# Florida Department of Environmental Protection

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| Type of Permit: | Everglades Forever Act Permit |
| Project: | Stormwater Treatment Area 1 West (STA-1W) & Stormwater Treatment Area 1 East (STA-1E) |
| County: | Palm Beach |
| Permit No.: | 0279499-001-EM |
| Applicant: | South Florida Water Management District (District) |
| Applicant Address: | 3301 Gun Club Road<br>P. O. Box 24680<br>West Palm Beach, Florida 33416-4680 |
| Authorization: | The Everglades Forever Act (EFA), Section 373.4592, Florida Statutes (F.S.); Sections 403.088 and 403.151, F.S. |
| Application Received: | December 23, 2003 |
| Issuance Date: | November 16, 2007 |
| Expiration Date: | November 15, 2012 |

This permit is issued in accordance with the Everglades Forever Act, Section 373.4592, Florida Statutes (F.S.)., authorizing operation and maintenance activities for the Stormwater Treatment Area 1 West (STA-1W) and Stormwater Treatment Area 1 East (STA-1E) Projects. Pursuant to Sections 403.088 and 403.151, F.S. this permit also contains orders for specific additional monitoring, reporting, and construction activities designed to achieve compliance with water quality standards, as well as a schedule for implementing such requirements. The above named permittee is hereby authorized to conduct the activities described on the application, associated drawing(s), plans, and other documents attached hereto or on file with the Department and made a part hereof. The District has submitted an application for the use of moderating provisions pursuant to Rule 62.302.540 (6). It is anticipated the Department will act on the District's application for a moderating provision prior to the expiration of this permit. The issuance of this permit does not constitute agency action on or prejudice the adoption or denial of a moderating provision. This permit may be modified upon adoption of a moderating provision. In the event that a moderating provision is adopted, alterations to this permit shall be addressed through a permit modification. The activities authorized by this permit must be conducted in conformance with all the provisions of this permit. Failure to comply with all the permit's conditions and documents referenced herein shall constitute grounds for revocation of the permit and appropriate enforcement action.

**PROJECT DESCRIPTION:**

This permit authorizes the continued operation and maintenance of STA-1W and STA-1E. STA-1W and STA-1E are a part of the Everglades Construction Project (ECP), construction, operation, and maintenance of which is required by the Everglades Forever Act (EFA), Section 373.4592, F.S. The STA-1W project (See Figure 1) consists of the S-5A Pump Station, the STA-1 Inflow Basin, the G-302 inflow structure, the STA-1W Interior Treatment Works, and the G-251 and G-310 Outflow Pump Stations. The STA-1E project (See Figure 2) consists of the STA-1E Inflow Pump Stations S-319 and S-361, Gated Spillway G-311, STA-1E Interior Treatment Works, C-51 Basin Divide Structure S-155A, C-51 Canal Improvements and STA-1E Outflow Pump Station S-362.

Initial construction of these facilities was previously authorized and completed under Florida Department of Environmental Protection (Department) Permit No. 0226317-001, FL0177962-001-IW7A, 0195030-001 and FL0304549-002-IW7A. At the present time, structural, operational and vegetation enhancements are underway in accordance with the October 2003 Everglades Protection Area Tributary Basins Long Term Plan for Achieving Water Quality Goals and subsequent revisions (Long-Term Plan, See Exhibit A), which are designed to optimize performance as needed to achieve the phosphorus water quality standard. Construction of these enhancements is

scheduled to be completed in accordance with Specific Condition 17 of this permit. A Periphyton-based Stormwater Treatment Area (PSTA) demonstration project is also being operated by the U.S. Army Corps of Engineers (Corps) in Cell 2 of the Eastern Flow-way of STA-1E. Additional enhancements to STA-1W and STA-1E may occur as part of the adaptive implementation process required by the Long-Term Plan. STA-1W and STA-1E are stormwater management systems (SMS) as defined in Subsection 373.403(10), F.S., and therefore are not subject to state surface water quality standards within STA-1W and STA-1E, pursuant to Section 373.4142, F.S.

Operation and maintenance activities authorized by this permit involve maintaining water levels within the STA to optimize phosphorus uptake effectiveness of the treatment area. Optimization of the treatment wetland is defined by its performance in removing the pollutants, particularly phosphorus, for which the project was designed. Other operation and maintenance activities authorized by this permit include: water quality and vegetation monitoring; preparation and submittal of monitoring reports; vegetation maintenance; and, maintenance of the water control structures (including canals and levees).

The STA-1W and STA-1E treatment facilities are hydrologically connected and interrelated, and will be operated in concert with each other. Assuming normal operating conditions, the STA-1W and STA-1E treatment facilities discharge into the northwestern and northeastern portion, respectively, of the Arthur R. Marshall Loxahatchee National Wildlife Refuge (Refuge), also known as Water Conservation Area (WCA) 1. Both of the facilities, as well as their associated diversion structures, discharge into impacted areas of the Everglades Protection Area, as defined in 62-302.540(3)(d). Wetlands and surface waters located within the receiving water body, the Refuge, are Class III and also Outstanding Florida Waters, pursuant to Rule 62-302.700(9)(b)17, Florida Administrative Code (F.A.C.). The Department has determined that operation and maintenance of the project is consistent with the anti-degradation requirements of Rules 62-4.242(1)-(2) 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.

The STA-1 Inflow Basin is designed to allow the direction, redirection, and diversion of inflows between STA-1W and STA-1E. The STA-1 Inflow Basin performs three major functions associated with the delivery of water: Direction, Redirection, and Diversion.

