

**FACT SHEET  
FOR  
FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION  
INDUSTRIAL WASTEWATER FACILITY PERMIT**

Permit No.: FL0177946

Permit Writer: John Hallas

Application No.: FL0177946-003-IW7A

Application Date: December 23, 2003

**1. SYNOPSIS**

**a. Name and Address of Applicant:**

South Florida Water Management District  
3301 Gun Club Road  
West Palm Beach, FL 33406

For:

Stormwater Treatment Area 2 (STA-2)

**b. Type of Facility:**

Primary SIC: 3822 Environmental controls

Secondary SIC: Standard Industrial Codes not available.

The facility is a designed and engineered flow through marsh system which utilizes natural biological processes to remove excess phosphorus in stormwater runoff from the Chapter 298 drainage districts situated on the easterly shore of Lake Okeechobee (East Shore Water Control District and Closter Farms), a portion of runoff from the S-5A basin via the Ocean and Hillsboro canals and the S-6/S-2 Basin, along with Lake Okeechobee regulatory releases. STA-2 is a stormwater management system (SMS) as defined in 373.403(10), F.S. At the present time, structural, operational and vegetation improvements and enhancements are underway in accordance with the Everglades Protection Area Tributary Basins Long Term Plan for Achieving Water Quality Goals (Long-Term Plan), to optimize performance as needed to achieve the phosphorus criterion in the Everglades Protection Area. Construction of these improvements and enhancements shall be completed in accordance with the schedules in the Long-Term Plan, and in the accompanying Administrative Order (AO-010-EV) Paragraph 19. Additional enhancements to STA-2 may occur as part of the adaptive implementation process envisioned in the Long-Term Plan.

**c. Design Capacity of Facility**

STA-2 is designed to provide 8,330 acres of effective treatment area and treat an average of approximately 343,314 acre-feet of stormwater runoff, seepage from WCA-2A, and Lake Okeechobee deliveries annually. The inflow to STA-2 consists almost entirely of agricultural stormwater runoff, and as such, varies considerably on a daily, monthly, seasonal and annual basis. The STA may be subject to an increase in inflow source loads beyond what was anticipated in development of the TBEL or due to violations of federal, state or District rules, laws, regulations or permits by persons other than the District.

**d. Applicant's Receiving Water**

Monitoring Group D-001: Discharges to L-6 Borrow Canal, Class III Fresh waters.

Latitude: 26° 22' 42" N Longitude: 80° 30' 30" W

#### e. Associated Documents

The following documents are associated with NPDES Permit No. FL0177946-003:

- 1. Administrative Order (Order) AO-010-EV-** This Order details a compliance schedule for achieving the conditions set forth in this permit. A summary of the associated schedules can be found in the Order section of this Fact Sheet.
- 2. Exhibit A:** Technical Support Document for the STA-2 TBEL<sup>1</sup>- This document establishes TBEL limits and identifies factors which may impact flows and loads associated with the treatment system,
- 3. Exhibit B:** Dissolved Oxygen Site Specific Alternative Criteria Technical Support Document<sup>2</sup>- This document establishes an alternative criterion for dissolved oxygen in the Everglades Protection Area pursuant to Subsection 62-302.800, F.A.C.
- 4. Exhibit C:** Stormwater Treatment Area 2 Pollution Prevention Plan (PPP)<sup>3</sup>- The PPP provides a summary of operations for STA-2, and describes factors which may impact those operations.
- 5. Exhibit D:** The Everglades Protection Area Tributary Basins Long-Term Plan for Achieving Water Quality Goals<sup>4</sup>- The Long-Term Plan includes structural, vegetative, and operational improvements and enhancements which will aid in the optimization of the hydraulic distribution and phosphorus removal of the project. The Long-Term Plan also includes detailed schedules associated with the identified improvements and enhancements. Revisions to the Long-Term Plan are available on the District's webpage for the Long-Term Plan: <http://www.sfwmd.gov/org/erd/longtermplan/index.shtml>.
- 6. Exhibit E:** Treatment Wetlands<sup>5</sup>. This document provides background into the characteristics of wetland treatment systems.
- 7. Exhibit F:** Test for Determining Achievement of 50 Part Per Billion Phosphorus Initial TBEL For Everglades Stormwater Treatment Areas<sup>6</sup>

#### f. Facility Description

The individual Everglades Construction Project (ECP) components included in STA-2 are as follows: S-5A Basin Runoff Diversion Work, S-6 Diversion Works, STA-2 Supply Canal Works, STA-2 Inflow Works, STA-2 Interior Treatment Works, STA-2 Discharge Works, G-335 Pump Station, and the WCA 2A Hydropattern Restoration Works. Collectively, these components are referred to as the District's STA-2 Project (STA-2).

##### S-5A Basin Runoff Diversion Works

A portion of the S-5A Basin stormwater is diverted to STA-2 for treatment prior to discharge into WCA-2A. This component includes the following features: the enlargement of the Hillsboro Canal extending southeasterly from its confluence with the Ocean Canal a distance of approximately 7 miles; the enlargement of the Ocean Canal between its confluence with the Hillsboro Canal and the old S-5AX structure (removed as part of the canal improvements); the 5.68 miles extension east from the old S-5AX structure and the construction and operation of the G-341 structure, located on the Ocean Canal.

