SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Hybrid Wetland Treatment Technologies Update Northern Everglades Interagency Coordination Meeting

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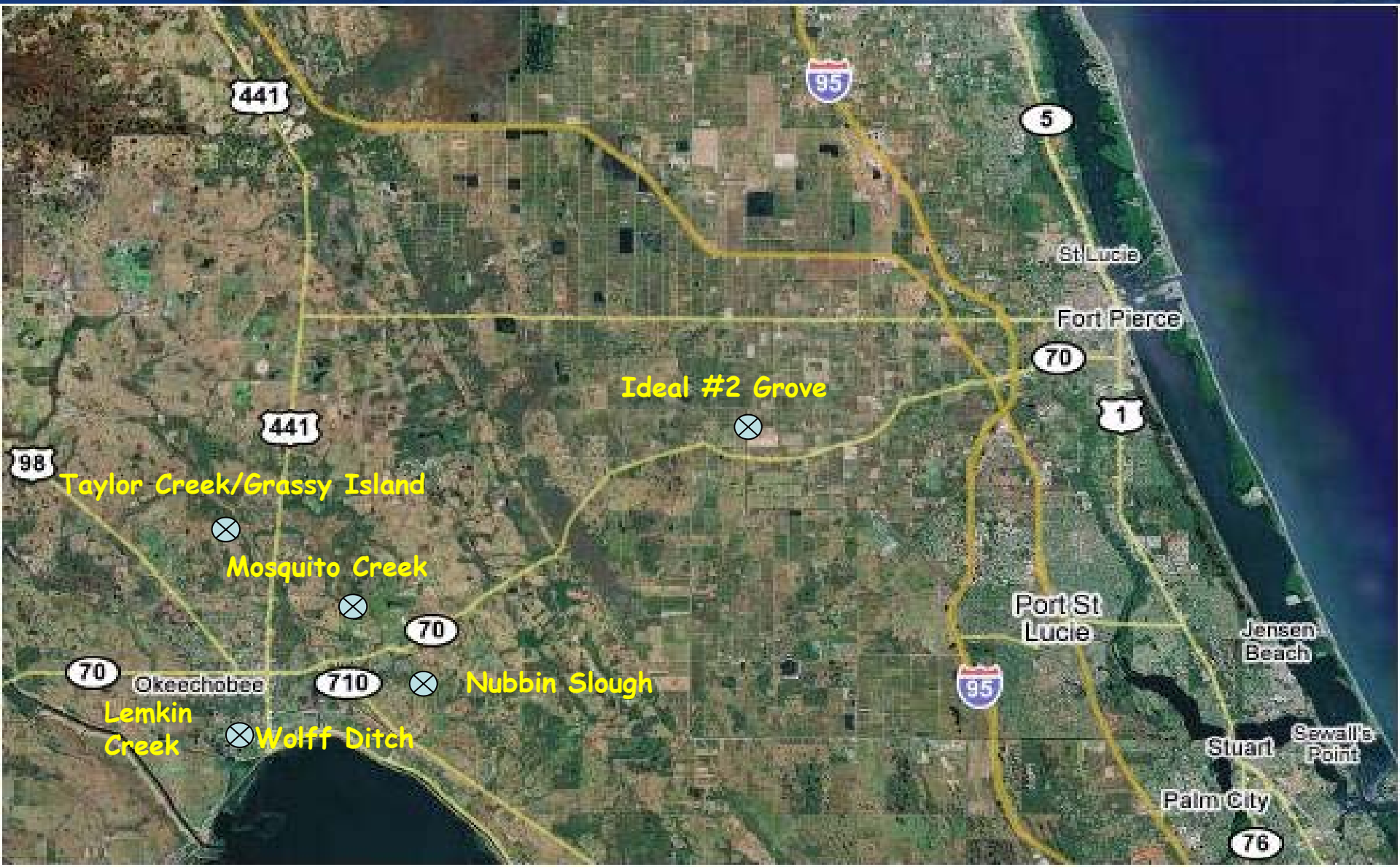
Hybrid Wetland Treatment Technology (HWTT) - Facility Locations



