

**State Recommendations to the Technical Oversight Committee  
For Consideration at the February 3, 2004 Meeting**

**Context of State Recommendations**

The following recommendations are being submitted by the SFWMD and FDEP for consideration by the TOC at the upcoming February 3, 2004 meeting.

The State's recommendations seek to fulfill the directions sent by the Principals to 'focus on gathering additional information and on solutions to achieve the requirements of the Settlement Agreement'. Given this mandate, the State parties believe that the TOC's primary focus should be towards completing and optimizing phosphorus reduction measures, working cooperatively to expedite the construction and enhancement of the STAs and BMP programs.

As a result, the State parties believe that the Category A recommendations should receive the highest priority and that they will be best achieved through implementation of the Long-Term Plan and completion of STA-1E. Category B and C recommendations, in turn, should be designed to facilitate implementation of these phosphorus control measures and to support associated management decisions. Recognizing that Federal and State resources are limited, all projects recommended by TOC should be technically feasible, necessary for environmental management and linked to the provisions of the Settlement Agreement.

Total estimated funding requirements are identified for each recommendation where available. In accordance with our commitment to achieve the requirements of the Settlement Agreement, State parties have identified specific funding estimated to occur before 12/31/2006.

**Category A. Controlling Phosphorus loads to the Refuge**

**TOC A.1.** *Continue to develop and implement strategies to operate the STAs within their design range. That should include review of baseline hydrologic data sets used for STA design and updating to reflect current regional water management.*

- a. This TOC recommendation is addressed in the following Long-Term Plan Process Development and Engineering (PDE) components which include total funding in the amount of \$4.2 million over FY2004 - FY2016 (\$2 million of which is to occur over FY04 - FY06) broken down as follows:

Section 5.1 includes funding for the development and implementation of Source Controls in the amount of \$2.1 million to occur over FY2004-FY2014 (\$1 million of this is to occur FY2004 - FY2006).

Section 5.6 includes funding for Improving the Reliability of Inflow Forecasts. This component includes updating the Baseline Data Sets, improving the understanding of water quality in certain basins with limited current data, and estimating the influence of CERP projects and Lake Okeechobee releases on

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STA Inflows. This component includes funding in the amount of \$2.1 million to occur over FY2004 - FY2015 (\$1 million is to occur over FY2004 - FY2006).

**Lead: SFWMD with DOI cooperation**

**Cost: \$4.2 million (a portion of which applies to the Refuge)**

**Priority: Currently Underway**

- b. Until STA-1E is fully operational, an average of 31,000 acre feet per year of EAA runoff carrying approximately 8 tons of phosphorus that is supposed to go to STA-1E will continue to overload STA-1W (reference 1994 Conceptual Design). The only alternative for this continued overload is to bypass untreated water to the Refuge, and SFWMD does not support bypass. The following strategies should be implemented to allow operation of STA-1W within its design range:

Accelerate construction of STA-1E including implementation of measures to accelerate the STA's ability to achieve flow-through operation.

**Lead: USACE**

**Cost: to be provided by USACE**

**Priority: 1- High**

Expedite acquisition of STA-1E operating permits, which are a prerequisite for flow-through operation of the STA.

**Lead: SFWMD, with support from DEP, USACE and USFWS**

**Cost: \$TBD**

**Priority: 1 - High**

Accelerate implementation of the enhancements described in Section 2.1 of the Long-Term Plan by promoting SAV growth in the downstream cells of each flow-way.

**Lead: USACE with support from SFWMD**

**Cost: TBD, however potential costs savings of up to \$834,000 by eliminating or reducing the need for herbicide treatment.**

**Priority: 1 - High**

- c. The SFWMD implemented the following operational and structural enhancements in STA-1W in FY03-FY04:

Following an extended period of higher than average inflows, STA-1W began to experience decreased performance in late 2002 – early 2003. In order to promote recovery of the STA, in February 2003, the SFWMD terminated Lake Okeechobee releases to STA. In addition for the balance of the dry season, the SFWMD is closing down the western flow-way (Cells 2 and 4) to lower water depths to about 12 inches in an attempt to allow Cell 2 floating cattail tussocks (islands) to root, and to allow Cell 4 vegetation to recover as well. While this may or may not allow Cell 2's tussocks to re-root, it should immobilize them so that SAV can re-grow in previously scoured areas.

