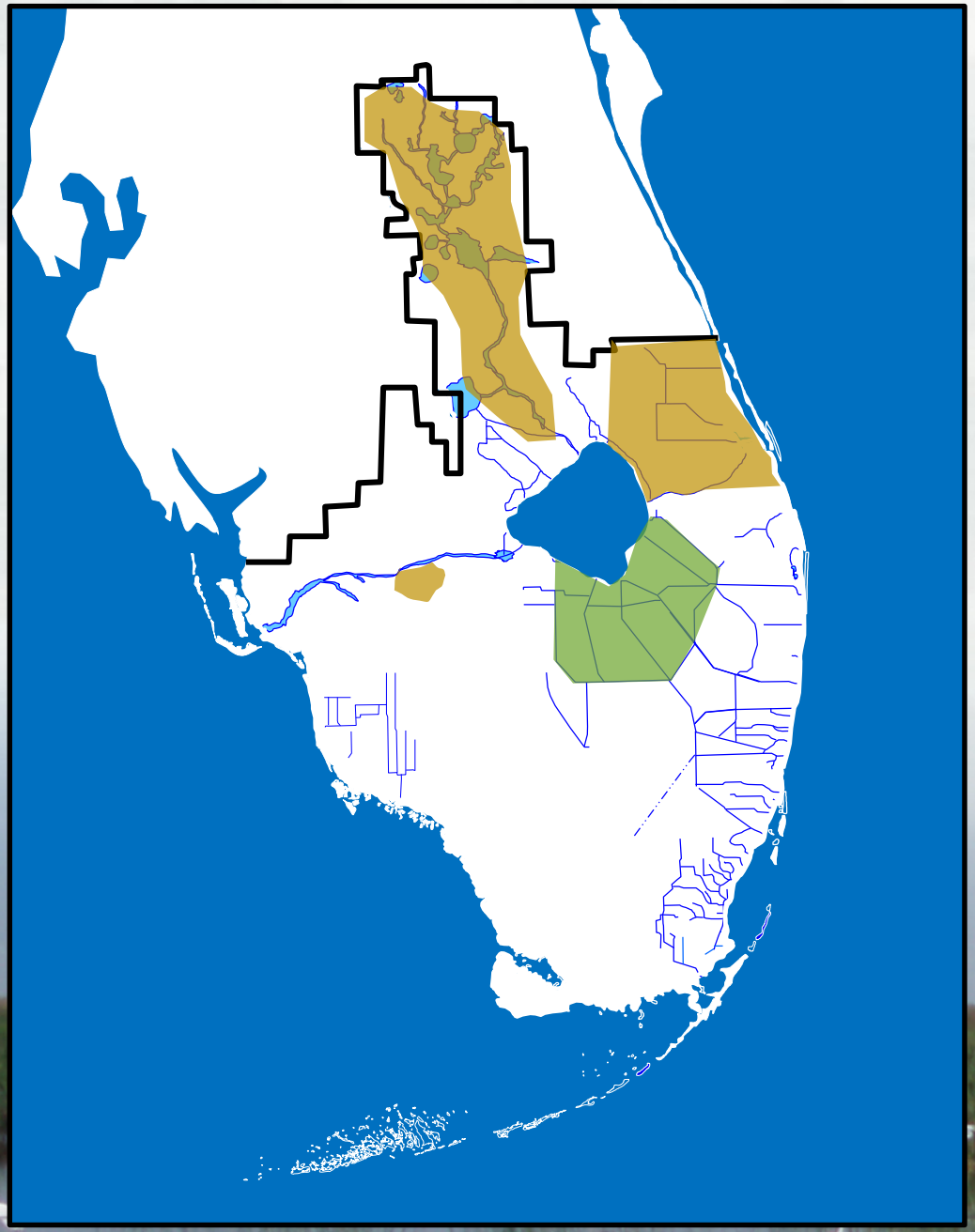




Key System Changes From ECB to FWO

- Kissimmee River Restoration
- Indian River Lagoon – South
- C-43 Phase I Reservoir
- **Everglades Agricultural Area**