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<sup>1</sup>Exhibit A: Goforth, G., N. Iricanin, S. Hill, S. Xue, T. Piccone, F. Nearhoof, and Ken. Weaver, *Technical Support Document for the STA-2 TBEL*. 2007.

<sup>2</sup>Exhibit B: Weaver, Ken, Florida Department of Environmental Protection, *Dissolved Oxygen Site Specific Alternative Criteria Technical Support Document*, January 2004.

<sup>3</sup>Exhibit C: South Florida Water Management District, *Stormwater Treatment Area 2 Pollution Prevention Plan*, May 2007 and subsequent revisions.

<sup>4</sup>Exhibit D: South Florida Water Management District, *Everglades Protection Area Tributary Basins Long-Term Plan for Achieving Water Quality Goals*, October 2003 and subsequent revisions.

<sup>5</sup>Exhibit E: Kadlec, Robert and Robert Knight, *Treatment Wetlands*, Boca Raton, pg. 474-475, 1996.

<sup>6</sup>Exhibit F (Nearhoof *et al*, 2005)

### **The S-6 Diversion Works**

The S-6 Diversion Works includes approximately 3,852 linear feet of canals and associated levees to convey discharges from the S-6 Pump Station to the STA-2 Supply Canal. Two gated control structures (G-338 and G-339) are also included. The G-338 structure, single vertical lift gate, functions as a water supply and partial emergency diversion system, sending flows to the Refuge and downstream areas. The G-339 structure (double vertical lift gate) functions as an emergency diversion system for the remainder of flows should operation of STA-2 require the diversion of flows during extreme storm events from the S-6 Pump Station to WCA-2A via the L 6 Borrow Canal. In addition, G-339 may be operated for flow recirculation from the L-6 Borrow Canal back into the STA-2 Supply Canal, to avoid hydrological and nutrient overloading the STA, or when water conditions within STA-2 may damage existing marsh vegetation. G-339 is located at the confluence of STA-2 Supply Canal and the L-6 Borrow Canal.

Diversion may occur when water from the S-6 Diversion Works, i.e., prior to entering the STA-2 Interior Treatment Works, is directed untreated into the Refuge through the G-338 structure or into WCA-2A through the G-339 structure. Under limited conditions, e.g., during extreme storm events, periods of water supply deliveries, to avoid damage to treatment vegetation and to avoid hydrological and nutrient overloading the STA, untreated water may be diverted directly from basins upstream of STA-2 to the Everglades Protection Area through the G-338 and G-339 diversion structures.

### **STA-2 Supply Canal Works**

The STA-2 Supply Canal includes the STA-2 Supply Canal, east and west Supply Canal Levees; with associated seepage collection canal and inflow control mound beginning at G-339 and extending in a southwesterly direction parallel to and west of the existing Levee L-6 to the north boundary of STA-2. The supply canal connects into the inflow distribution canal located along the northerly perimeter of STA-2. Pump Station G-328 is a privately owned and operated pump station which conveys Everglades Agricultural Area (EAA) discharges directly into the L-6 Canal. This pump station has a capacity of approximately 445 cfs. This pump station directs EAA discharge water into the supply canal for inflow into STA-2 for treatment along with the S-6 pump station. This pump station may also withdraw water from the STA-2 Supply Canal to meet irrigation water supply demands.

The G-337B Seepage Pump Station directs perimeter seepage water into the STA-2 Supply Canal for re-circulation through the STA. Seepage Pump Station G-337A was modified to a facility with four gated control structures. This facility provides operational flexibility for the direction of inflow water into cell 4 or isolation of flow within the Supply Canal.

### **STA-2 Inflow Works**

The STA-2 Inflow works consist of a perimeter levee, inflow canal, inflow levee and associated inflow structures, and spreader canal; a seepage collection canal, and inflow control mound. The existing STA-2 inflow is being extended south and west along the top of Cell 4, and six internal inflow structures will convey the water into the north end of Cell 4. Water is directed into Treatment Cell 1 via G-329 A-D gated control structures, into Treatment Cell 2 via G-331 A-G gated control structures, into Treatment Cell 3 via G-333 A-E gated control structures and will be directed into Treatment Cell 4 via G-367 A-F gated control structures. Cell 4 is substantially complete and was flow capable as of December, 31 2006.

### **STA-2 Interior Treatment Works**

STA-2 is located west of WCA-2A and is situated generally on and surrounding the former Brown's Farm Wildlife Management Area and surrounding EAA lands. More than half of STA-2 is situated on lands previously used primarily for agricultural production. The original STA-2 consisted of 6,430 acres of effective treatment area and began operation in 2000.

The STA-2 interior treatment works is divided into three parallel treatment cells (Cells 1-3) through interior levees and water control structures. Flows pass through the three treatment cells from north to south and are directed into a final discharge system situated along the southern boundary of STA-2. A new cell, Cell 4, located between Cell 3 and the North New River (a 2,015-acre expansion), has been constructed and shall begin Start-up operations once flows are available. Cell 4 will be operated in parallel with Cells 1-3. The District shall complete the construction of improvements and enhancements for STA-2 in accordance with the schedules in the Long-Term Plan .

Cell 1 consists of approximately 1,783 acres of effective treatment area; Cell 2 consists of approximately 2,382 acres; and Cell 3 consists of approximately 2,265 acres of effective treatment area. Cell 4 will have an effective treatment area of approximately 1,901 acres and will operate in parallel with Cells 1, 2 and 3.