Hybrid Wetland Treatment Technology (HWTT) – Status Update

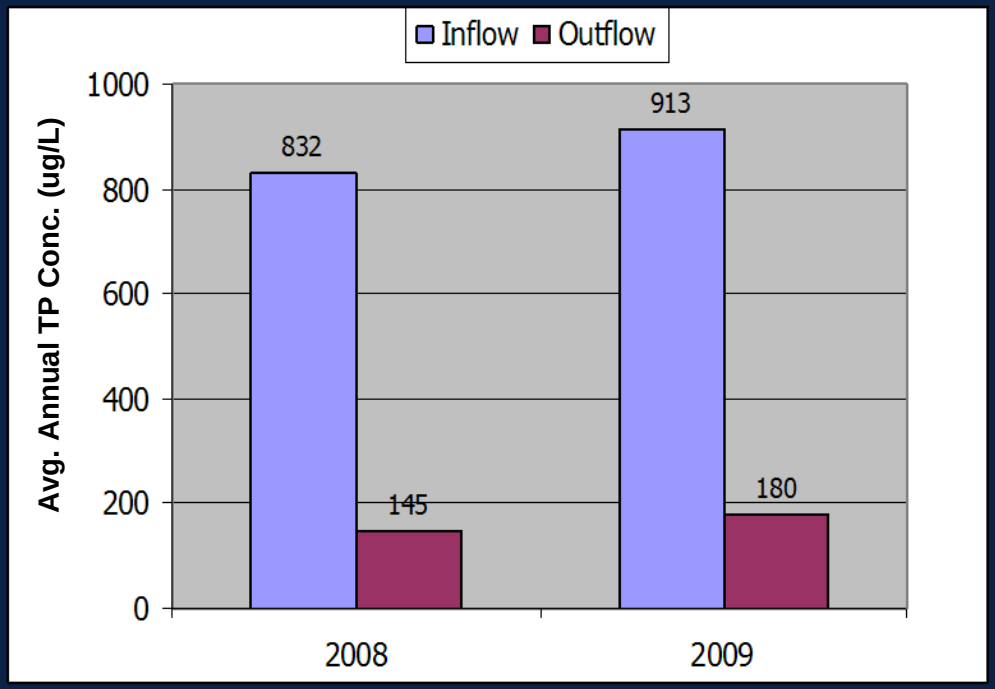
- **Six HWTT systems will be operated and maintained through 2nd quarter FY11:**
  - **Three facilities constructed and operated since FY 08**
    - **Nubbin Slough (6 cfs)**
    - **Ideal #2 Grove (1 cfs)**
    - **Mosquito Creek (6 cfs)**
  - **Two facilities constructed and operated since FY 09**
    - **Wolff Ditch (20 cfs)**
    - **Lemkin Creek (5 cfs)**
- **Additional facility (Grassy Island - 10 cfs) will be constructed during remainder of FY10.**

Hybrid Wetland Treatment Technology

- Nutrient removal treatment technology comprised of both chemical and wetland treatment
- Technology has been developed during past decade
  - Minimizes land requirements of treatment wetlands
  - Reduces cost of coagulant feed requirements in chemical treatment systems
- Continuing to optimize HWTT performance to improve synergies between the unit processes