- Direction occurs when water from the S-5A Pump Station is being directed into the intended STA(s) through the respective inflow structures located within the STA-1 Inflow Basin.

- Redirection occurs when: water exits the STA-1E facility, via the G-311 structure, and is routed through the G-302 structure into STA-1W for treatment; when water from the STA-1 Inflow Basin is discharged through the S-5AS spillway to the L-8 Basin north of the STA-1 Inflow Basin for water supply deliveries; and, when flows from S-5A enter STA-1E via the G-311 structure. The G-311 has the ability to flow in or out of the STA-1E facility, which allows for the utilization of both STAs in the treatment of water prior to discharge into the Refuge. Runoff could be redirected to STA-1W through the G-311 Structure; however, the present design of STA-1E is such that no redirection should be necessary as a result of hydraulic limitations in STA-1E except in response to extreme storm events or if one or more of the STA-1E flow-ways are off-line, as will be the case during the operation of the Periphyton Stormwater Treatment Area (PSTA) demonstration project being conducted by the Corps of Engineers in the Eastern flow-way of STA-1E. The current design and operation contemplates that redirection of flows from S-5A to STA-1E will occur during normal operations whenever the discharge from the S-5A Pump Station to STA-1W exceeds the hydraulic capacity of STA-1W or when other contributing factors warrant such redirection in order to optimize system performance.

- Diversion occurs when water from the STA-1 Inflow Basin is directed untreated into the Refuge through the G-300 and/or G-301 structures. Diversion may occur for water supply needs (see Section II below) or when discharges from the S-5A or S-319 pump stations will exceed the hydraulic capacity of the STAs, which will compromise the safe operation of the facilities. This may occur when stage elevations of waters, rates of inflows, or the duration of sustained inundation creates conditions threatening the survival

of marsh vegetation and the treatment efficiency of the project or when water supply needs require it. Except for instances where flow is intentionally diverted for water supply needs (See Section I below), all diversions will be monitored and reported in accordance with Specific Condition 26. With the exception of the aforementioned circumstances, it is the Department's expectation that the District shall limit the occurrence of all diversions from the G-300 and G-301 structures.

While it is hydrologically possible for the STA-1 Inflow Basin to also accept runoff from the L-8 Basin and Lake Okeechobee regulatory releases, it is not designed to regularly accept water from these sources. However, these flows are anticipated to continue to enter the STA-1 Inflow Basin until the additional projects necessary for diversion of these sources are complete.

The District is the Local Sponsor of the Congressionally-mandated Central and South Florida Project for Flood Control and Other Purposes, and must operate STA-1E, STA-1W, S-5A and other structures as necessary to fulfill its obligations as Local Sponsor, including but not limited to providing flood control and water supply throughout South Florida.

**PROJECT COMPONENTS:**

The individual ECP components included in STA-1W are as follows: The S-5A Pump Station, STA-1 Inflow Basin, STA-1W Interior Treatment Works, and both the G-251 and G-310 Outflow Pump Stations. Collectively, these components are referred to as the District's STA-1W Project (STA-1W). While the S-5A Pump Station and the STA-1 Inflow Basin distribute water to the STAs and they are considered an integral part of the operation of STA-1W, these portions of the facility are considered conveyance mechanisms and are not part of the treatment works.

The individual ECP components included in STA-1E are as follows: S-319 Inflow Pump Station, S-361 Inflow Pump Station, G-311 Gated Spillway, STA-1E Interior Treatment Works, S-362 Outflow Pump Station, C-51 Basin Divide Structure S-155A, and the C-51 Canal Improvements. While the East and West Distribution Cells distribute water to the STA and they are considered an integral part of the operation of STA-1E, these portions of the facility are considered conveyance mechanisms and are not part of the treatment works.

Below are descriptions of the ECP works taken from:

- The Conceptual Design Document for the Everglades Protection Project, reference page VII-11 (1994);
- Detailed Design Report for Stormwater Treatment Area 1 West (June 1996);
- Supplement to the STA-1W Detailed Design Report, Hutcheon Engineers (October 1996);
- Final Design Report for Storm Water Treatment Area 1 Inflow and Distribution Works, Stanley Consultants Inc. (September 1996);
- Final Design Report for Pumping Stations G-310 and G-335, Brown and Caldwell (January 1997 ); Addendum To Design Documentation Report Stormwater Treatment Area 1 East (May 2000);
- Stormwater Treatment Area 1 East Period of Record Dry-Out Analysis (June 2000);
- C-51 & STA 1 East Design Documentation Report (October 1999);
- Permit Application for STA-1W prepared by the South Florida Water Management District (June 1997);
- Permit Application for STA-1E prepared by the South Florida Water Management District (February 2002);

- Central and Southern Florida Project For Flood Control And Other Purposes, Stormwater Treatment Area 1 East C-51 Improvements, Construction and Solicitation and Specifications (September 2003);
- *Everglades Protection Area Tributary Basins Long Term Plan for Achieving Water Quality Goals* (Long-Term Plan, October 2003); and subsequnt revisions;
- Permit Renewal and Modification Application for STA-1W and the Modification Application for STA-1E (December 2003);
- The Design Analysis Report for STA-1E, Cell 1-2, PSTA/SAV Field-Scaled Demonstration Project (September 2005);
- STA-1E PSTA Demonstration Project, Engineering Plans (2005);,
- STA-1E PSTA Construction Solicitation Specifications (July 2005);
- Design Analysis Report for the STA-1E PSTA demonstration DAR FAV Addendum (June, 2006),
- Operations Plan for the STA-1E, Cells 1-2 PSTA/ SAV Field Scale Demonstration Project (June, 2006);
- Draft Operations and Partnering Plan for the STA-1E Cells 1-2 PSTA/SAV Field-Scaled Demonstration Project (November 2006);
- Draft Monitoring Plan for the STA-1E Cells 1-2 PSTA/SAV Field-Scaled Demonstration Project (June 2006).
- Technical Support Document for the STA-1E TBEL (Goforth *et al*. 2007); and,
- Technical Support Document for the STA-1W TBEL (Goforth *et al.* 2007).