EAA ECB – A1 FEB

BUILDING STRONG

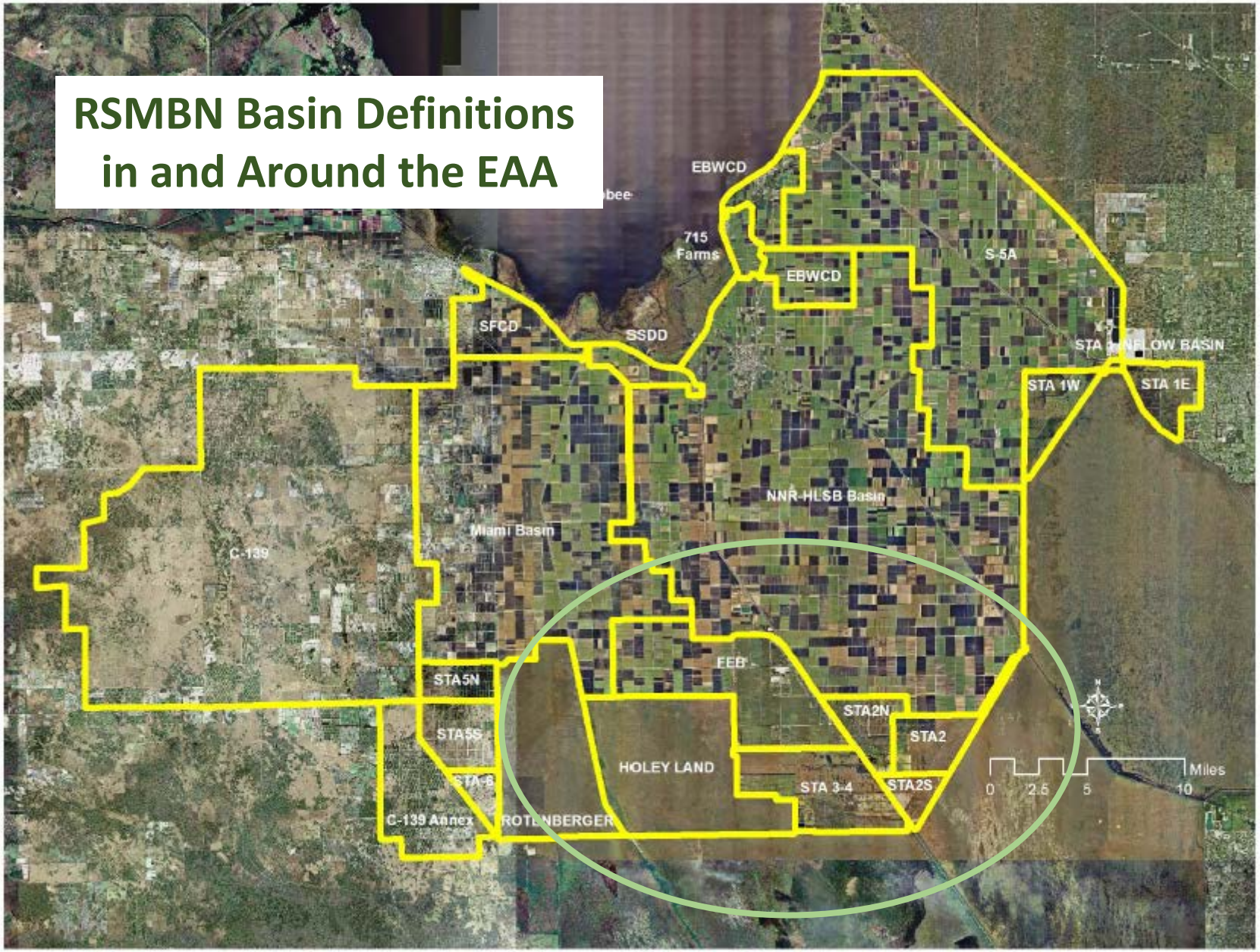
- Assumed Flowage Equalization Basin (A1 FEB) Effective Footprint = 15,853 acres
- FEB operating limits:
- EAA runoff accepted when FEB < 3.8 ft.
- Discharges discontinued when depths < 0.5 ft.
- No supplemental water supply provided to FEB.
- FEB outflows are used to help meet established inflow targets (as estimated using the Dynamic Model for Stormwater Treatment Areas) at STA-3/4, STA-2N, and STA-2S