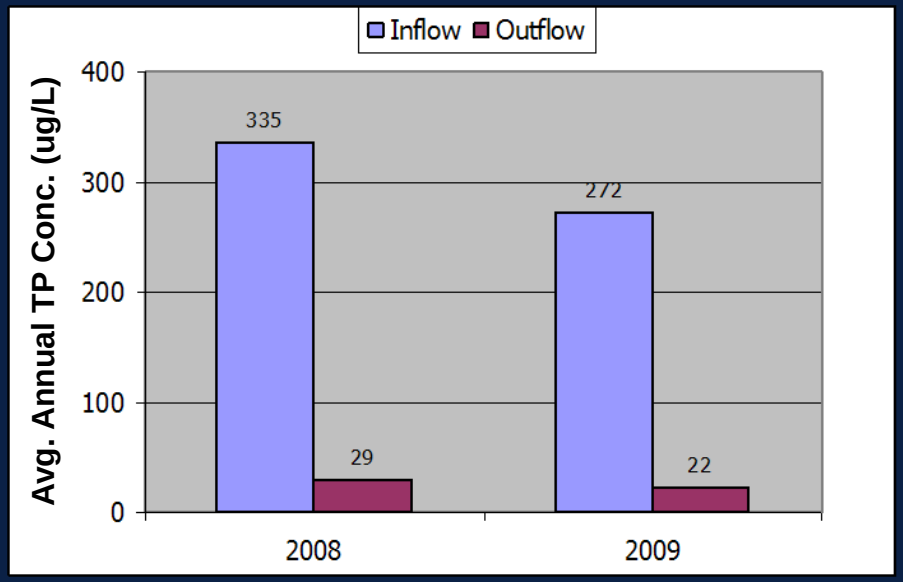
Nubbin Slough (Davie Dairy) HWTT Facility

- **1.4 acres of treatment area**
- **Gravity fed system from Nubbin Slough**



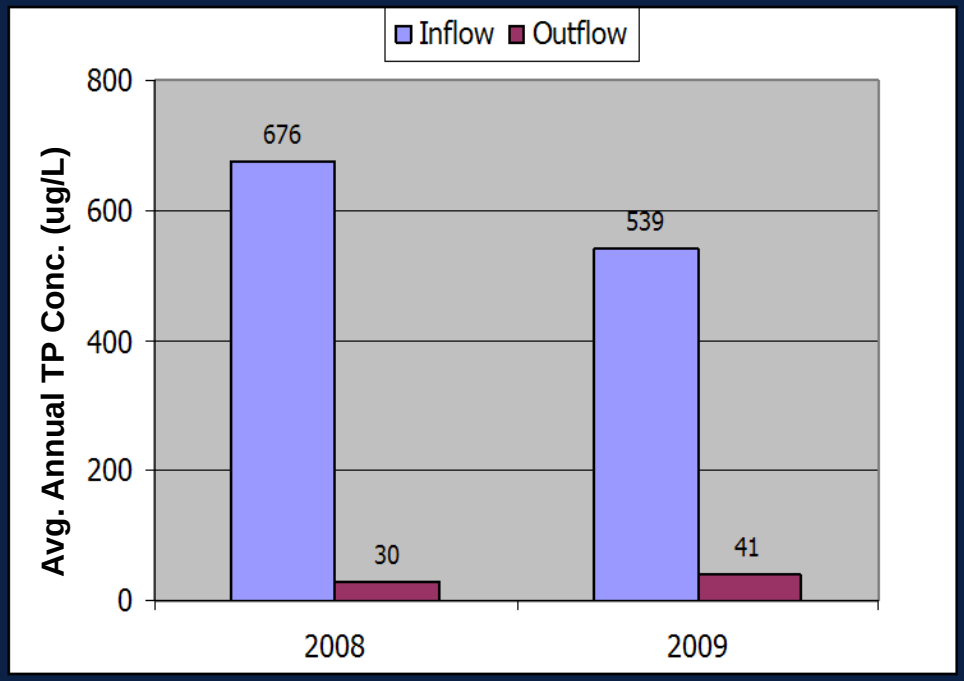
Ideal Grove HWTT Facility

- 0.7 acres of treatment area
- Pumped flow from citrus grove canals
- Parallel flow paths for testing varying chemical dosing amendment strategies