**I. S-5A Pump Station**

The S-5A Pump Station provides flood protection to an upstream agricultural basin of approximately 230 square miles. The removal of stormwater runoff from the upstream basin has been, and will continue to be, the primary function of the S-5A Pump Station. In addition to flood control for the S-5A tributary basin, the S-5A Pump Station has been used to remove excess flows from the L-8, East Beach Water Control District, and Western C-51 Basins as well as to convey excess water from Lake Okeechobee (when it is above its regulation schedule) to the Refuge. It is also used to convey water from Lake Okeechobee to the Refuge for the purpose of water supply for points downstream of the pump station. This structure is a six-unit pumping plant located on the south side of State Road 80 and the West Palm Beach Canal about 20 miles west of West Palm Beach. The pump station is equipped with six pumps each rated at 800 cubic feet per second (cfs) at a static head of 11.1 feet, with a combined capacity of 4,800 cfs.

**II. STA-1 Inflow Basin**

The STA-1Inflow Basin includes physical works adjacent to the north end of the WCA-1 (outside the boundaries of the Refuge) that convey stormwater and other discharges from the existing S-5A Pump Station to STA-1W, STA-1E, the Refuge, and the L-8 Basin. These works consist of a separation levee, access canal, five remotely automated control structures (G-311, G-300, G-301, G-302, and S-5AS) and three associated control buildings. The G-311 structure serves as one of the two inflow compliance monitoring stations for STA-1E. The G-302 structure serves as the inflow compliance monitoring station for STA-1W. Besides conveyance of flows, the STA-1 Inflow Basin may also be used to facilitate the transfer of flow between STA-1W and STA-1E, which allows the utilization of both STAs to treat runoff and discharged waters from the S-5A Basin, the Western C-51 Basin, the L-8 Basin, Lake Okeechobee regulatory releases, the East Beach Water Control District and, runoff from the Village of Wellington Acme Basin B. When required by operational constraints in the STAs or other considerations, S-5A Pump Station outflows may be diverted around STA-1W and STA-1E and discharged directly into the Refuge via the G-300 and/or G-301 structures, or into the L-8 Basin via the S-5AS structure. Water supply deliveries may be

made to the L-8 Basin via the S-5AS structure. In addition, G-300 and G-301 may be operated to avoid hydrological overloading of the STAs or water conditions within the STAs that may damage existing vegetation.

**III. Inflow Pump Stations S-319**

Inflow Pump Station S-319 accepts stormwater runoff and other flows from the C-51 Canal and conveys it to the Eastern Distribution Cell of STA-1E where it can be routed through the S-375 structure to the West Distribution Cell. S-319 is the primary point of inflow to STA-1E. The pump station is located approximately 2 miles east of the S-5A Pump Station and approximately 2 miles west of Flying Cow Road. Water from the distribution cells can also be discharged into the STA-1 Inflow Basin via the G-311 structure or released back through the S-319 Pump Station by gravity to the Western C-51 Canal.

**IV. Inflow Pump Station S-361**

Inflow Pump Station S-361 is a secondary inflow pump station that discharges directly into treatment Cell 4S of STA-1E. S-361 has three vertical electric pumps (approximately 75 cfs capacity) with diesel power back-up. S-361 is located on the southeastern perimeter of STA-1E. S-361 serves to preserve permitted drainage for the Rustic Ranches subdivision and agricultural lands located in Section 24, south and east of STA-1E. In addition, S-361 also serves to return collected seepage into STA-1E.

**V. Gated Spillway G-311**

The G-311 Gated Spillway, a three bay reinforced spillway situated in the northwest corner of STA-1E, east of the L-40 Borrow Canal, serves to direct flows between the STA-1 Inflow Basin and STA-1E. The structure has the capability to accept S-5A Pump Station when water from the STA-1 Inflow Basin is discharged into the STA-1E Western Distribution Cell from the STA-1 Inflow Basin or redirect inflows from the S-319 Pump Station into the STA-1 Inflow Basin, where it can then be routed into STA-1W through the G-302 Gated Spillway inflow structure or diverted directly into the L-40 Borrow canal through the G-300 Gated Spillway, and/or diverted directly into the L-7 Borrow Canal through the G-301 Gated Spillway.

**VI. STA-1W Interior Treatment Works**

STA-1W is located on the northwest border of the Refuge in Palm Beach County. The facility consists of a wetland marsh system which utilizes biological treatment technology in the removal of nutrients from stormwater entering the facility. Wetland vegetation within STA-1W is managed in conjunction with hydrologic operations to maintain optimal performance levels within the facility. The structural works (See Figure 1) involved in the operation of STA-1W consist of inflow and discharge conveyance canals, treatment cell divide levees, gravity flow control structures, pump stations, and independent treatment paths (Flow-ways 1-3).