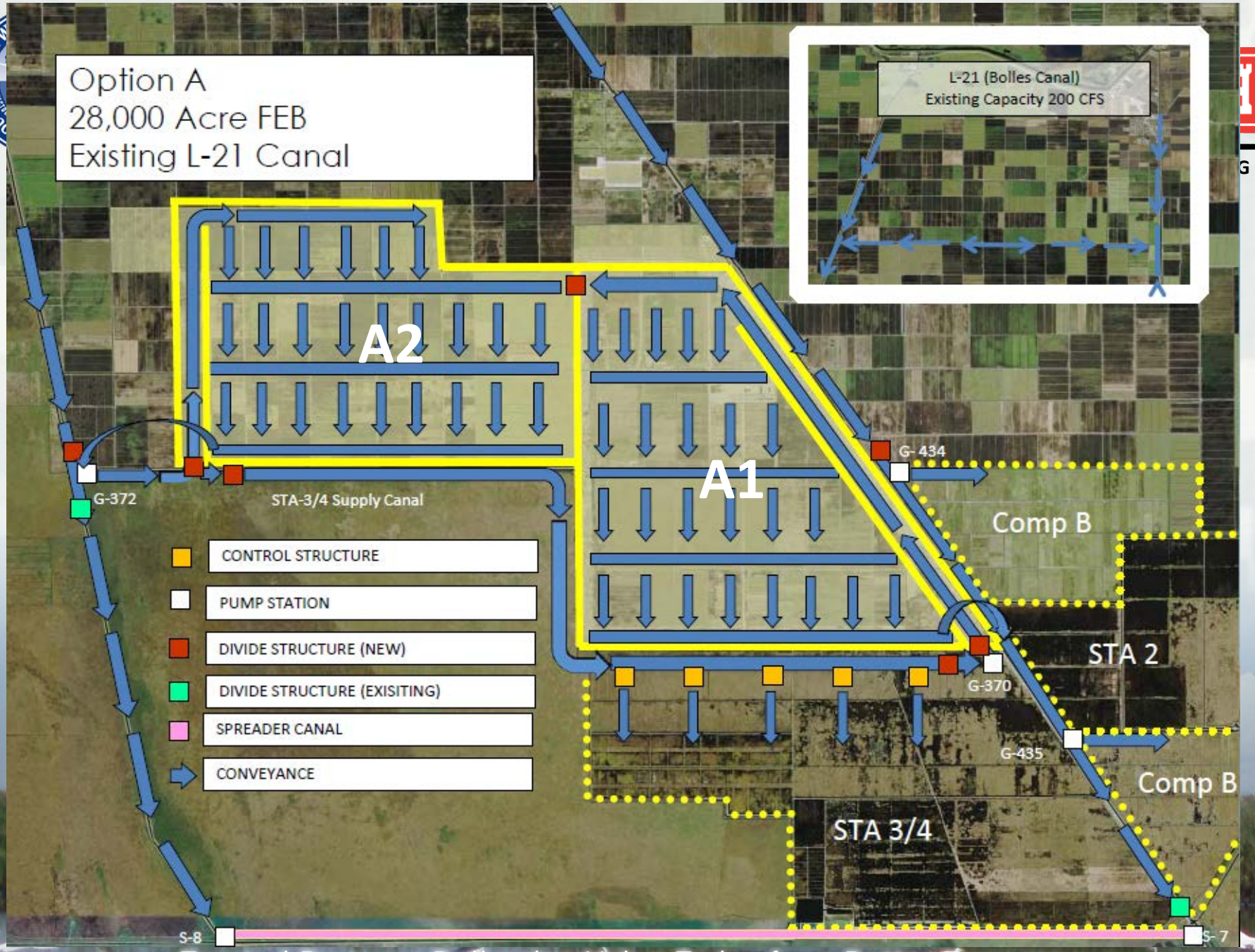
EAA FWO – A1/A2 (CEPP) FEB

BUILDING STRONG

- Assumed Flowage Equalization Basin (A1/A2 FEB) Effective Footprint = 28,467 acres
- FEB operating limits:
- EAA runoff accepted when FEB < 3.8 ft.
- Lake Okeechobee water accepted when FEB < 2.0 ft.
- Discharges discontinued when depths < 0.5 ft.
- No supplemental water supply provided to FEB.
- FEB outflows are used to help meet established inflow targets (as estimated using the Dynamic Model for Stormwater Treatment Areas) at STA-3/4, STA-2N, and STA-2S

