

# STA-3/4 Diversions To Protect Aquatic Vegetation

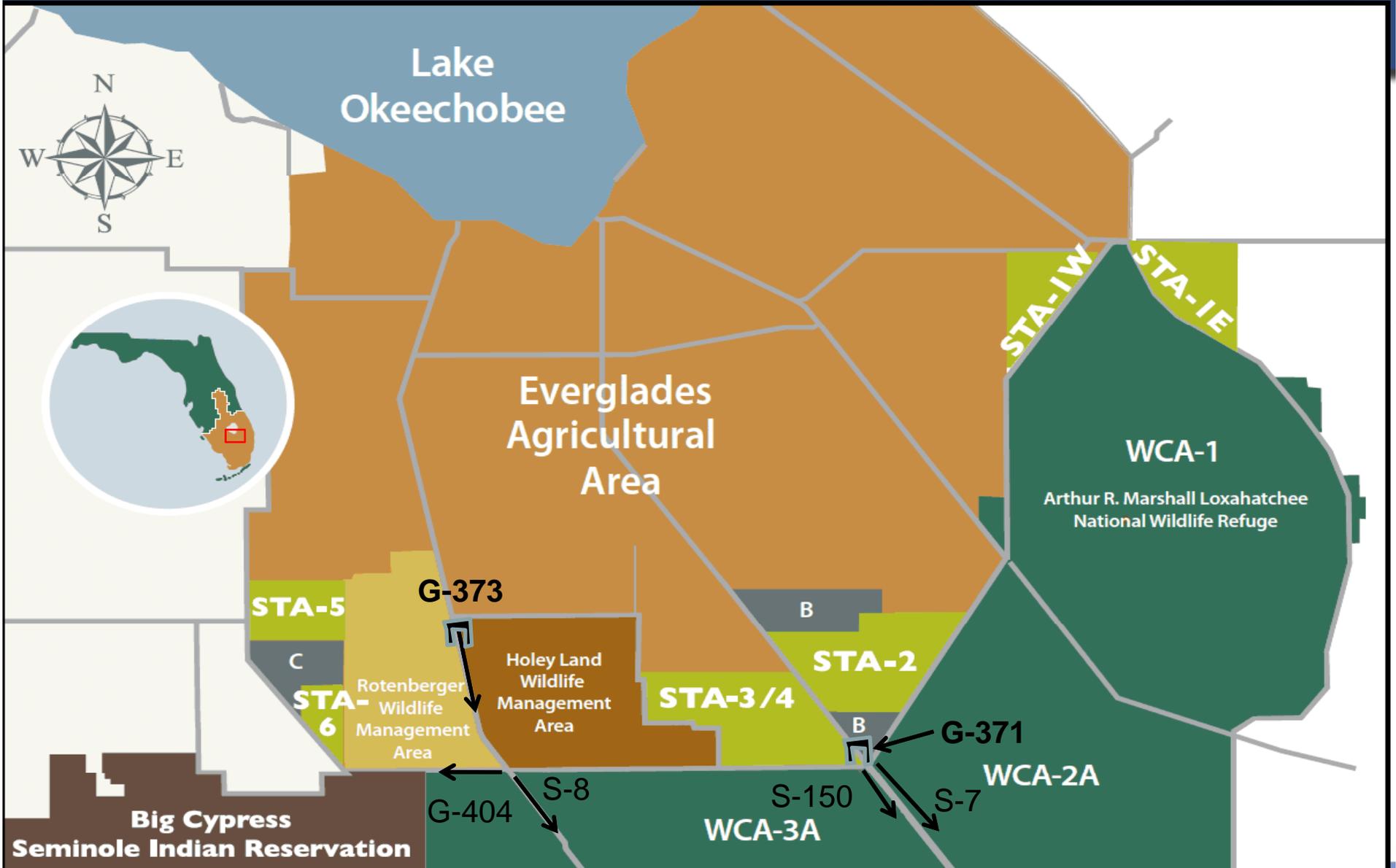
Technical Oversight Committee

September 14, 2011



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Office of Everglades Policy and Coordination

# Everglades Stormwater Treatment Areas



Areas in gray marked with a "B" or "C" represent the current expansion of existing Stormwater Treatment Areas