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Extensive vegetation management activities were completed in Cell 2 consisting of chopping and removing floating cattail tussocks.

Extensive vegetation management activities were completed in Cell 5 consisting of treatment to eliminate over 1,000 acres of undesirable floating aquatic vegetation.

A limerock berm demonstration project was constructed in Cell 5 to improve hydraulic redistribution. Flow tests were conducted in early 2003 to characterize the pre-berm flow distribution and additional flow tests and a dye tracer project are scheduled for early 2004 to characterize the post-berm flow distribution. (Costs for this recommendation are included in TOC A.2.a. below).

**Lead: SFWMD**

**Cost: \$estimate needed and see TOC A.2.a**

**Priority: Currently Underway**

**TOC A.2.** *Review the long-term plan to determine whether additional measures are appropriate for optimizing phosphorus reduction. Implement such measures as necessary to achieve the long-term levels.*

**Context:** This TOC recommendation is addressed by multiple projects in the Long-Term Plan's Process Development and Engineering (PDE) component. As stated on page 1-15 of the Long-Term Plan, **'it is the principal function and purpose of the PDE component to develop those measures necessary to provide adequate assurance of the ability to meet the water quality goals in the most cost-effective manner.'**

**Lead: SFWMD**

**Cost: \$45 million over FY2004-2016 (a portion of which applies to Refuge)**

**Priority: Currently Underway at high priority**

- a. This TOC recommendation is addressed in the following Long-Term Plan Process Development and Engineering (PDE) components which include total funding in the amount of \$40.8 million over FY2004 - FY2016 (\$22.2 million of which is to occur over FY04 - FY06) broken down as follows:

Section 5.2 includes funding for Enhanced Control and Monitoring of the STAs to provide information necessary to fully characterize and optimize the STAs and to modify ongoing operations to improve performance. This component includes funding in the amount of \$26.5 million to occur over FY2004 - FY2016 (\$11.3 million of this is to occur FY2004 - FY2006).

Section 5.3 includes funding for Improved Analytical and Forecasting tools. This component includes continued development and refinement of the analytical tools necessary for increased confidence in predicting the water quality improvement performance of the STAs and predicting the influence of upstream storage reservoirs on STA water quality improvement performance.

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This component includes funding in the amount of \$11.8 million to occur over FY2004 - FY2010 (\$9 million of this is to occur FY2004 - FY2006).

Section 5.4 includes funding to investigate ways to optimize SAV performance at large-scale and with long-term reliability. This component includes funding in the amount of \$1.2 million to occur over FY2004 - FY2008 (\$0.6 million of this is to occur FY2004-FY2006)

Section 5.5 includes funding to investigate Additional Structural and Operational Measures that can improve the treatment performance of the STAs. This component includes funding in the amount of \$1.3 million to occur over FY2004 - FY2005.

**Lead: SFWMD**

**Cost: \$40.8 million (a portion of which applies to the Refuge)**

**Priority: Currently Underway**

- b. This TOC recommendation is already addressed in the Long-Term Plan's Adaptive Implementation component. Specifically, Section 6.3 recommends additional measures be expeditiously implemented following confirmation of their scientific defensibility and confirmation of their need, both of which are intended to result from the PDE component of the Long-Term Plan. This component includes funding in the amount of \$36 million to occur over FY2007-FY2010.

**Lead: SFWMD**

**Cost: \$36 million over FY2007-FY2010 (a portion of applies to the Refuge)**

**Priority: TBD**

- c. This TOC recommendation is addressed in the Long-Term Plan's STA-1W Enhancements project. The SFWMD has initiated design of the enhancements and the project is on schedule for completion by December 2006.