All untreated stormwater flows enter the STA-1W Interior Treatment Works through the G-302 inflow structure and are dispersed throughout the facility by a series of internal structures. During the design storm event, approximately 55% of the water entering the inflow canal from the G-302 structure will be routed to Flow-ways 1 & 2 via the G-303 structure. Flow-way 1, the “Eastern” flow-way, is comprised of Treatment Cells 1A, 1B, and 3. Cells 1B and 3 are currently being converted to submerged aquatic vegetation through 2008. Water entering Flow-way 1 follows a north to south sheet-flow path and discharges from the facility via the G-251 Outflow Pump Station. Under high flow conditions, water in Flow-way 1 may be conveyed through the G-308 and G-259 structures into the Western Discharge Canal and exit the facility via the G-310 Outflow Pump Station.

Flow-way 2, the “Western” flow-way, is comprised of Treatment Cells 2A, 2B, and 4. Water entering Flow-way 2 follows a general north to south sheet-flow path and is conveyed through the G-309, G-258, and/or G-307 structures to the Western Discharge Canal and is then discharged to the Refuge via the G-310 Outflow Pump Station.

The remaining flows entering STA-1W are routed to Flow-way 3 via structures G-304A-J. Flow-way 3, the “northern” flow-way, is comprised of Treatment Cells 5A and 5B. Water entering Flow-way 3 follows an east to west sheet-flow path. Treated water exits Flow-way 3 through the G-306A-J structures and enters the Western

discharge canal where it is discharged from the facility via the G-310 Outflow Pump Station. Seepage from Flow-way 3 enters a seepage collection canal, located along the north side of Flow-way 3 from the west end and moves to the east end of the canal where it is returned via the seepage collection canal system and returned via the G-250S Pump Station to Flow-ways the front end of 1. Seepage is also collected via the G-327B Seepage Pump Station and is used to maintain stages within Cell 5B. The combination of all three treatment paths provides an effective treatment area of 6,670 acres.

**VII. STA-1E Inflow Distribution Cells**

Stormwater from the S-319 Pump Station is directed into the Eastern Distribution Cell, located at the northern-most part of STA-1E. Stormwater may also enter the Western Distribution Cell from STA-1 Inflow Basin via the G-311 Gated Spillway. The Eastern and Western Distribution Cells are divided by a center levee. Inflow water is routed between the Eastern and Western Distribution Cells by the operation of the S-375 gated box culverts located in the center levee. After inflow water is directed into the Eastern or Western Distribution Cell, it is then routed to one or more of the three separate and independently operable treatment paths or flow-ways.

**VIII. STA-1E Interior Treatment Works**

STA-1E is located on the northeast border of the Refuge in Palm Beach County. The facility consists of a wetland marsh system which utilizes biological treatment technology in the removal of nutrients from stormwater entering the facility. Wetland vegetation within STA-1E is managed in conjunction with hydrologic operations to maintain optimal performance levels within the facility. The structural works (See Figure 2) involved in the operation of STA-1E consist of inflow and discharge conveyance canals, treatment cell divide levees, gravity flow control structures, pump stations, and independent treatment paths (Flow-ways 1-3).

Once inflow water is directed to the Eastern Distribution Cell, it can be routed to treatment Cell 1 of the Eastern most flow-way (Flow-way 1; Cells 1-2) via the S-363 A-C structures where it would continue in a north-to-south path into treatment Cell 2 via the S-364 A-C structures. Treated water would then be routed from treatment Cell 2 into the discharge collection canal via the S-365 A-B structures and then discharged into the Refuge through the S-362 Pump Station. All S-363, S-364, and S-365 structures are gated box culverts.

Inflow water that is directed to the Eastern Distribution Cell can also be routed to treatment Cell 3 of the central flow-way (Flow-way 2; Cells 3-4N-4S) or, under certain hydraulic conditions it is feasible to backflow through the S-319 Pump Station to the C-51 Canal. Inflow water enters treatment Cell 3 via the S-366 A-E structures, where it continues in a north-to-south path into treatment Cell 4N via the S-367 A-E structures and then into treatment Cell 4S via the S-368 A-E structures. Treated water is then routed from treatment Cell 4S into the discharge collection canal via the S-369 A-D structures and discharged into the Refuge through the S-362 Pump Station. All S-366, S-367, S-368, and S-369 structures are gated box culverts.

Inflow water that is directed to the Western Distribution Cell can be routed to treatment Cells 5 and 7 of the Western most flow-way (Flow-way 3; Cells 5, 6, & 7) or, under certain hydraulic conditions can flow from the Western Distribution Cell to the STA-1 Inflow Basin or back to the Eastern Distribution Cell where it can be released back to the C-51 Canal by gravity through the S-319 Pump Station. Water traveling to treatment Cell 5 via the S-370 A-C structures continues in a north-to-south path into treatment Cell 6 via the S-371 A-C structures. Water traveling to treatment Cell 7 via the S-373 A & B structures continues in a north-to-south path into treatment Cell 6 via the S-374 A-C structures. Treated water is then routed from treatment Cell 6 into the discharge collection canal via the S-372 A-E structures and discharged into the L-40 Canal through the S-362 Pump Station. All S-370, S-371, S-372, S-373 and S-374 structures are gated box culverts. The combination of all treatment paths provides an effective treatment area of 5,132 acres.

Seepage along the east side of STA-1E adjacent to treatment Cells 1, 2, and 4S is collected in a seepage collection canal, located immediately outside of the exterior levee (L-85). The seepage collection system connects directly to the C-51 Canal by gravity or collected seepage is routed into Cell 4S via the S-361 Pump Station.