#### **STA-2 Discharge Works**

Treated water is collected at the southern end of each treatment cell of STA-2 and passes through a series of outflow control structures (Cell 1 outflow structures G-330 A-E, Cell 2 outflow structure G-332, Cell 3 outflow structure G-334, and Cell 4 outflow structure G-368 A-D to the Discharge Canal. Structures G-368 A-D consist of four gated culverts that serve as the outflow control structures for treatment Cell 4. Each culvert consists of a 140-ft long 8-ft x 8-ft concrete box culvert with a 96"x 96" slide gate in the center of the culvert alignment, and flared end sections. These structures convey water from a collector canal that runs across the south end of Cell 4 into the common discharge canal. Water collected in the Discharge Canal is pumped from STA-2 by the G-335 Pump Station.

The eastern levee of the North New River Canal serves as the new Cell 4 western levee. The Cell 4 outlet control structure has been constructed at the confluence of the new discharge canal and the existing canal immediately east and downstream of G-334. If needed, seepage control is provided by collection canals along the northern and southern boundaries of Cell 4 with direct connections to the North New River Canal. Approximately 2.5 miles of perimeter levees, six gated water control structures and one spillway comprise the major construction features (Figure 1).

#### **G-335 Pump Station**

Pump Station G-335 is the outflow pump station which draws treated water from the STA-2 Discharge Works and releases it to the WCA-2A Hydropattern Restoration Works via the L-6 Borrow Canal. This pump station is located in the extreme southeastern corner of STA-2. G-335 pump station includes two 100 cfs pumps, two 470 cfs pumps, two 950 cfs pumps, a pump station enclosure, and a connection canal leading to the L-6 Borrow Canal and the WCA-2A Hydropattern Restoration Works.

#### **WCA 2A Hydropattern Restoration Works**

It was originally contemplated in the February, 1994 *Conceptual Design, Everglades Protection Project*, that discharges from STA-2 were to have been delivered via a sheet flow to a length of the westerly perimeter of WCA-2A of approximately 40,000 feet, extending generally northeasterly from the STA-2 Outflow Pumping Station (G-335).

Continuing concern over the potential impact of such discharges prior to their full compliance with water quality standards led to a modified plan. Six box culverts, with an approximate capacity of 300cfs each, were placed in the northern impact area of WCA-2A along the East L-6 Levee. The six box culverts discharge into previously impacted areas of WCA-2A. The originally intended discharge structures along the perimeter of WCA-2A extending north from G-335 (along a previously unimpacted area of WCA-2A) were excluded from the construction. In order to replace the "lost" hydraulic capacity, a part of the discharge from STA-2 is now directed south, through Structure G-336G, discharging to WCA-2A through a 3,400-ft. length of a fully degraded East Levee L-6 near S-7.

It is intended that, upon completion of the STA-2 enhancements, STA-2 discharges will fully comply with permit effluent limit. The Long-Term Plan for completion of the WCA-2A Hydropattern Restoration consists of construction of additional culverts through the East Levee L-6 over that length (approximately 18,000 ft.) of the WCA-2A excluded from the original construction. It is anticipated that a total of 6 culverts (10'x5') reinforced concrete boxes similar to G-336 (A-F)) will serve that purpose.

#### **STA Operations Summary**

Assuming normal operating conditions, the following treatment path culminates with discharges into Water Conservation Area (WCA) 2. Runoff from the Chapter 298 drainage districts situated on the easterly shore of Lake Okeechobee (East Shore Water Control District and Closter Farms), a portion of runoff from the S-5A basin via the Ocean and Hillsboro canals and the S-6/S-2 basin, along with Lake Okeechobee releases intended for WCA-2A or meant for delivery to the Lower East Coast, are directed into STA-2 from the S-6 Pump Station to the STA-2 Inflow Works. In addition, seepage from WCA-2A enters the STA. After introduction to STA-2, interior structures will direct water into one of four cells (will be called flow-ways when the cells are divided into two or more compartments) where it will undergo treatment. Cells 1-3 were previously constructed and are operational. Cell 4 has been constructed as a part of the Long-Term Plan and will

begin stabilization (flow-through) operation upon achievement of Start-up test. Treated discharges are drawn from the STA-2 Discharge works by the G-335 Pump Station and are then released to the WCA-2A Hydropattern Restoration Works via the L-6 Borrow Canal. Wetlands and surface waters located within the receiving water body, WCA-2, are Class III Waters.

**g. Description of Discharges (as reported by applicant)**

Monitoring Group D-001: Discharge of treated stormwater from the tributaries of the S-6 and G-328 Pump Stations including that portion of the S-5A Basin which is diverted to the S-6 pump station from the S-5A Basin Diversion Works.

**2. BASIS FOR EFFLUENT LIMITS AND MONITORING REQUIREMENTS**

The following table provides the basis for Part I. A. provisions.