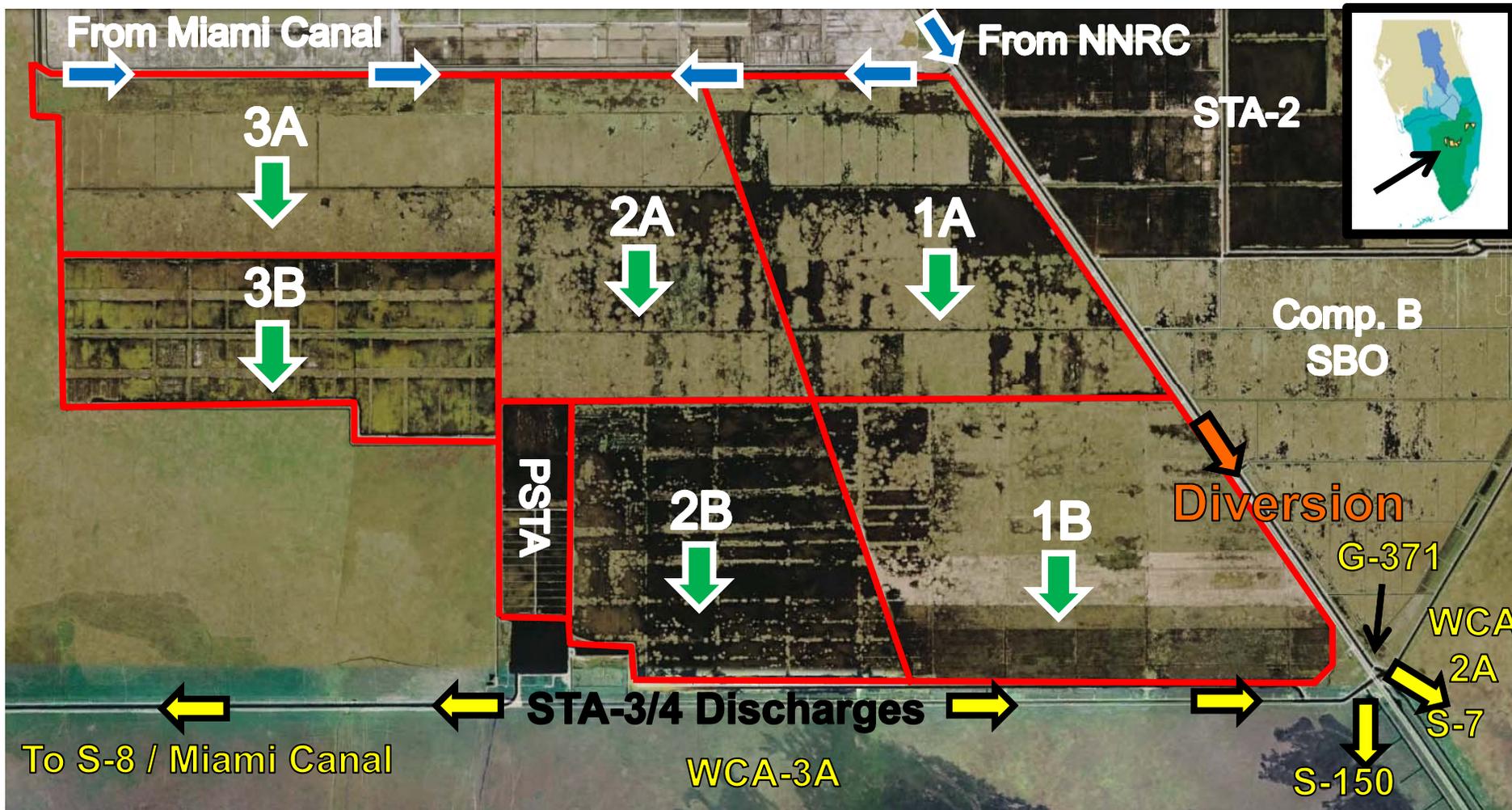
# STA Drought Contingency Plan Implementation

- Drought contingency stages implemented December, 2010
  - STA water levels raised to ~1.75 ft.
  - Drought contingency stage is ~0.5 ft. above normal target
- Supplemental Water Deliveries
  - More than 35,000 acre-feet of Lake Okeechobee water delivered to STAs during drought
- STA-3/4 not set to drought contingency stage because emergent vegetation cells exhibited impacts from prolonged deep water conditions