RSMBN Basin Definitions in and Around the EAA




Option A
28,000 Acre FEB
Existing L-21 Canal
L-21 (Bolles Canal)
Existing Capacity 200 CFS
A2
A1
G-372
STA-3/4 Supply Canal
G- 434
Comp B
CONTROL STRUCTURE
PUMP STATION
DIVIDE STRUCTURE (NEW)
DIVIDE STRUCTURE (EXISITING)
SPREADER CANAL
CONVEYANCE
STA 2
G-370
G-435
Comp B
STA 3/4
S-8
S- 7

RSMBN EAA & FEB Implementation

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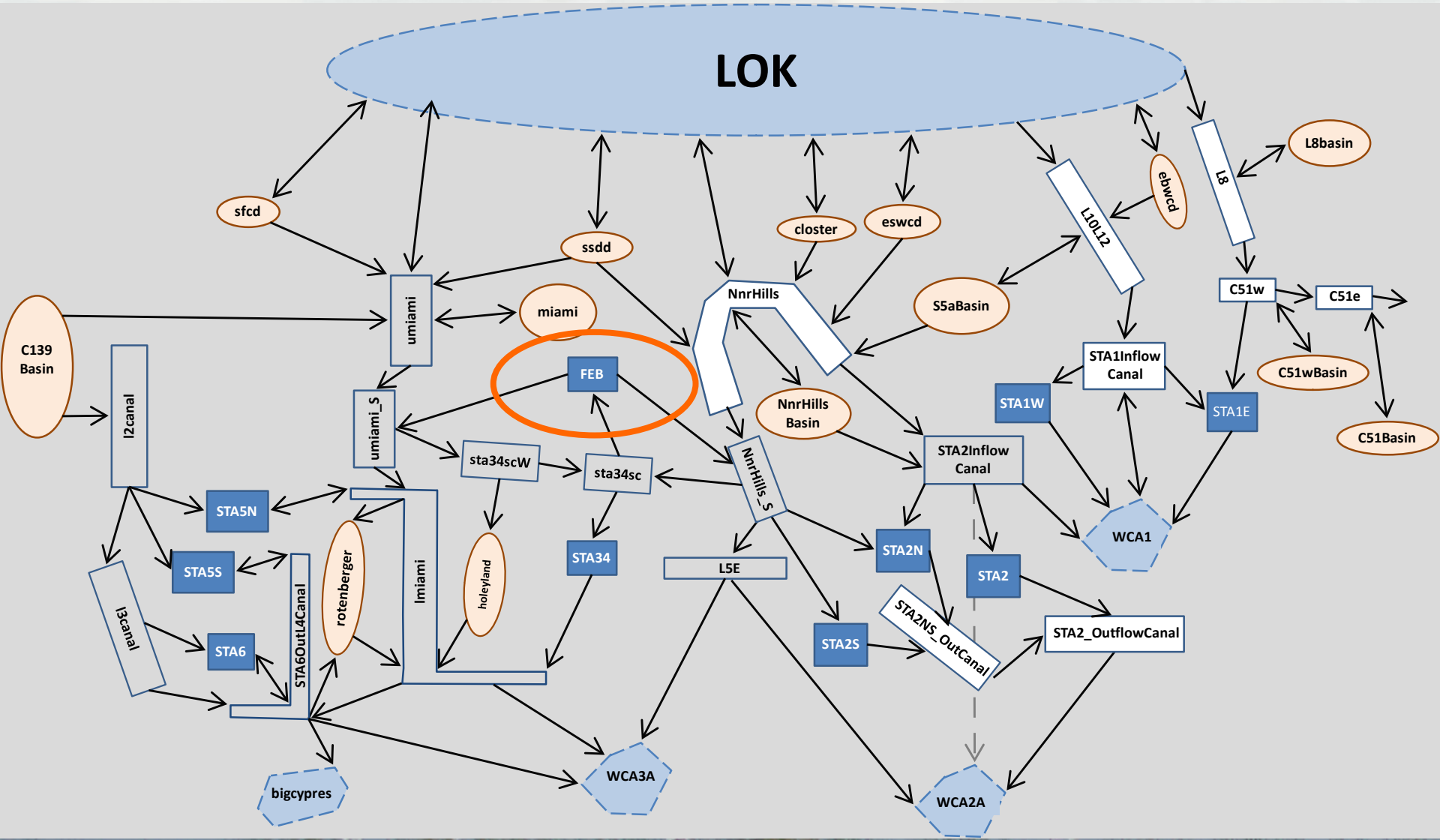