**Table 1. Basis for Provisions of Part I.A: Outfall D-001 (G-335 Pump Station):**

| Parameter                | Units | Limit                                                      | Statistical Basis    | Rationale                                                                     |
|--------------------------|-------|------------------------------------------------------------|----------------------|-------------------------------------------------------------------------------|
| pH                       | SU    | 6.0                                                        | Daily Minimum        | Rule 62-302.530(52), F.A.C.                                                   |
| pH                       | SU    | 8.5                                                        | Daily Maximum        | Rule 62-302.530(52), F.A.C.                                                   |
| Phosphorus, Total (as P) | ppb   | 10 ppb <sup>7</sup><br>See I.A.5 <sup>8</sup><br>See I.A.6 | Report <sup>6</sup>  | Section 373.4592, F.S; Rule 62-302.540 F.A.C.; Rule 62-302.530(48)(b), F.A.C. |
| Oxygen, Dissolved (DO)   | mg/l  | See I.A.7 and Report                                       | See attached DO SSAC | Rule 62-302.800, F.A.C.                                                       |
| Flow                     | CFS   | See I.A.6                                                  | Daily Average        |                                                                               |

The following were used as the basis of the permit limitations/conditions:

A. FAC refers to various portions of the Florida Administrative Code.  
 The effective dates of FAC Rule Chapters cited in the permit and in this document are as follows:

| Chapter | Effective Date |
|---------|----------------|
| 62-4    | 05-01-03       |
| 62-160  | 06-08-04       |
| 62-302  | 01-09-06       |
| 62-601  | 12-24-96       |
| 62-620  | 12-23-04       |
| 62-650  | 12-26-96       |
| 62-660  | 05-10-05       |

B. FS refers to various portions of the Florida Statutes

<sup>7</sup> Monitoring results for this parameter shall be reported as a monthly average and as an annual average. The “monthly average” is a flow-weighted mean of the weekly effluent samples. The “annual average” shall be computed for each water year (May - April) and is equal to the flow-weighted mean concentration for the water year.

<sup>8</sup> The 10 ppb effluent limit represents the phosphorus criterion set forth in Rule 62-302.540(4)(a), F.A.C. and is consistent with Section 301(b)(1)(C) of the CWA. A water quality based effluent limitation (WQBEL) for phosphorus will be established in accordance with 62-650 F.A.C. and 373.4592 Florida Statutes by December 31, 2010 and will be a major permit modification. It is recognized that the ultimate WQBEL to be developed may be higher than a flow-weighted mean of 10 ppb. The antibacksliding provisions of the CWA and NPDES regulations do not apply to an effluent limitation with a delayed compliance date, until the date of compliance. In this case, restrictions on backsliding would not apply to the 10 ppb permit effluent limit until the established WQBEL takes effect at the end of the compliance schedule.

| Parameter                                                                      | Units | Limit | Statistical Basis | Rationale |
|--------------------------------------------------------------------------------|-------|-------|-------------------|-----------|
| C. CFR refers to various portions of the Code of Federal Regulations, Title 40 |       |       |                   |           |
| D. BPJ refers to Best Professional Judgment                                    |       |       |                   |           |

The Department has concluded that the most appropriate way to measure whether the STA-2 project is achieving the design goal for phosphorus requires consideration of the known characteristics of wetland treatment systems. Wetland treatment systems reach optimal performance only after initial periods called “start-up” and “stabilization” phases. This conclusion is consistent with the findings of Kadlec and Knight (Exhibit E, pg. 474 – 475).

As treatment cells are constructed and managed to optimize performance, they will undergo three operational phases, each with different levels of performance:

**Start-Up Phase** During the initial Start-Up Phase of a new cell or new flow-way, the permittee shall monitor phosphorus concentrations within the facility to demonstrate that the project is achieving a net reduction in phosphorus. Portions of STA-2 may operate independently of each other. Under those circumstances, Start-Up Phase operation and monitoring within the treatment area shall be performed as follows:

- i. **Establishment of Marsh Vegetation.** The permittee shall manage water depths in the treatment cells to facilitate the recruitment of marsh vegetation in accordance with the Operations Plan, which may include recirculating waters within the STA.
- ii. **Start-Up Monitoring.** On a weekly basis, the permittee shall monitor total phosphorus at the upstream side of inflow structure(s). Total phosphorus shall also be monitored on a weekly basis on the upstream side of the outflow structures.
- iii. **Phosphorus Start-Up Test.** The Phosphorus Start-Up Test for an individual flow-way or cell is based on when the above samples demonstrate, over a four-week period, a net reduction in phosphorus occurs. This net reduction shall be deemed to occur when the 4-week geometric mean total phosphorus water column concentration from samples collected at the applicable outflow structures is less than the 4-week geometric mean total phosphorus water column concentration collected at the applicable inflow structure(s).
- iv. **Discharge Operations.** Discharge operations, from an individual flow-way or cell that has passed the Phosphorus Start-Up Test described above, may commence once Initial Start-Up Phase documentation and all supporting data and analyses are submitted to the Department via regular or electronic mail. For flow-ways that have not met these tests within six months after issuance of the permit, the permittee shall submit status updates regarding progress toward and identifying strategies and timelines to achieve this test.
- v. **Initiation of Individual Flow-way (Stabilization and Routine Operation) Discharges and Monitoring.** Once flow-through discharges from a flow-way begin, the permittee shall initiate routine water quality monitoring for that flow-way consistent with the monitoring program described in Part I.A.1-7 of the NPDES permit..