Mosquito Creek HWTT Facility

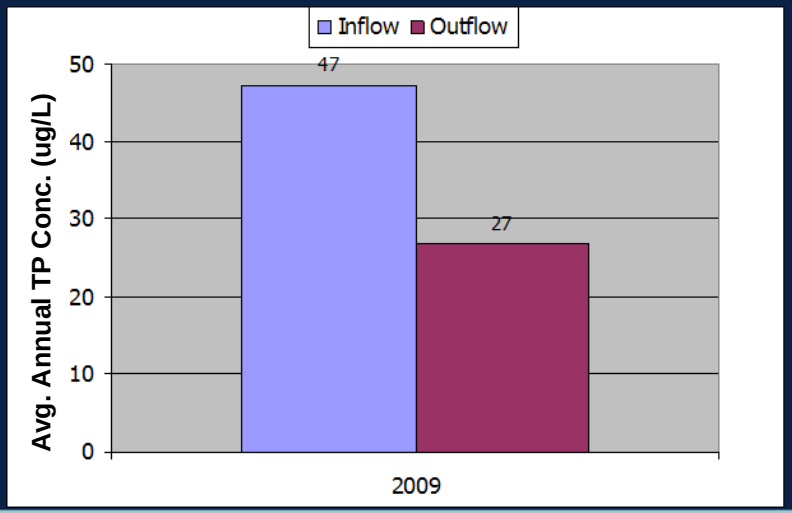
- **1.7 acres of treatment area**
- **Both high flow (5cfs) and low flow (1cfs) systems are pumped from Mosquito Creek**



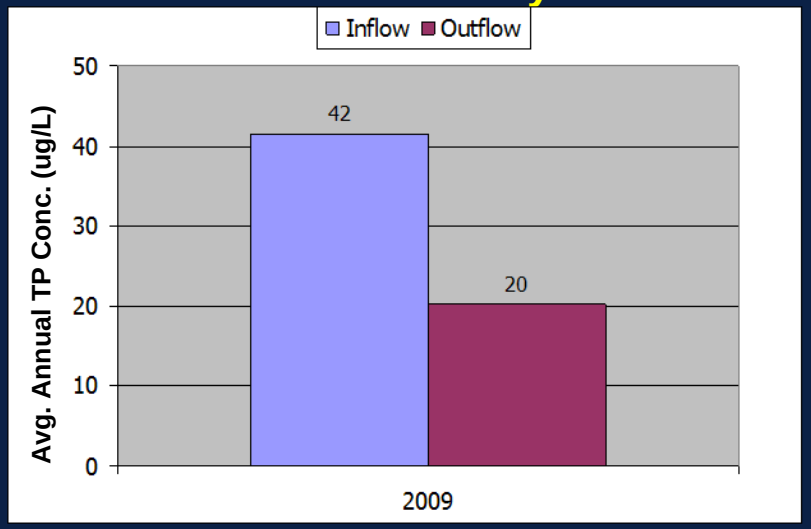
Wolff Ditch and Lemkin Creek HWTT Facilities

- **Wolff ditch 8.2 acres effective treatment area**
- **Lemkin Creek 4.8 acres effective treatment area**
- **Pumped system where outflows are used to hydrate downstream isolated wetlands**