# Open Water Areas in Emergent Cell 1A



# Stormwater Treatment Area 3/4

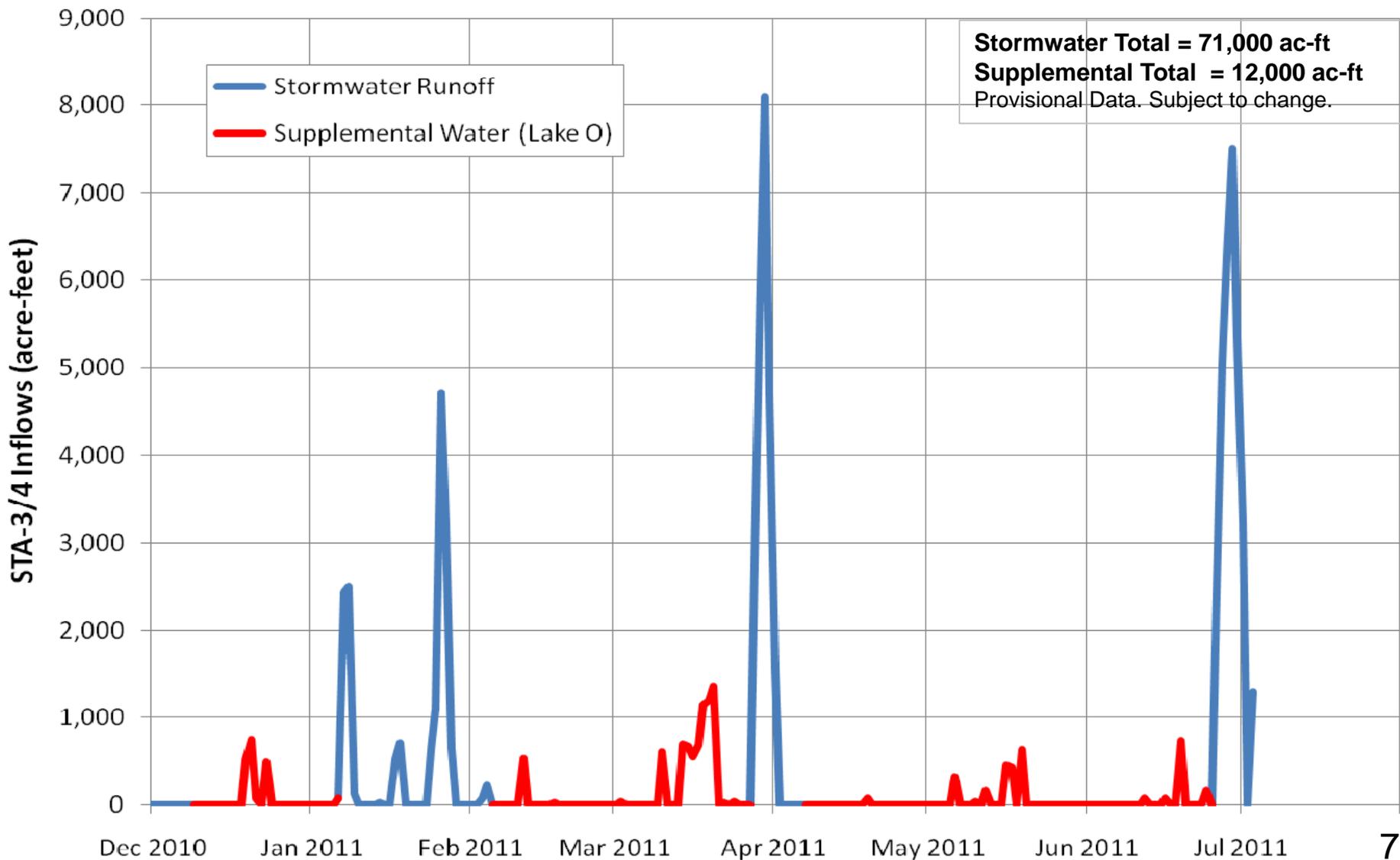


## STA-3/4 Dry Season Enhancements

- STA-3/4 not set to drought contingency stage to allow
  - Bulrush planting in Cell 1A
  - Lowered water stages in Cell 1A to promote new cattail seedling growth and to rejuvenate existing cattails
- Pumped from cell 1A to 2A and 1B
- Supplemental Lake Okeechobee deliveries continued to STA-3/4 into June

# STA-3/4 Inflows

## December 1, 2010 – July 3, 2011



# STA-3/4 Water Depths During Drought



# Transition from Drought to Rainy Season

## **Dryout resulted in loss of vegetation in all SAV cells**

- Water depths increased rapidly last week of June - additional rainfall predicted
- Internal discussion of options to protect and re-establish vegetation
  - Anticipated harmful flows and depths
  - Permit condition allows diversion to protect vegetation
  - STA scientists recommended decreasing depths to 1.0-ft in SAV cells to re-establish vegetation
- Coordinated with DEP to divert portion of flows and lower stages