**Stabilization Phase (Flow-through Operations)–** An STA enters the Stabilization Phase after each of three antecedent conditions: (1) once flow-through operations begin following the initial start-up of a new treatment cell; (2) when a treatment cell is taken off-line for implementation of Long-Term Plan enhancements that may have adverse impacts on STA performance, or (3) when a treatment cell is taken off-line for recovery activities associated with a major event that compromises the structural integrity or performance of the STA. During the Stabilization Phase the treatment vegetation will be maturing and the STA performance will generally be improving toward achieving the TBEL. However, the overall performance of the STA is extremely difficult to evaluate and predict. It is anticipated that the treatment vegetation will require one to three years after flow-through operations begin for the affected cells to achieve optimal

performance. During the stabilization phase the TBEL shall apply. Once the facility achieves the TBEL it shall enter the Routine Operations Phase.

**Routine Operations Phase** - During the Routine Operations Phase, discharges from the STA shall achieve compliance with the TBEL as described in Section 6 below.

### 3. **ADDITIONAL MONITORING REQUIREMENTS**

In addition to the monitoring requirements set forth in Section I.A. of the permit, the following site specific monitoring requirements are included in the accompanying Order.

As a condition of Order AO-010-EV, the permittee shall conduct monthly monitoring for Total Phosphorus at a series of sites located along two transects downstream of the STA-2 discharge site to characterize the effects of the STA-2 discharge on adjacent marsh areas of WCA-2 (Figure 3). Table 2 below identifies nine sampling sites. Of the nine sites, seven are located in areas currently identified as impacted (i.e., sediment TP concentration greater than 500 mg/kg), and two sites (C4 and CA 29) located in areas currently identified as unimpacted. Upon demonstration that an additional sampling site or removal of an existing sampling site is warranted, the permittee may request a modification to the monitoring program as appropriate. The Department shall review and approve such requests on a case by case basis.

**Table 2: Transect Monitoring Locations**

| SITE              | LAT_DEC  | LONG_DEC  | Category              |
|-------------------|----------|-----------|-----------------------|
| <b>Transect 1</b> |          |           |                       |
| N.25              | 26.45398 | -80.45649 | Impacted              |
| N1                | 26.44735 | -80.45613 | Impacted              |
| N2                | 26.43897 | -80.45402 | Impacted <sup>9</sup> |
| N4                | 26.42263 | -80.45038 | Impacted              |
| C4                | 26.39515 | -80.46808 | Unimpacted            |
| <b>Transect 2</b> |          |           |                       |
| FS0.25            | 26.34577 | -80.52683 | Impacted              |
| FS1.0             | 26.34402 | -80.51953 | Impacted              |
| FS3.0             | 26.33773 | -80.50045 | Impacted              |
| CA 29             | 26.33036 | -80.47837 | Unimpacted            |

As a condition of the Order, all flows, including those diverted through the G-338 and G-339 structures, shall be monitored and reported consistent with the requirements of the permit. The submitted notification shall include a description of the circumstances related to the diversion and a projection of the anticipated duration of the diversion. All diversions occurring through the G-338 and G-339 structures will be monitored for the parameters listed in the table below.

**Table 3. Required Monitoring for All Diversions**

| Parameter/ Station                             | Units | Sample Type | Frequency     |
|------------------------------------------------|-------|-------------|---------------|
| Total Phosphorus collected at S-6 Pump Station | mg/l  | Grab        | Weekly        |
| Flow at G-338 and/ or G-339 and/ or G-328      | CFS   | Calculated  | Daily Average |

As a condition of the permit, the District is required to provide an annual assessment as to whether the facility is operating within or outside the operational envelope. It is assumed that the facility will operate routinely around the average values

<sup>9</sup> Transition site

identified within the TBEL document. In order to provide the Department with a tool for monitoring operation within this “operational envelope”, the District shall submit an assessment based on annual inflow volumes and phosphorus loads and in comparison to the corresponding average flow and load values contained in the operational envelope (See Exhibit A Goforth et al. 2007). If the annual inflow volumes or phosphorus loads exceed the corresponding average values of the operational envelope during an annual compliance period, the District shall conduct a review of potential causes and include this review in the annual report.

In addition to the operational envelope requirements of the permit, the associated Order requires that if annual inflow volumes or phosphorus loads exceed the corresponding maximum values of the operational envelope during an annual compliance period and such an exceedance is determined to have caused or contributed to the facility’s inability to achieve the effluent limitation, the District shall conduct a review of potential causes. This review shall include a comparison of the relationships between rainfall, runoff, and phosphorus loads from the compliance year with the rainfall/runoff/load relationships derived from the data used in deriving the TBEL as a condition of the associated Administrative Order.

#### **4. REQUESTED VARIANCES OR ALTERNATIVES TO REQUIRED STANDARDS**

Pursuant to the Everglades Forever Act (EFA, Section 373.4592(4)(e), F.S.), the Department and the District must evaluate existing water quality standards applicable to the Everglades Protection Area and Everglades Agricultural Area (EAA) canals. Annual assessments of the water quality standards within the Everglades Protection Area determined that dissolved oxygen (DO) concentrations below the current Class III standard of 5 mg/L (62-302.530, F.A.C.) commonly occurred in all areas of the Everglades Protection Area. These frequent excursions below the dissolved oxygen standard were not unexpected since it is widely recognized that dissolved oxygen concentrations in macrophyte dominated wetlands are normally low due to natural marsh processes. In response to these characteristics, the Department adopted the Everglades Marsh Dissolved Oxygen Site Specific Alternative Criteria (DO SSAC) which was adopted by Secretarial Order on January 26, 2004 and approved by the U.S. Environmental Protection Agency as a revision to the Florida’s water quality standards on June 16, 2004. Compliance with the DO SSAC shall be evaluated annually, and reported consistent with the requirements of Section I.E. 7 of the permit, using a statistical analysis to compare dissolved oxygen levels within facility discharges to predicted model values. The specific methods for determining compliance are set forth in the DO SSAC (Exhibit B).