Wolff HWTT System



Lemkin HWTT System



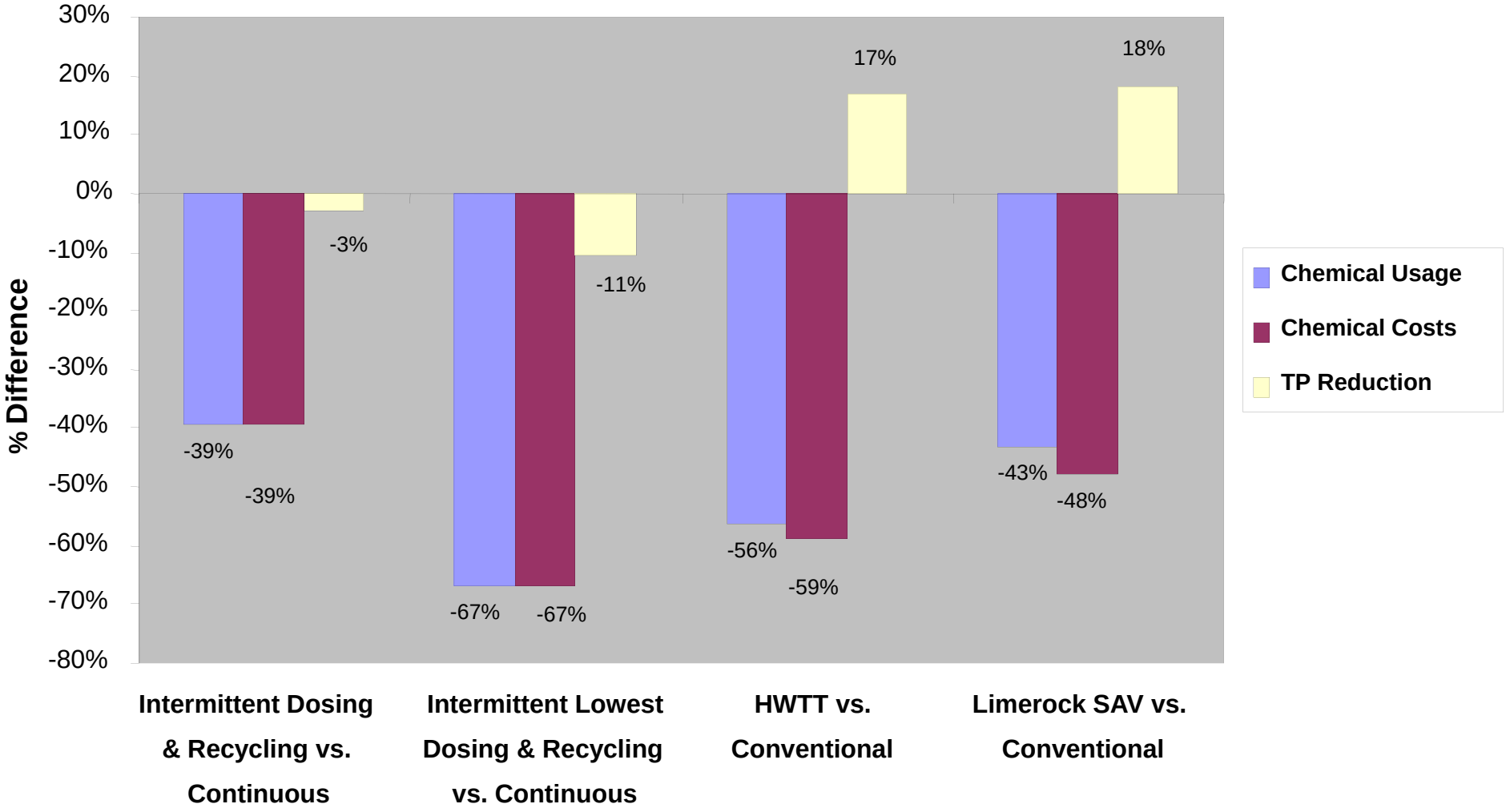

Wolff and Lemkin HWTT Systems during Construction
Eagle Bay Marsh
Lemkin Creek Isolated Wetland
Lemkin Creek
Wolff HWTT System Inflow
Outflow
Inflow
Floc Settling Pond
SAV Pond
Limerock Berms
Lemkin HWTT System Inflow

HWTT Nutrient Removal Optimization

- **Both full-scale facilities and mesocosms were used to evaluate and optimize performance of selected HWTT features**