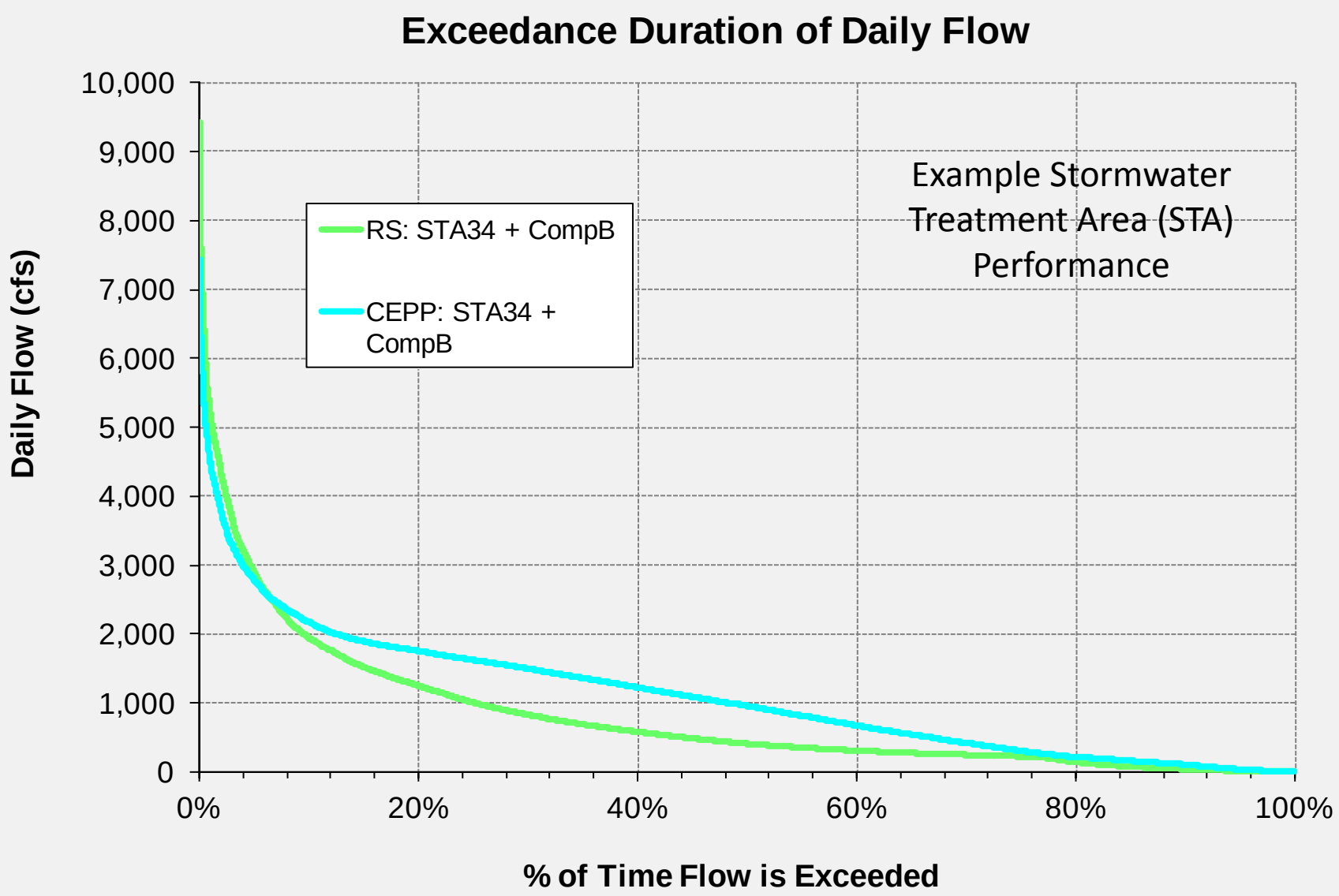
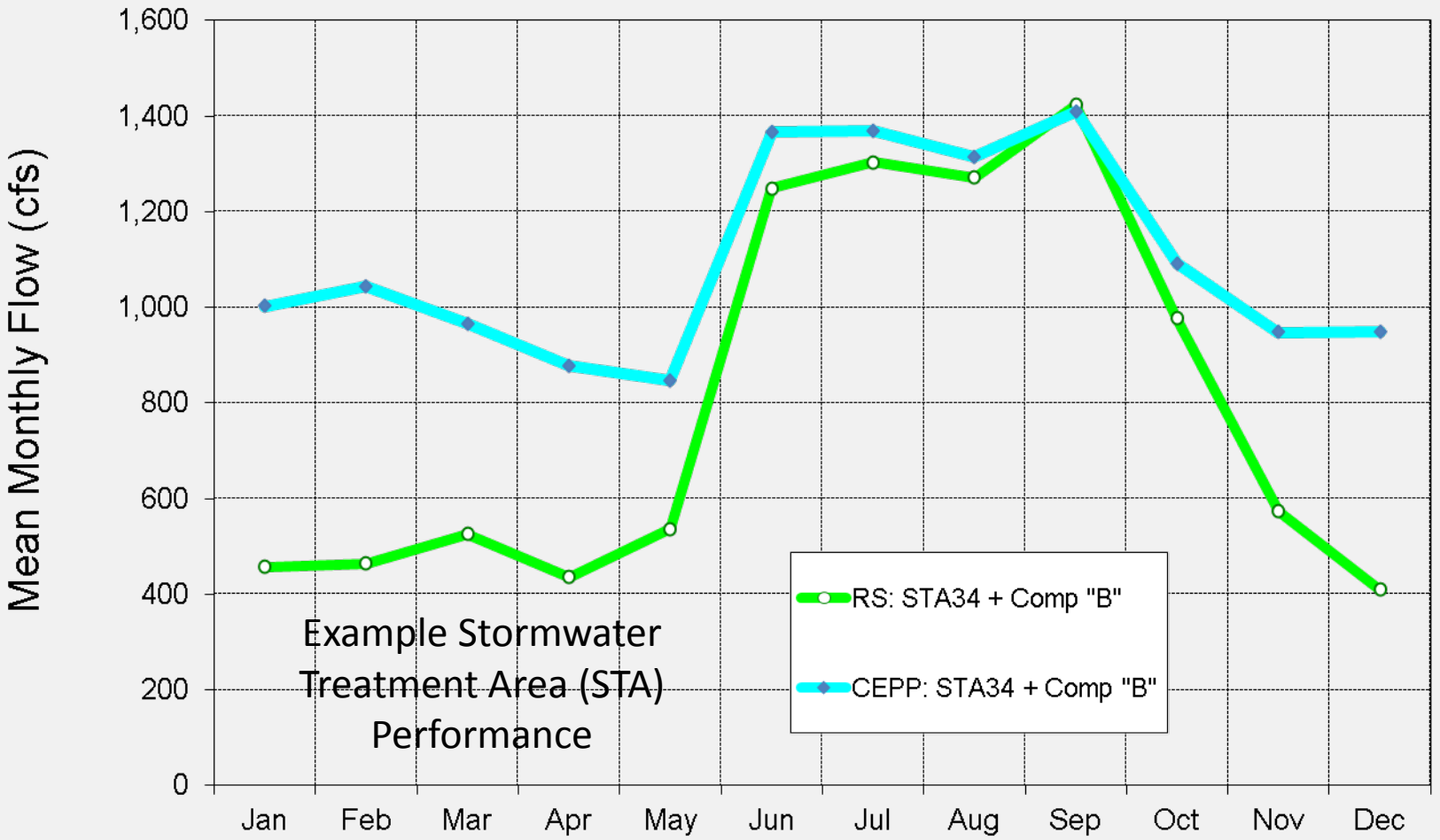
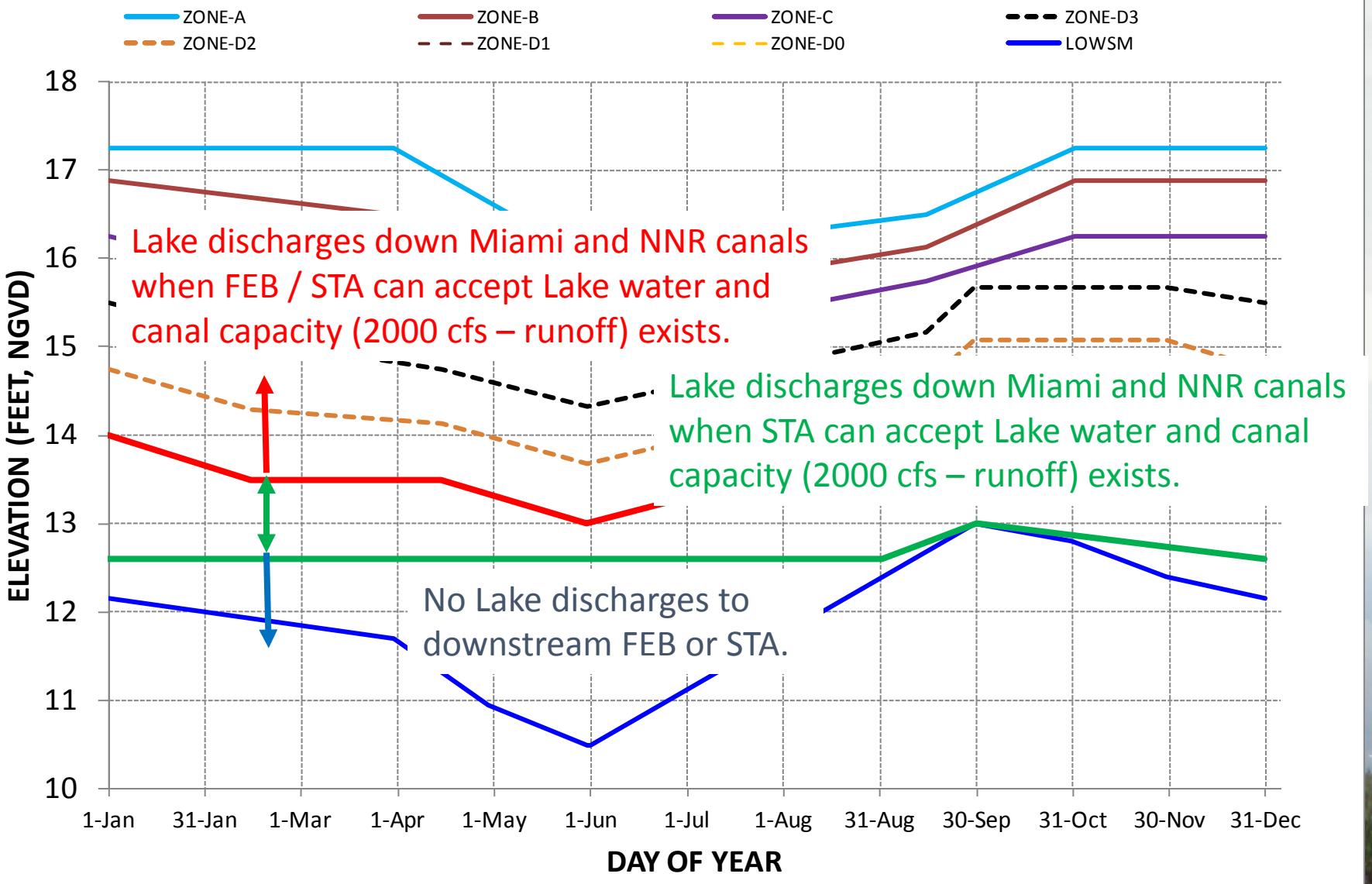