The US Army Corps of Engineers (Corps or USACE) constructed a PSTA demonstration project in cell 2 of STA-1E. The District and the Corps shall coordinate operational schedules for the Eastern Distribution Cell, and Cells 1 and 2 of STA-1E as necessary. Interior PSTA demonstration cells will be used to evaluate three different alternatives for the development of activated PSTA. The field demonstration, expected to be conducted over a 24-month operation period, will be used to determine the optimum design parameters, operational parameters, and recommendations for full-scale implementation of PSTA for STA-1E. The conceptual treatment train for the field-scale demonstration of PSTA in STA-1E (Cells 1 and 2) will use Emergent Aquatic Vegetation (EAV) in Cell 1, 55 acres in the northern most portion of Cell 2 for Submerged Aquatic Vegetation area (SAV) and cyanobacteria-dominated periphyton cells in the eastern third of Cell 2. A conceptual layout and a flow diagram of the EAV/SAV/PSTA treatment train in Cells 1 and 2 are shown in Figure 2.

**IX. STA-1W Outflow Pump Stations G-251 & G-310**

There are two primary discharge locations for STA-1W, Outflow Pump Stations G-251 and G-310, both of which act as the outflow compliance monitoring stations for the project. These two pump stations discharge directly into the L-7 Canal which is located within the Refuge. The combined capacity of these pump stations is 3,490 cubic feet per second (cfs). The G-310 Pump Station discharges treated water from Flow-ways 2 and 3 and also from Flow-ways 1 & 2 when outflows from the Flow-ways exceed the G-251 Pump Station nominal discharge capacity of 450 cfs.

**a.** The G-251 Pumping Station is the primary outflow pump station serving Flow-way 1 which discharges treated water into the Refuge. G-251 is equipped with six 36-inch diameter pumps, each with a maximum capacity of 75 cfs, for a total discharge capacity of 450 cfs. The G-251 Pump Station draws treated water from the STA-1W facility and releases those discharges into the L-7 canal.

**b.** The G-310 Pumping Station is the primary outflow pumping station serving Flow-ways 2 and 3, and which draws treated water from the STA-1W Western discharge canal and releases those discharges to the L-7 canal. This pumping station houses two 100 cfs, two 470 cfs, and two 950 cfs pumps with a maximum facility design outflow pumping capacity of 3,040 cfs. The pumping station also includes approach and discharge canals, and other related civil works.

**X. STA-1E Outflow Pump Station S-362**

S-362 is the outflow pump station drawing treated water from the STA-1E internal discharge collection canal and discharging into the L-40 Borrow Canal. This pump station has the capacity to discharge up to 4,200 cfs. The pump station includes seven pumps, approach and discharge canals, pump station enclosure and other related civil works. S-362 has five diesel engine-driven pumps (three 960 cfs pumps and two 550 cfs pumps) and two additional 110 cfs electric motor driven pumps. Due to the close location to adjacent residential areas, electric motors are used for the smaller pumps, used most frequently, to reduce the noise. During storm conditions, S-362 may be required to pump up to its maximum capacity to prevent overtopping of the external levees.

**XI. C-51 Basin Divide Structure S-155A**

The S-155A structure is located in the C-51 Canal, approximately 800 feet west of State Road 7, and serves as a divide structure between the Western C-51 and Eastern C-51 Basins. S-155A is a concrete ogee crested weir/spillway, with two 14 feet wide by 9 feet high vertical lift gates. S-155A is designed to pass flood discharges from the Western C-51 and S-5A Basins to the east, when STA-1E has reached maximum operational depths and no longer has the capacity for additional inflows. Up to 1,460 cfs will be discharged via S-155A to the Eastern C-51 Basin if conditions allow.

**XII. C-51 Canal Improvements**

C-51 Canal has been enlarged over a distance of about 3.3 miles from 1/2 mile east of Ousley Farm Road to Pump Station 319. This section of the C-51 Canal has been widened progressively from 30 feet to 70 feet (east to west) and deepened progressively from a bottom elevation of 1.6 feet m.s.l. to -6 feet m.s.l (east to west). A berm on the

south side of the C-51 Canal has been constructed with the dredge material for the enlarged reach. The berm provides access to the canal and controls overland flow.

**XIII. Recreational Facilities**

In fulfillment of the public access and recreation requirements of the EFA Subsection 373.4592 (4)(a) F.S., and as further described in Subsection 373.1391(1)(a) F.S. and (b), recreational facilities are proposed at STA-1W and STA-1E. The proposed recreational facilities shall be designed to ensure compatibility with the restoration goals of the ECP and the water quality and hydrological purposes of the STAs.

- The currently proposed recreational facilities at STA-1W include an asphalt parking area on the south side of CR 880 and associated road improvements such as an acceleration and deceleration lane in the vicinity of the entrance to the parking lot. A walkway across the FPL easement will provide access to the canoe launching site on the north bank of the seepage canal. Here a footbridge will cross the seepage canal to provide pedestrian access to the existing leveled area adjacent to the north end of the limerock berm in Cell 5B. An information kiosk, a composting toilet, lighting and landscaping are proposed at this location. Pedestrian gates, signage and fencing as needed to define public access areas and to protect sensitive equipment are also proposed. The design of the STA-1W recreational facilities is complete and the current schedule calls for construction to be completed in FY2008.

- The currently proposed recreational facilities at STA-1E include an asphalt parking area, a composting toilet, landscaping, lighting, and an information kiosk. Pedestrian gates, signage and fencing as needed to define public access areas and to protect sensitive equipment are also proposed. The location of this site has been moved from the SE corner of the STA to the north side, west of the pump station on C-51. The design of the STA-1E recreational facilities is complete, and the current schedule calls for construction to be completed in FY2008.