# STA 3/4 Vegetative Responses

1/27/11



Thick growth of submerged aquatic vegetation in Cell 2B

6/13/11



Dried out Cell 2B in early June 2011

6/29/11



Re-flooded areas after the heavy rain event in late June



Peat lifting up to the water surface

6/29/11

## From STA-3/4 EFA Permit

### Specific Condition 23

“diversion of waters from the STA-3/4 inflow structures through the G-371 and/or G-373 structures.....allowed... when water conditions within STA-3/4 may damage existing marsh vegetation”

## Diversions Overview

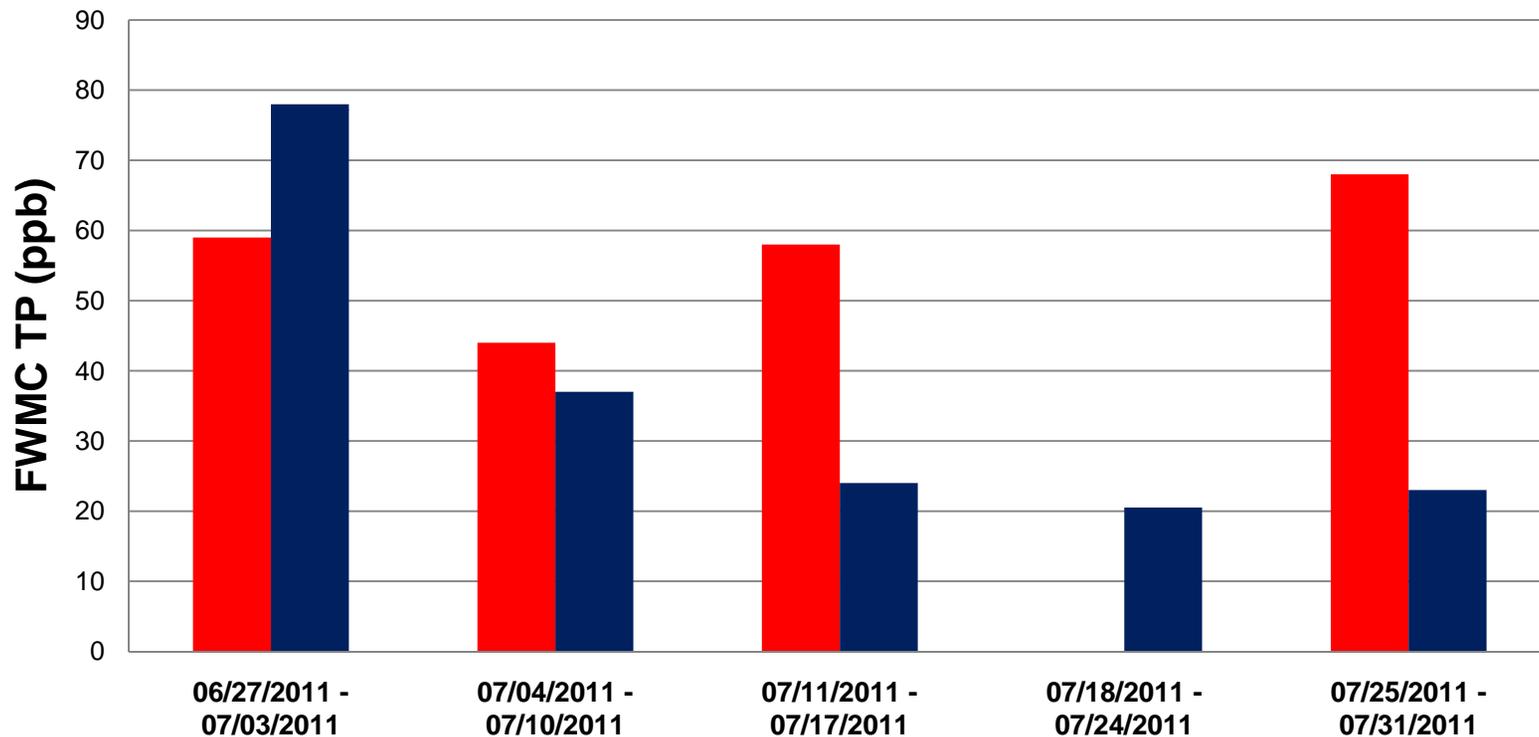
### **Partial diversions occurred for 28 days, from July 2 – July 29, 2011**