Exceedance Duration of Daily Flow
Daily Flow (cfs)
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
0%
20%
40%
60%
80%
100%
% of Time Flow is Exceeded
RS: STA34 + CompB
CEPP: STA34 + CompB
Example Stormwater Treatment Area (STA) Performance

Average Monthly Flow Distribution



2008 Interim Lake Okeechobee Regulation Schedule in RSMBN



FWO CEPP Operational Flexibility in Lake Okeechobee is Accomplished by Considering Flexibility within the Existing Regulation Schedule:

For Example:

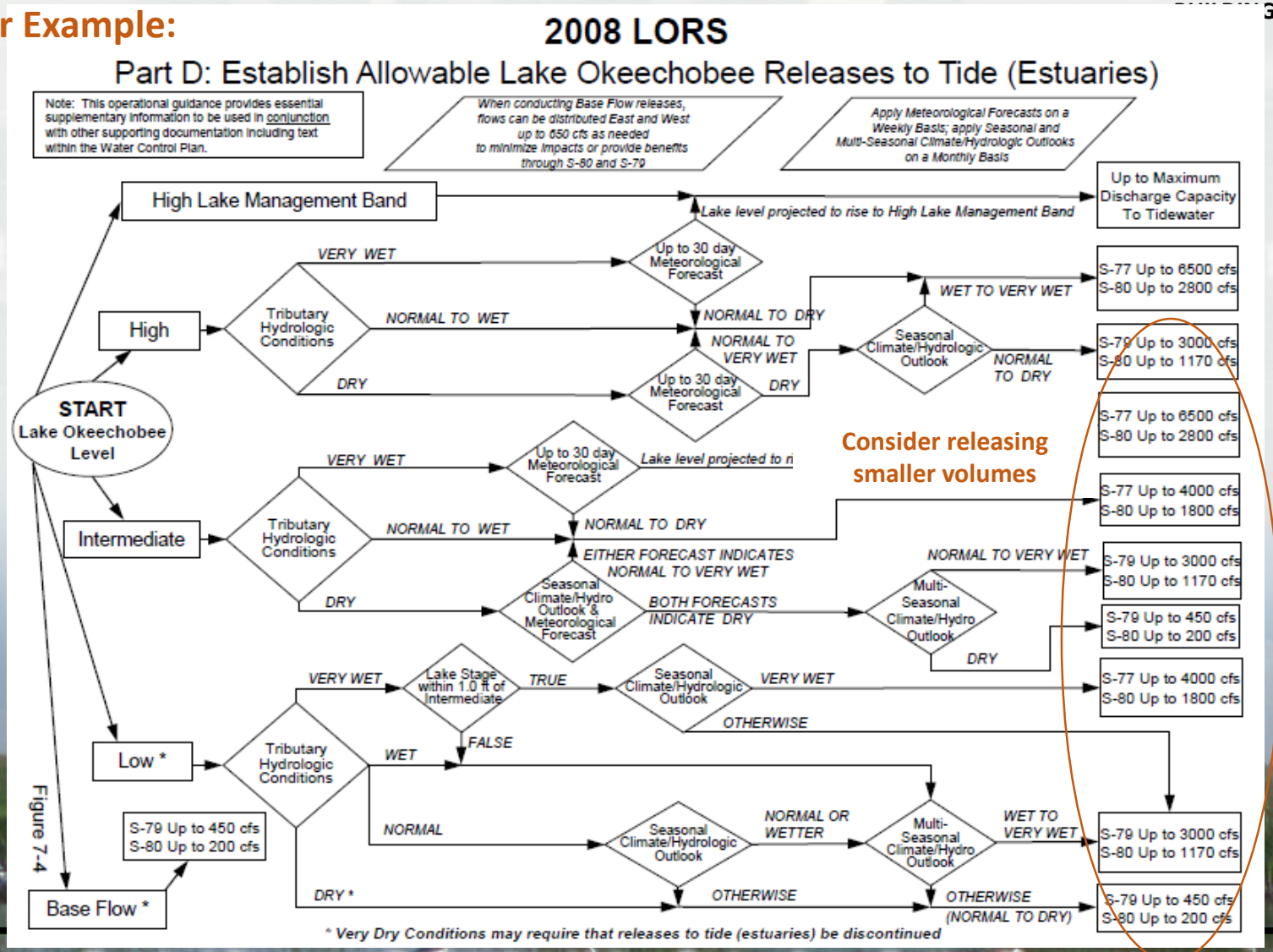


Figure 7-4


Discussion