**LOCATION:**

The project is located within the following property descriptions in Palm Beach County:

- **S-5A Pump Station.** Section 32, Township 43 North, Range 40 East.
- **STA-1 Inflow Basin**. Section 5, Township 44 South, Range 40 East and Section 32, Township 43 South, Range 40 East and Section Government Lot 5, Township 43.5, Range 40 East.
- **G-302 Inflow Structure**. Double Gated Spillway, Section 6, Township 44 South, Range 40 East.
- **STA-1W Interior Treatment Works**. Northwest portions of Sections 6 and 7, Township 44 South, Range 40 East and Sections 1, 2, 3, 10, 11, 14, 15, 22, 23; northwest portions of Sections 12, 13, 26, 27, 34; Eastern line of Sections 4, 9, 16, 21, 28, 33; Township 44 South, Range 39 East.
- **G-251 Outflow Pump Station.** Southern tip of STA-1W, in Section 37, Township 44 North, Range 39 East.
- **G-310 Outflow Pump Station.** Extreme southern tip of STA-1W, in Section 34, Township 44 South, Range 39 East.
- **Inflow Pump Station S-319.** Located in the north central portion of STA-1E, adjacent to the C-51 Canal, in Section 35, Township 43 South, Range 40 East in Palm Beach County, Florida.
- **Inflow Pump Station S-361.** Located in the southeastern portion of STA-1E, just east of STA-1E, in Section 14, Township 44 South, Range 40 East in Palm Beach County, Florida.
- **Gated Spillway G-311.** Located in the northwestern corner of STA-1E, Section 5, Township 44 South, Range 40 East and Section 32, Township 43 South, Range 40 East and Section Government Lot 5, Township 43.5, Range 40 East in Palm Beach County, Florida.

- **STA-1E Interior Treatment Works.** Located within the entire STA, Sections 1-4, 9-12, 14, 15, and 23, Township 44 South, Range 40 East in Palm Beach County, Florida.
- **Outflow Pump Station S-362.** Located in the southwestern portion of STA-1E, just east of and adjacent to the L-40 Borrow Canal levee, in Section 23, Township 44 South, Range 40 East in Palm Beach County, Florida.
- **C-51 Basin Divide Structure S-155A.** Located in the C-51 Canal, six miles east of the northern corner of STA-1E, just west of State Road 7, in Section 36, Township 43 South, Range 41 East in Palm Beach County, Florida.
- **C-51 Canal Improvements.** Located in the C-51 Canal from 1/4 mile east of Ousley Farm Road to Pump Station 319, Sections 31-36 Township 43 South, Range 41 East and Sections 35 & 36 of Township 43 South, Range 40 East in Palm Beach County.

**GENERAL CONDITIONS:**

In accordance with Subsection 373.4592(9)(g), F.S., this permit may include any standard conditions provided by Department rule which are appropriate and consistent with the EFA.

**1. Enforcement.** The terms, conditions, requirements, limitations and restrictions set forth in this permit, are "permit conditions" and are binding and enforceable pursuant to Sections 373.129, 403.141, 403.727 and 403.859 through 403.861 F.S. The permittee is placed on notice that the Department will conduct periodic compliance review of this permit and may initiate enforcement action for any violation of these conditions.

**2. Scope of permit.** This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.

**3. Limitation of rights.** The issuance of this permit does not convey any vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state, or local laws or regulations. This permit is not a waiver of or approval of any other Department permit that may be required for other aspects of the STA-1W and STA-1E which are not addressed in this permit. However, this permit is in lieu of other permits under Part IV of Chapter 373, F.S., pursuant to Subsection 373.4592(9)(c), F.S.

**4. Limitations upon title.** This permit conveys no title to land or water, does not constitute State recognition or acknowledgment of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.

**5. Liability.** This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department. The permittee shall hold and save the Department harmless from any and all damages, claims, or liabilities which may arise by reason of the construction, alteration, operation, maintenance, removal, abandonment or use of any system authorized by the permit.

**6. Operation and Maintenance Responsibilities.** The permittee shall properly operate and maintain STA-1W and STA-1E and systems of treatment and control (and related appurtenances) that are installed and used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision

includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.

**7. Access Rights.** The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at reasonable times, access to the premises where the permitted activity is located or conducted to:

A. Have access to and copy any records that must be kept under conditions of the permit;

B. Inspect the facility, equipment, practices, or operations regulated or required under this permit; and

C. Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

Reasonable time may depend on the nature of the concern being investigated.

**8. Noncompliance.** If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:

A. A description of and cause of noncompliance; and

B. The period of noncompliance, including dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the noncompliance. The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or for revocation of this permit.

**9. Records as evidence.** In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data, and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is prescribed by Sections 403.111, F.S. and 403.73, F.S. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.

**10. Changes in Law.** The permittee agrees to comply with changes in applicable Department rules and applicable Florida Statutes after a reasonable time for compliance; provided, however, the permittee does not waive any other rights granted by Florida law.

**11. Transferability.** This permit is transferable only upon Department approval in accordance with Rules 62-4.120 and 62-343.130, F.A.C., as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.

**12. Permit at Work Site.** This permit or a copy thereof shall be kept at the work site of the permitted activity. For the purposes of this permit the work site shall be defined as the South Florida Water Management District Headquarters located at 3301 Gun Club Road in West Palm Beach, Florida.