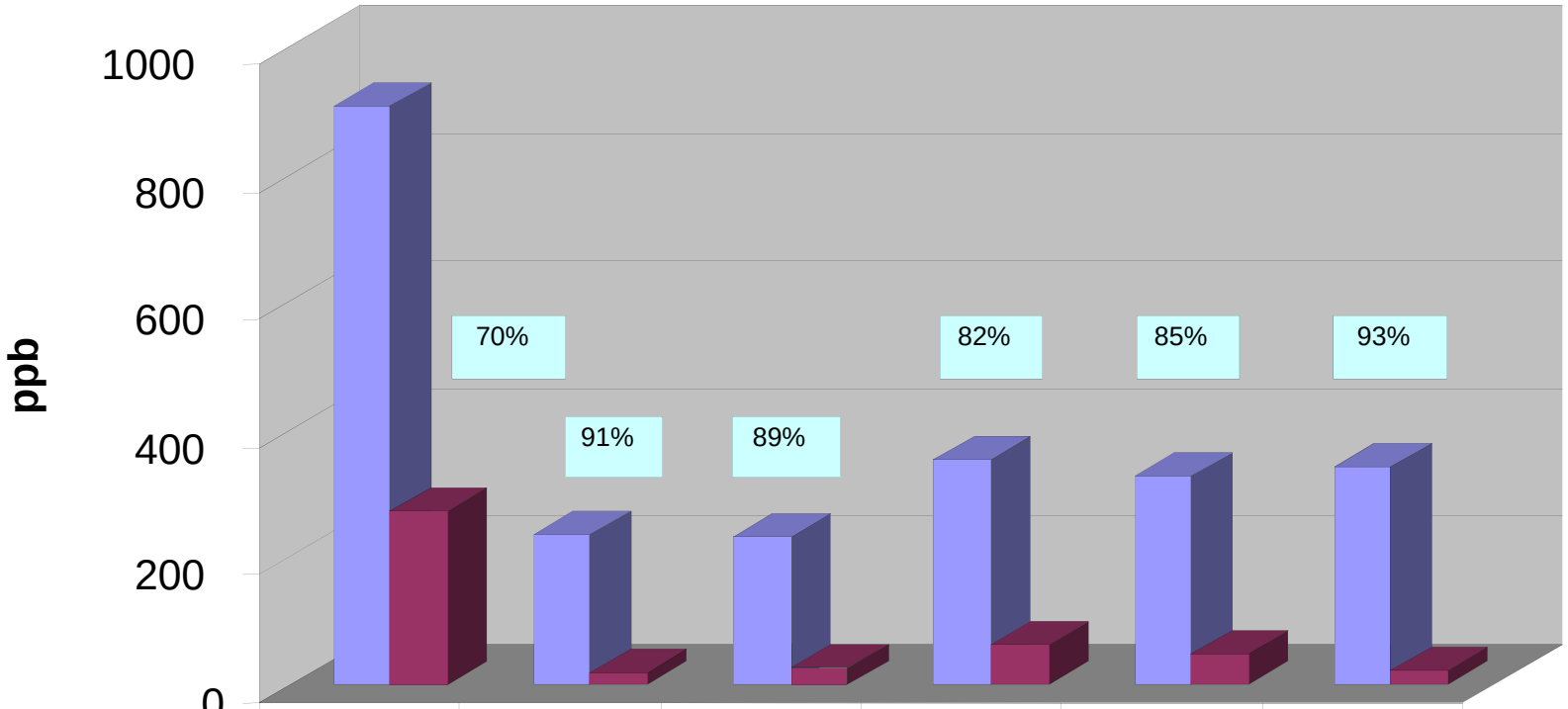
HWTT Nutrient Removal Optimization (cont.)

Comparative Trials of HWTT Components



HWTT Nutrient Removal Performance

Flow Weighted TP Concentrations & Percent Reductions



	Nubbin Slough	Ideal Grove A	Ideal Grove B	Mosquito Small East	Mosquito Small West	Mosquito Large Pond
Inflow	905	235	233	354	329	344
Outflow	274	21	27	63	48	24

Site

Potential for Utilization of HWTT in the Northern Everglades

- **The Northern Everglades can be a challenging environment for both chemical and wetland treatment systems:**
  - **Broad temporal and spatial variability in water quality**
  - **Variable wet and dry seasons flows**
- **HWTT systems are an appropriate technology for nutrient removal in the Northern Everglades, with features that minimize operating costs (chemical use) and maximize performance, all within a relatively compact footprint**

Current and Future HWTT Activities

- Full scale operations of five existing sites and optimization of newly constructed site
- Reporting will include:
  - Quarterly TP load reductions
  - Cost/Benefit analysis based on full scale operations
- Future implementation and operation of HWTT will be determined based on further information gained in FY10 and FY11

Questions?

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