**Lead: SFWMD**

**Cost: \$6.4 million**

**Priority: Currently Underway**

- d. The USACE is preparing to design and construct a PSTA demonstration project in STA-1E. Effort should be made to conduct a technical review of this project by the same group of experts that collaborated on the PSTA demonstration in STA-<sup>3</sup>/<sub>4</sub>, accelerate project construction and ensure that normal operation of the STA is not compromised. Coordinate with the SFWMD on the implementation of the STA-1E enhancements described in Section 2.1 of the Long-Term Plan.

**Lead: USACE in coordination with SFWMD**

**Cost: \$TBD**

**Priority: 1 - High**

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**TOC A.3. Refine operational strategies to reduce short-term peak loads to and from the STAs.**

- a. This TOC recommendation is already addressed by the PDE component of the Long-Term Plan. Specifically, Section 5.2.4. includes funding to develop operational strategies for the STAs that optimize phosphorus removal while maintaining adequate hydraulic and hydrologic operation. Long-term permits for the STAs will include "TBELs"\* based on these operational strategies. This Long-Term Plan component includes funding in the amount of \$4 million to occur over FY2004 - FY2016.

**Lead: SFWMD**

**Cost: \$4 million (a portion applies to STAs discharging to the Refuge)**

**Priority: Currently Underway**

- b. This TOC recommendation is also addressed by Section 5.4.1 of the PDE component. This activity includes development of an operational strategy for optimizing phosphorus removal performance of SAV treatment areas.

**Lead: SFWMD**

**Cost: \$0 (to be completed by staff assigned to Long-Term Plan activities)**

**Priority: Currently Underway**

- c. This TOC recommendation is also addressed by Part 8 of the Long-Term Plan. Section 8.5.2 includes funding for operations plan refinement, hydraulic and water quality modeling, and operational support for the STAs. This section includes funding in the amount of \$4 million to occur over FY2004 – FY2016.

**Lead: SFWMD**

**Cost: \$4 million (a portion applies to STAs discharging to the Refuge)**

**Priority: Currently Underway**

- d. Evaluate and implement measures to minimize short-term advection of phosphorus into the interior of the Refuge which may occur during periods of peak discharges from STA-1E.

**Lead: USACE**

**Cost: \$TBD**

**Priority: 2 – High**

\*"Technology-based effluent limitation" or "TBEL" means the technology-based treatment requirements as defined in Rule 62-650.200, Florida Administrative Code.

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**TOC A. 4.** *Review of regional water management decisions affecting STA operations and performance.*

- a. This TOC recommendation is partially addressed by several activities in the PDE component of the Long-Term Plan. Section 5.3.2. includes funding to obtain data to assist CERP in estimating the phosphorus removal associated with reservoirs. The results of this activity will provide information that will be used to optimize the phosphorus removal performance of the linked STAs and Reservoirs in the EAA. Sections 5.6.3. and 5.6.4. include estimating the influence of CERP projects and Lake Okeechobee releases on STA Inflows. These three sections of the Long-Term Plan include funding in the amount of \$1.9 million to occur over FY2004-FY2010 (\$1.7 million of which is to occur over FY2004-FY2006.)

**Lead: SFWMD**

**Cost: \$1.9 million (a portion applies to STAs discharging to the Refuge)**

**Priority: 2 - Medium**

- b. Conduct review of the Everglades National Park operating rules associated with the Cape Sable Seaside Sparrow and the impact of these rules on STA operations and performance, including impact on STA discharges to the WCAs, including the Refuge.

**Lead: SFWMD**

**Cost: \$TBD**

**Priority: 2 - Medium**

**Context for Category B and C Recommendations:** The recommendations in Categories B and C concern gathering information on phosphorus dynamics in relation to historic and future exceedances. However, scientific understanding of exceedances can only be gained by investigations of external and internal factors influencing the 14-station tracking and compliance system. Broad scale monitoring and 'far-field' modeling as proposed by the DOI at the January 8, 2004, TOC meeting has not been designed to address issues identified by the TOC in their July 24, 2003 letter to the Principals efficiently. DOI proposals are largely beyond the provisions or relevant interests of the Settlement Agreement. Furthermore, the State parties do not believe the monitoring and modeling proposed by DOI will provide information in a timely enough manner to address existing issues. For these reasons, the State parties are submitting the following recommendations for consideration by the TOC.