**13. Records Retention.** The permittee shall comply with the following:

A. Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department;

B. The permittee shall hold, at the STAs or other location(s) designated by this permit records of all monitoring information required by the permit, copies of all reports required by this permit, and records of all data used to complete the application for this permit. These materials shall be retained at least five years from the date of the sample, measurement, report, and application unless otherwise specified by Department rule; and,

C. Records of monitoring information shall include:

1. the date, exact place, and time of sampling or measurements;
2. the person responsible for performing the sampling or measurements;
3. the dates analyses were performed and the appropriate code as required by Chapter 62-160, F.A.C.;
4. the person responsible for performing the analyses;
5. the analytical techniques or methods used, including but not limited to MDL (Method Detection Limit); and,
6. the results of such analyses, including identification of potential outlier values.

**14. Requests for Information.** When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

**15. External Agency Requirements**. Should any other regulatory agency require changes to the permitted system, the permittee shall notify the Department in writing of the changes prior to implementation so that a determination can be made whether a permit modification is required.

**16. Sovereign Lands.** The permittee is hereby advised that Florida law states: No person shall commence any excavation, construction, or other activity involving the use of sovereign or other lands of the state, title to which is vested in the Board of Trustees of the Internal Improvement Trust Fund or the Department of Environmental Protection under Chapter 253, until such person has received from the Board of Trustees of the Internal Improvement Trust Fund the required lease, license, easement, or other form of consent authorizing the proposed use. Therefore, the permittee is responsible for obtaining any necessary authorizations from the Board of Trustees prior to commencing activity on sovereignty lands or other state-owned lands.

**17. Artifacts.** If historic or archaeological artifacts such as, but not limited to, Indian canoes, arrow heads, pottery or physical remains, are discovered at any time on the project site, the permittee shall immediately stop all activities which disturb the soil and notify the Department and the State Historic Preservation Officer.

**SPECIFIC CONDITIONS:**

**1. Addresses.** Reports and notices submitted to the Department in accordance with this permit, unless otherwise specified, shall be submitted to the Department's Division of Water Resource Management, Water Quality Standards and Special Projects Program, 2600 Blair Stone Road, MS 3560, Tallahassee, Florida, 32399-2400, telephone no. (850) 245-8440, and to the Department's Southeast District Office, Water Resource Management and Environmental Planning, 400 North Congress Avenue, Suite 200, West Palm Beach, Florida 33401, telephone no. (561) 681-6600.

**2. Related Permits.** The Department and the permittee acknowledge the issuance of other permits related to STA-1W and STA-1E.
STA-1W previously operated under EFA Permit No.: 0226317 (503074709) and NPDES Permit No. FL0177962-001-IW7A. Additional related permits include Department Permit No. 0178018, which authorizes temporary dewatering activities to construct and modify the STAs and associated works, and, the U.S. Army Corps of Engineers 404 Permit No. 199404532. This STA-1W permit, upon issuance, shall supersede and replace the former

STA-1W EFA Permit previously issued by the Department. A timely request to renew the NPDES Permit No. FL0177962-002-IW7A has been received and is being processed.

STA-1E previously operated under Department EFA Permit No. 0195030-001 and NPDES Permit No. FL0304549-001. Additional related permits include Permit No. 0195030-002, which authorizes the S-319 Pump Test, Individual Water Use, Permit No. 0178018, which authorizes temporary dewatering activities for the construction of facilities within the ECP Restoration Projects, and the Dewatering General Water Use Permit No. 0229886. This STA-1E permit, upon issuance, shall supersede and replace the former STA-1E EFA Permit previously issued by the Department. A request to revise the NPDES Permit No. FL0304594-002-IW7A has been received and is being processed.

**3. Public Use.** The recreational facilities located within the STA-1W and STA-1E Projects shall be maintained to ensure compatibility with the restoration goals of the ECP and the water quality and hydrological purposes of the STAs. This permit does not absolve the permittee from the responsibility of obtaining other permits (federal, state, or local) which may be required for the activities occurring at these sites.

**Conditions for Operation and Maintenance**

**4. Project Operation and Maintenance.** The permittee shall operate and maintain STA-1W and STA-1E consistent with the design documents, as may be modified and reflected on the record drawings, operations criteria, and operation plans required by Specific Condition 8.

**5. As-Built Certification and Record Drawings.** Within 60 days after completion of any construction contracts for STA-1W and STA-1E, the permittee shall submit a written statement of completion and certification by a registered professional engineer or other appropriate individual as authorized by law. The statement of completion and certification shall be based on on-site observation of construction or review of as-built drawings for the purpose of determining if the work was completed in compliance with permitted plans and specifications. This submittal shall serve to notify the Department that STA-1W and STA-1E are ready for inspection. Additionally, if deviation from the approved drawings is discovered during the certification process, the certification must be accompanied by a copy of the approved permit drawings with deviations noted. Both the original and revised specifications must be clearly shown. The plans must be clearly labeled as "as-built" or "record" drawing. All surveyed dimensions and elevations shall be certified by a registered surveyor.

**6. Operational Improvements and Enhancements**. Structural, operational, and vegetation improvements and enhancements are presently underway in accordance with the Long-Term Plan (Exhibit A). These improvements and enhancements are designed to optimize performance as needed to achieve the phosphorus water quality standard. The District shall complete the construction of improvements and enhancements for STA-1W and STA-1E that are identified in the currently approved Long-Term Plan. The schedules, strategies, and timelines for these improvements and enhancements, along with any additional schedules, strategies, and timelines for regional water management projects, are detailed in Specific Condition 17. The District shall submit proposals for additional phosphorus reduction and operational improvements and enhancements, including the schedules, strategies, and timelines associated with these improvements and enhancements for STA-1W and STA-1E as part of the adaptive implementation process identified in the Long-Term Plan. Revisions to the Long-Term Plan are available on the District's webpage: http://www.sfwmd.gov/sta. Revisions to the Long-Term Plan require approval by the Department prior to implementation and any approved changes to the Long-Term Plan will be reviewed by the Department to determine whether a permit revision is required. The Florida Legislature has defined Best Available Phosphorus Reduction Technology (BAPRT) as a combination of BMPs and STAs, including a continuing research and monitoring program, to reduce outflow concentrations of phosphorus so as to achieve the phosphorus criterion in the Everglades Protection Area (Subsection 373.4592(2)(a), F.S.). These phosphorus reductions are being achieved through the iterative adaptive implementation of the Long-Term Plan and subsequent revisions. The Florida Legislature, in Subsection 373.4592(3)(b), F.S., has determined that the combination of BMPs and STAs contained within the Long-Term Plan constitutes the BAPRT for achieving the phosphorus criterion in the Everglades