On December 13, 2006, the District submitted an application for the use of moderating provisions pursuant to 62-302.540(6) F.A.C. Pursuant to the Rule, the use of net improvement moderating provisions are authorized until December 31, 2016 for discharges into or within the EPA upon a demonstration by the applicant that; the District will implement or cause to be implemented BAPRT as defined by Subsection 373.4592(2)(a), F.S., and further defined in the Rule, which shall include a continued research and monitoring program designed to reduce outflow concentrations of phosphorus; and, the discharge is into or within an impacted area. It is anticipated that the Department will act on the District’s application for a moderating provision prior to the expiration of this permit. The issuance of an Administrative Order does not constitute agency action on or prejudice the adoption or denial of a moderating provision.

#### **5. ADMINISTRATIVE ORDER AND PERMIT SCHEDULES**

This permit is accompanied by an Administrative Order (Order) AO-010-EV, effective \_\_\_\_\_, 2007 which includes a schedule of compliance. This Order is hereby incorporated by reference.

While significant reductions of phosphorus loads in water delivered to the Everglades Protection Area are anticipated to continue improving along with technological advancements, the Department recognizes that additional time is required in order to further optimize the STA-2 facility, develop and implement future phosphorus reduction measures (if necessary), to achieve the effluent limit in the permit. Based on information collected to date identifying performance levels of the ECP components, the ongoing planning and design of regional water management projects, and the mechanism for identifying future improvements and enhancements through the PDE component of the Long-Term Plan, the Department has determined that the issuance of the accompanying Order, is necessary to provide the relief required for the continued success of the STA-2 facility. Pending Department concurrence that additional time is required for completion of the projects identified in Paragraph 19 of the accompanying Order and/or upon finding that additional projects are necessary in

order for the District to achieve compliance with the effluent limit in the permit, the conditions set forth in the accompanying Order may be extended until December 31, 2016.

Pursuant to Subsection 403.088(2)(f), F.S., the Order accompanying this permit establishes a schedule for achieving compliance with all permit conditions. The Order establishes schedules for the completion of structural, operational, and vegetation improvements and enhancements; schedules for associated project monitoring; schedules for reporting; schedules for coming back into compliance with permit conditions from transitional effects occurring as a direct result of structural, operational, and vegetation improvements and enhancements to the facility and/or any major event that effects the structural integrity of the facility or section(s) of the facility; and schedules for the planning and design of regional water management projects which will directly affect the STA-2 facility. In addition, the Order recognizes the permittee's inability to achieve the established permit effluent limit and thereby provides relief in the form of a TBEL (See also Goforth *et al.*, 2007).

40 C.F.R. 122.41(l)(2) and General Condition 17 of the permit require that the permittee give advance notice to the Department of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements. Since it is expected that implementation of the Long-Term Plan or any planned maintenance activities may have adverse short-term impacts on the facility's performance, the permit and Order require the permittee to provide the Department with a description of the anticipated activities; the estimated length of anticipated short term performance impacts, to include dates and times; and, strategies and timelines for the facility to achieve optimal performance.

## 6. PROPOSED EFFLUENT LIMITS

Section 373.4592(10), F.S., of the EFA requires the Department and the permittee to take such action as may be necessary to implement the Pre 2006 projects and strategies of the Long-Term Plan by December 31, 2006, so that water delivered to the Everglades Protection Area achieves state water quality standards, including the phosphorus criterion and moderating provisions. The Long-Term Plan is a comprehensive program of source controls, STAs (including STA-2), regulatory programs, and integrated Comprehensive Everglades Restoration Program (CERP) projects to achieve phosphorus reductions for discharges to the Everglades Protection Area. The October 27, 2003 Long-Term Plan and subsequent revisions contain detailed schedules of improvements and enhancements that were identified as part of an adaptive management process. These revisions identified several structural, vegetative, and operational enhancements for STA-2 to be completed prior to the expiration of the permit and will aid in the optimization of the hydraulic distribution and phosphorus removal of this project. The Post 2006 improvements, enhancements, and strategies, in conjunction with the Pre 2006 projects, will continue being developed through the Long Term Plan process to further optimize the facility's phosphorus reduction capabilities. The Department has determined that the improvements and enhancements identified for STA-2, through the iterative adaptive implementation process contained within the Long Term Plan, are the most environmentally appropriate and expeditious means of achieving compliance with applicable phosphorus criterion in the Everglades Protection Area.

Consistent with the Long-Term Plan and rule 62-302.540(5)(d), F.A.C., a TBEL for phosphorus has been derived in accordance with state rules, and is consistent with the Federal guidelines for best available technology economically achievable (BAT) set forth in 40 CFR Subsection 125.3(d). During the Routine and Stabilization Phases discharges from STA-2 via the G-335 Pump Station shall meet TBELs in accordance with the accompanying Order. The test for determining achievement of the STA-2 TBEL is set forth in Order AO-010-EV which accompanies this permit. The *Technical Support Document for the STA-2 Technology Based Effluent Limit* (Goforth *et al.*, 2007) further explains the derivation of the STA-2 TBELs, when the interim period limits apply, and factors which may impact flows and loads associated with the treatment system.