**Category B. Enhancing Monitoring of the Refuge**

- TOC B.1.** *Design and implement an enhanced monitoring program to improve spatial and temporal understanding of factors related to phosphorus dynamics.*

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- a. Collect baseline phosphorus data plus a maximum of two years of transect data downstream of STA-1E discharges. The transect should be limited to approximately five (5) sites. Also, collect a maximum of two years of phosphorus transect data downstream of STA-1W discharges. This transect should also be limited to approximately five (5) sites.

**Lead: USFWS with SFWMD collaboration**

**Cost: \$100,000 using Federal water quality funding for the Refuge**

**Priority: 2 - Medium**

**Category C. Modeling of the Refuge**

*TOC C.1. Develop a water quality / hydraulic model for the Refuge with a phosphorus cycling component*

- a. The Long-Term Plan includes a component to develop and calibrate a model capable of predicting the response of impacted areas in the EPA, including the Refuge, to improve water quality. The function of the model will be to predict the spatial extent and temporal distribution of water quality and marsh recovery. As described in Section 7.1.1, the Everglades Landscape Model (ELM) is proposed for meeting this need. The ELM is currently being updated and a version is being adapted for the Refuge using a 200 meter spatial scale. Because of the State's investment in ELM and the model's ability to deal with landscape dynamics, the State parties recommend that this Long-Term Plan activity be used in concert with the ELM model of the Refuge already under development to meet the needs of this TOC recommendation. This Long-Term Plan activity includes funding in the amount of \$1.1 million to occur over FY2004 to FY2007.

**Lead: USFWS with assistance from SFWMD**

**Cost: \$1.1 million from SFWMD** (a portion of which applies to the Refuge) plus additional SFWMD funds for the ELM model of the Refuge already under development

**\$300,000 from USFWS/DOI/ENP**

**Priority: 2 - Medium**

- b. This TOC recommendation can be partially addressed by the Long-Term Plan activity "Determine Relationship between Discharges and Water Quality within the EPA" (Section 5.6.5). This activity includes using best available information, primarily water quality monitoring data, to examine statistical relationships between surface water discharges and downstream P concentrations in water bodies of the EPA, therefore a portion of this work could apply to the Refuge. The same data sets will be used to calibrate and validate empirical P models, such as DMSTA or EPGM. These or other models may be used to develop

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scenarios for the long-term responses of receiving water P to spatial and temporal changes in P concentrations and loads in surface water inflows. This Long-Term Plan activity includes funding in the amount of **\$400,000** to occur over FY2004 and FY2005.

**Lead: SFWMD**

**Cost: \$400,000 (a portion of which applies to the Refuge)**

**Priority: SOW currently under development**

**TOC C.2.** *Evaluate the issues associated with phosphorus loads and transports within the L-40 and L-7 canals.*

- a. Refine RMA-2 model of the L-40 canal downstream of STA-1E discharges to include phosphorus transport.

**Lead: USACE or USFWS**

**Cost: \$50,000**

**Priority: 3 - Low**

- b. Collect samples in the L-40 canal downstream of STA-1E to characterize the phosphorus contained in the canal sediments.

**Lead: USACE and USFWS with IFAS**

**Cost: \$50,000**

**Priority: 1 - High**

- c. Dredge sediments in the L-40 canal downstream of STA-1E.

**Lead: USACE and USFWS**

**Cost: \$450,000 in FY04 (plus additional funds in subsequent fiscal years)**

**Priority: 1 - High**

**TOC C.3.** *Develop and track a simple phosphorus mass-balance for the Refuge.*

- a. Develop a simple black-box mass-balance model of the Refuge as discussed at January 8, 2004 TOC meeting.

**Lead: USFWS in cooperation with DOI consultant Dr. Bill Walker**

**Cost: \$50,000**

**Priority: 2 - Medium**