- Initially reduced inflow rates to lower water depths to 1.0-ft in SAV cells
- Gradually increased flow, but maintained 1-ft depth
- Increased flow and depth in western and central flow-ways
- Increased flow and depth in eastern flow-way
- Returned to normal operations as of August 30, 2011

# STA 3/4 Weekly Inflow and Outflow Concentrations

**STA-3/4 Inflow and Outflow FWMCs**  
 (Data is provisional and subject to change)

■ Inflow  
 ■ Outflow



# Diversion Flow Summary

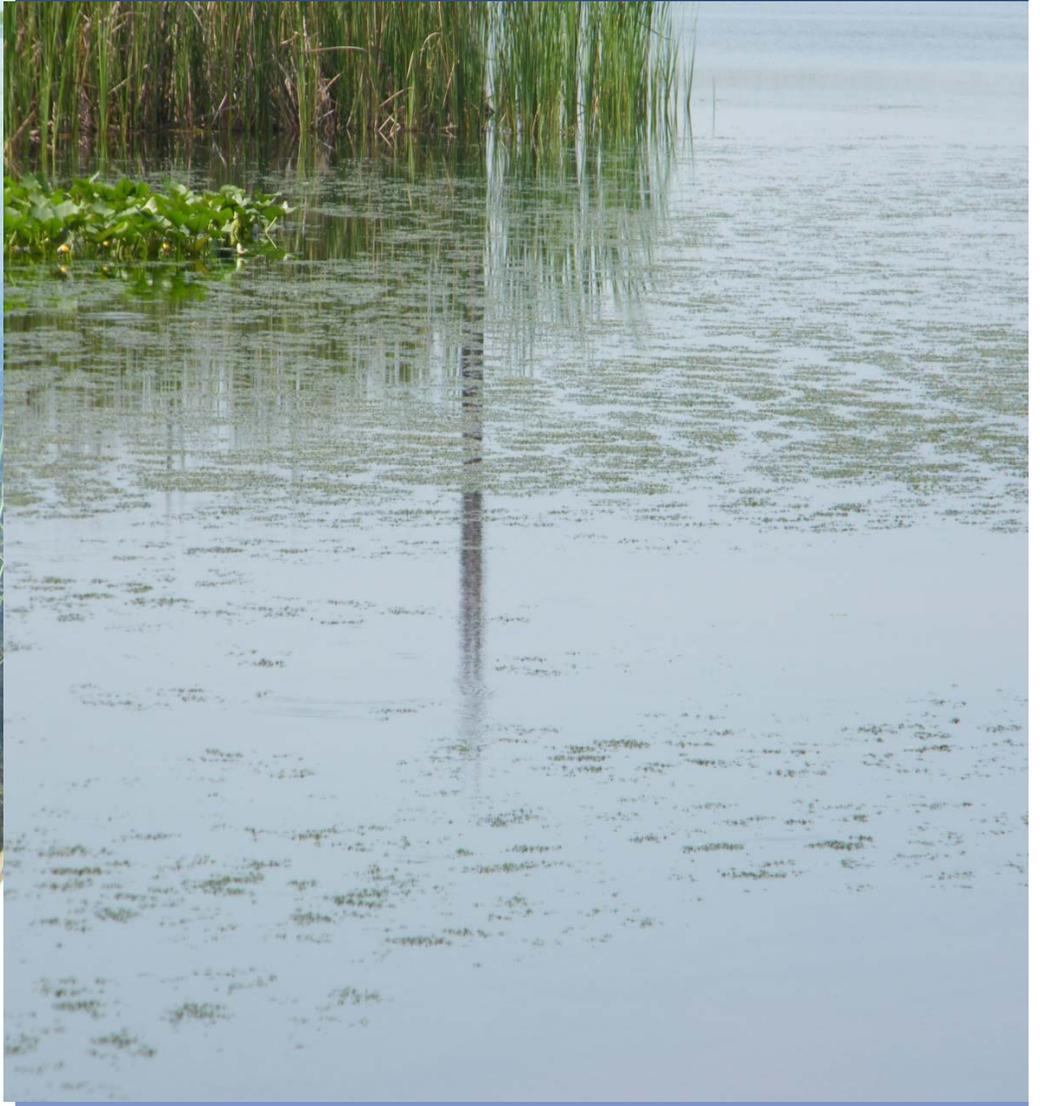
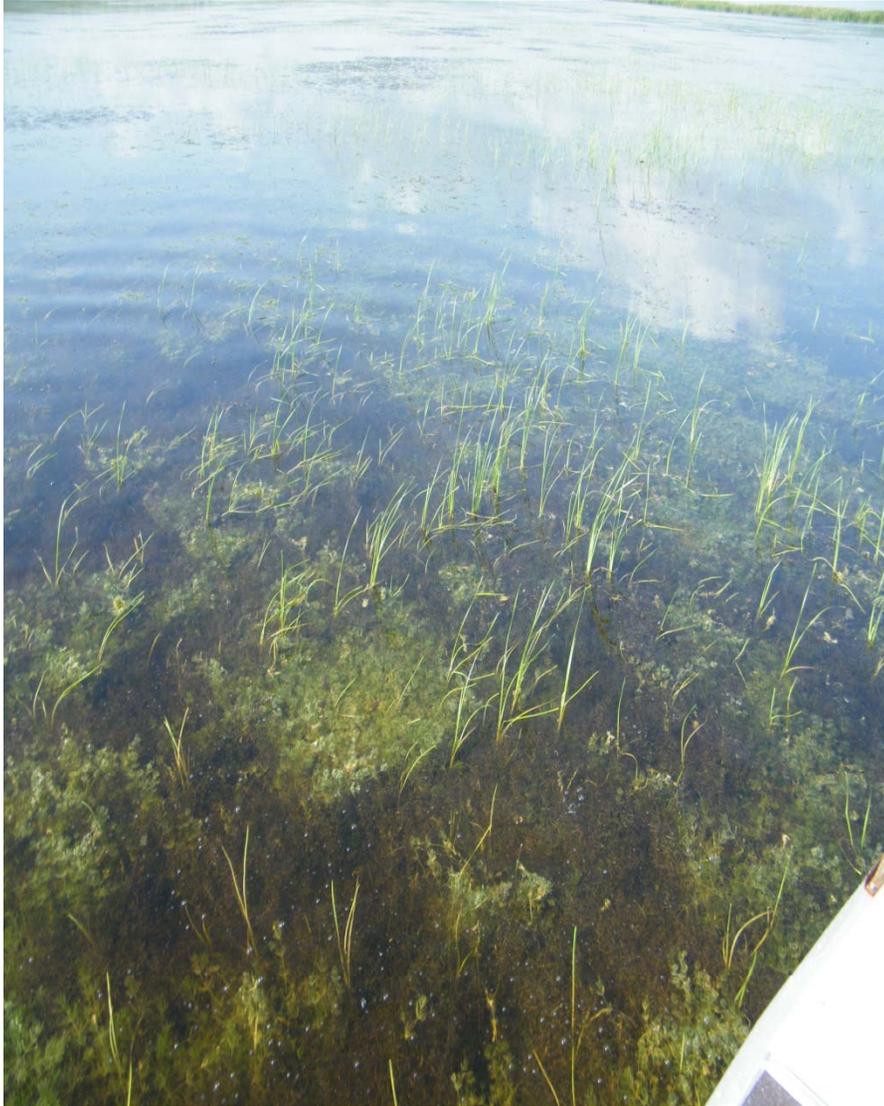
	Time Period	Flow Volume (acre-feet)	TP Load (metric tons)	Flow Weighted Mean TP Concentrations (ppb)
<b>STA-3/4 Outflow</b>	7/2-7/29/2011	55,400	2.3	35
<b>G371 + G373</b>	7/2-7/29/2011	55,200	5.9	87
<b>S-7, S-8, S-150, and G-404</b>	7/2-7/29/2011	129,700	7.7	48

Provisional data. Subject to change.

# Submerged Aquatic Vegetation Recovery from Drought

- **Weekly Qualitative Surveys of SAV Regrowth (July and August)**
- **Semi-quantitative Surveys courtesy of DB Environmental (July and August)**

# SAV Recovery Cell 2B -August 18, 2011



# SAV Recovery Cell 1B -August 18, 2011



# Recovery Status

- Emergent cells
  - New cattail seedlings and bulrush doing well
- SAV cells
  - Cell 1B: slow regrowth of southern naiad but dense beds of chara in southern end of cell
  - Cell 2B: Southern naiad replaced by chara
  - Cell 3B: Rapid recovery of SAV, primarily chara
- Outflow concentrations:
  - Past 28 days - 16 ppb (62,000 acre-feet)
  - Past 7 days -13 ppb (17,000 acre-feet)

Questions?