As part of the phased implementation of the Everglades restoration program, numerous regional water management projects are underway that will influence the flows and phosphorus loads entering STA-2, and therefore its performance, over the life of the 5-year permits (2007-2012), and beyond. Until the regional projects described in Paragraph 19 in the accompanying Order are complete, STA-2 will be in one of two **Interim Performance Periods**. (Discussed below).

- **Interim Performance Period 1.** Cells 1, 2 and 3 of STA-2 are presently in Routine Operations, having passed through the Stabilization Phase. Until flow-through operations begin in the new Cell 4, the flows and loads to STA-2 will be treated in the three existing flow-ways, with higher phosphorus loading rates and higher TP in the outflow than anticipated in the RFS WY2006-2009 data set simulation, which assumed that all four flow-ways had passed through stabilization. There is presently no available tool to accurately predict outflow concentrations from a stormwater treatment wetland during the Stabilization Phase, which complicates the forecasting of STA outflow concentrations. During the **Interim Performance Period 1**, only cells 1, 2 and 3 in STA-2 will be in flow-through operation, and for the purpose of deriving a TBEL for this period, the performance of STA-2 was forecast utilizing the WY2006-2009 inflow data set for 6,430 acres of treatment area.
- **Interim Performance Period 2.** Once Cell 4 and the enhanced cells have all passed through their stabilization phases, STA-2 will be in the **Interim Performance Period 2**. Once the facility achieves TBEL 2, the TBEL associated with Interim Performance Period 1 no longer applies. Once construction of these projects has been completed, the District shall promulgate a new Long-term Performance Period TBEL for the facility. .

The following table summarizes the applicability of the two Interim Performance Period TBELs for STA-2. For additional information as to the derivation of the TBEL please refer to the *Technical Support Document for the STA-2 TBEL* (Exhibit A).

*Table 4: Interim Performance Period TBEL Application Summary*

| Phase                                                    | Applicable TBEL                                                                                              | Applicable TBEL                                 | Period Initiation                                                                                                                                                                                 | Period end date                                                                                                              | No. of Flow-ways Operational |
|----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|-------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|------------------------------|
| <b>Routine Operations Interim Performance Period 1</b>   | TBEL 1                                                                                                       | 30 – 39 ppb                                     | Upon issuance of the Permit                                                                                                                                                                       | Cells 1 and 2 improvements and enhancements are complete and have passed the Stabilization Phase, Facility achieves TBEL 1   | 3-4                          |
| <b>Routine Operations Interim Performance Period 2</b>   | TBEL 2                                                                                                       | 22 -29 ppb                                      | Cells 1 and 2 have passed through Stabilization and facility is achieving TBEL 1.                                                                                                                 | All regional water management projects and facility enhancements have been completed and have passed the stabilization test. | 4                            |
| <b>Routine Operations - Long-Term Performance Period</b> | Long-term TBEL to be promulgated subsequent to completion of regional water management projects construction | Default to TBEL 2 until new TBEL is promulgated | Implementation of all regional water management projects and approved enhancements complete; facility is achieving TBEL 2; Long-term Performance Period TBEL has been approved by the Department. | New TBEL is established or facility meets WQBEL.                                                                             | 4                            |
| <b>Stabilization Phase-Interim Performance Period 1</b>  | TBEL 1                                                                                                       | 30 -39 ppb                                      | See Stabilization Phase description in Section 2.d.                                                                                                                                               | Facility is achieving the TBEL                                                                                               | 0-4                          |
| <b>Stabilization Phase-Interim Performance Period 2</b>  | TBEL 2                                                                                                       | 22 – 29 ppb                                     | See Stabilization Phase description in Section 2.d.                                                                                                                                               | Facility is achieving the TBEL                                                                                               | 0-4                          |

At this time, a water quality based effluent limitation (WQBEL) has not been established under 62-650, F.A.C. as necessary to achieve the phosphorus criterion in the Everglades Protection Area, as specified in 62-302.540 F.A.C. Research is currently ongoing to establish this relationship and establish a WQBEL. In the interim, until such a relationship is determined and a WQBEL established, discharges from STA-2, via the G-335 Pump Station, shall meet the TBEL identified in the Order accompanying this permit. The TBEL shall be revised as appropriate, consistent with the iterative implementation of BAPRT and 62-620.620(3), F.A.C., until such time that the TBEL becomes consistent with the water quality based effluent limitation (WQBEL) established to achieve the numeric phosphorus criterion in the Everglades Protection Area.

As stated above, it is envisioned that a WQBEL will be established under 62-650 F.A.C. to achieve the phosphorus criterion in the Everglades Protection Area established under 62-302.540 F.A.C. Thus, the adoption of the WQBEL will be deemed to be a limitation as stringent as necessary to meet the underlying water quality criterion in the Everglades Protection Area. This is consistent with the requirements of Clean Water Act (CWA) Section 301(b)(1)(C) and 40 Code of Federal Regulations (C.F.R.) Part 122.44(d)(5). This is also consistent with Florida's reasonable assurance requirements under 62-620.620(1)(g) F.A.C.

The applicant is being given a reasonable time to comply with the permit effluent limit (and any derived WQBEL) through the schedule contained in the attached Order. In the interim, compliance with the TBEL is being required. Compliance with the TBEL shall be consistent with the provisions of the accompanying Order AO-010-EV. If the permittee achieves

effluent levels equal to or lower than the WQBEL prior to the end of that schedule, the permittee will be in compliance with the WQBEL and the underlying phosphorus criterion. At any subsequent permit renewal, because the WQBEL has been determined to be that effluent limit that is as stringent as necessary to provide reasonable assurance that the underlying phosphorus criterion will be met in the Everglades Protection Area, the permit will continue to require compliance with that WQBEL. There is no basis under the backsliding provisions of CWA Section 122.44(l) to require an effluent limit more stringent than the WQBEL, even if the permittee has demonstrated that such lower effluent limits can be achieved.

7. **DISCUSSION OF PREVIOUS PERMIT EFFLUENT LIMITS**

Based upon BAPRT, the 1994 Conceptual Design of the ECP identified an initial TBEL for phosphorus at a long-term flow-weighted mean of 50 ppb. Pursuant to Subsection 373.4592(4)(e)2 of the EFA, the Department adopted a 10 ppb numeric criterion for phosphorus in the Everglades Protection Area, which was approved by the U.S. EPA on January 24, 2005. The compliance methodology for this criterion was revised and adopted by the Department on May 5, 2005, and the revised rule was approved by the U.S. EPA on July 27, 2005. Under the State's Long-Term Plan, the goal is to achieve the phosphorus criterion in the Everglades Protection Area, which will be accomplished through the iterative adaptive implementation process set forth in the Long-Term Plan. Structural, operational and vegetation enhancements are presently underway in accordance with the Long-Term Plan, and are designed to optimize performance as needed to achieve the phosphorus water quality standard. Construction of these improvements and enhancements shall be completed in accordance with the schedules in the Long-Term Plan, as may be revised upon approval by the Department. Additional enhancements to STA-2 may occur as part of the adaptive implementation process envisioned in the Long Term Plan.

Prior to the Everglades Marsh Dissolved Oxygen Site Specific Criteria (DO SSAC) being adopted by the Department, the previous permit was accompanied by Order (AO-005-EV) issued in accordance with Subsection 403.088(2)(e), F.S. During the period of operation under the aforementioned Order, sufficient data was collected to determine that natural conditions existed within unimpacted areas of the Everglades Protection Area which would preclude the attainment of the Class III dissolved oxygen criterion within the water body. In response to these characteristics, the Department adopted the Everglades Marsh Dissolved Oxygen Site Specific Alternative Criteria (DO SSAC) which was adopted by Secretarial Order on January 26, 2004, and approved by the U.S. Environmental Protection Agency as a revision to the State of Florida's water quality standards on June 16, 2004.

8. **NEW OR EXPANDED DISCHARGES TO SURFACE WATERS; ANTIDEGRADATION INFORMATION**

The Department has determined that operation and maintenance of the project is consistent with the anti-degradation requirements of Rules 62-4.242(1) and 62-302.300, F.A.C. and is clearly in the public interest pursuant to Subsection 373.4592(9)(a), F.S. and the requirements of Rule 62-4.242(2), F.A.C.

9. **EFFECTS OF SURFACE WATER DISCHARGE ON THREATENED OR ENDANGERED SPECIES**

The Department does not anticipate adverse impacts on threatened or endangered species as a result of permit issuance.

**10. FDEP CONTACT**

Additional information concerning the permit may be obtained during normal business hours from:

John Hallas  
Environmental Specialist III  
Department of Environmental Protection  
Water Quality Standards & Special Projects Program  
2600 Blair Stone Road, MS 3560  
Telephone Number: (850) 245-8052  
Fax Number: (850) 412-0766

**11. THE ADMINISTRATIVE RECORD**

STA-2 previously operated under Florida Department of Environmental Protection (Department) Permit No. 0126704-004 and U.S. EPA NPDES Permit No. FL0177946-001. Additional related permits include Department Permit No. 0178018, which authorizes temporary dewatering activities for the construction of facilities within STA-1E, STA-1W, STA-2, STA-3/4, and STA-5 Hydropattern Restoration Projects, and the United States Army Corps of Engineers (ACOE) 404 Permit No. 199404532.

The administrative record including application, draft permit, fact sheet, public notice (after release), comments received and additional information is available by writing FDEP or for public inspection during normal business hours at the location specified in item 10. Copies will be provided at a minimal charge per page.

The Department held a public meeting for the Notice of Draft Permits for STA-1W1E, STA-2, STA-5, and STA-6 on July 20, 2007, at the Department's Southeast District Office. The Public meeting was noticed in the Florida Administrative Weekly and a paper of general circulation at least 30 days prior to the meeting being held. The Department announced at the public meeting that it would extend the public comment period until July 25, 2007. The Department received written comments both at the public meeting and prior to the July 25, 2007 deadline. All public comments were taken into consideration by the Department prior to issuance of these permits

**12. SCHEDULE FOR PERMIT ISSUANCE**

|                                           |                 |
|-------------------------------------------|-----------------|
| Application Complete.....                 | August 29, 2005 |
| Draft Permit to Applicant and USEPA...    | June 1, 2007    |
| Applicant to Publish Public Notice by.... | June 20, 2007   |
| Public Comment Period Ends.....           | July 25, 2007   |
| Notice of Intent to Issue.....            | July 31, 2007   |

**-END OF FACT SHEET-**