Protection Area. The Long-Term Plan contains a planning objective of achieving compliance with the phosphorus criterion in the Everglades Protection Area. The October 27, 2003 version of the Long-Term Plan was subsequently revised to include further refinements to the recommended water quality improvement measures consistent with the iterative adaptive implementation process described in the plan. Post-2006 improvements, enhancements, and strategies, which will continue through 2016, are also included within the Long-Term Plan. The District has demonstrated that they 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.

**7. Pump Station Maintenance.** Maintenance requirements for the pump stations include operation of the pumps for approximately 2 to 4 hours per month, as necessary, to maintain their mechanical integrity. Temporary operation of the pump stations for maintenance purposes is allowed; however, such discharges are subject to the discharge criteria of the Specific Conditions of this permit. The permittee shall document all such temporary maintenance operations, and shall include all such discharge flows and loads as a part of the monitoring requirements of this permit.

**8. STA Operation Plans and Modifications.** Upon completion of the scheduled Long-Term Plan improvements and enhancements, and within 90 days of the completion of any additional Long-Term Plan enhancements, the permittee shall submit to the Department at the addresses listed in Specific Condition No. 1 an updated Operation Plan for both STA-1W and STA-1E. Until the updated Operation Plans are submitted by the permittee and approved by the Department, the previously existing Operating Plans shall remain in effect, subject to modification under the conditions set forth below.

If at any time changes to the STA-1W or STA-1E Operation Plans are warranted to optimize facility operation, and upon verification of data to be supplied by the permittee that justifies the need for such modification, the Operation Plans may be modified as mutually agreed upon by the Department and the permittee. The Operation Plans shall also include the information described in A-F, below.

Under emergency conditions that threaten the safety of life, property, or the STA-1W or STA-1E facilities, the permittee may modify the operations of STA-1W or STA-1E and immediately employ any remedial means to protect life and property in accordance with the emergency provisions of Chapter 373, F.S. The permittee shall notify the Department within 48 hours of such occurrence and shall provide data justifying the need to employ the emergency modifications to operations of STA-1W and/or STA-1E.

**A. Minimum Water Level Targets to Avoid Dryout**. In accordance with the relevant design documents, the permittee shall, to the maximum extent practicable, maintain a minimum static water level of 0.5 feet above the average ground elevation of the treatment cells to avoid dryout of the treatment cells, subject to available water from the upstream watershed.

**B. Responding to Dryout Conditions**. The permittee shall evaluate and correct potential adverse dryout effects on the water quality performance of STA-1W or STA-1E. If the compliance requirements in this permit are not met due to dryout conditions, then the permittee shall propose modifications to the Operation Plans as appropriate and submit the revised plan to the Department for review and approval.

**C. Maximum Water Level Targets**. The permittee shall ensure, to the maximum extent practicable, that maximum water depths of 4.0 feet above the average ground elevation of the treatment cells will not be exceeded in order to avoid long-term damage to the treatment vegetation and provide protection of project levees.

**D. Operational Envelope**. The District shall ensure that operation of the facility does not exceed the operational envelopes for STA-1W and STA-1E contained in the Operation Plans, except as required to fulfill the District's obligations as local sponsor of the C&SF project. In the event that the District anticipates the need to operate outside of the operational envelope(s) for reasons other than the District's obligations as local sponsor of the C&SF project, the District shall notify the Department prior to any such

operations, with the exception of routine maintenance. The District shall receive Department concurrence prior to any such operations when practicable. Departmental concurrence shall be obtained prior to initiating Lake Okeechobee regulatory or water supply releases that would result in an exceedance of the maximum levels of flow or phosphorus load contained in the operational envelope.

**E. Phosphorus Uptake Optimization**. Operations shall be conducted to distribute the flows and water levels within STA-1W and STA-1E to optimize the phosphorus reduction performance and shall be updated as necessary to include the results of the permittee's Process Development and Engineering (PDE) program being implemented as a part of the Long-Term Plan.

**F**. **Hydropattern Restoration**. STA-1W and STA-1E shall be operated in such a manner as to be consistent with the activities proposed to restore the hydropattern of the Everglades Protection Area, as described in Specific Condition 9 below.

**9. Hydropattern Restoration.** In accordance with Subsection (4)(b) of the EFA, the permittee shall operate the STAs in order to improve and restore the Everglades water supply and hydroperiod. The permittee shall operate the ECP to achieve the requirements of Specific Condition 12 and provide additional increased flow to the Everglades Protection Area through the modification of historical operational practices for regulatory releases from Lake Okeechobee and the Water Conservation Areas. The STAs shall be operated to achieve the goal of providing additional flows to the Everglades Protection Area and shall, to the maximum extent practicable, be coordinated with and consistent with the Lower East Coast Water Supply Plan, the Lake Okeechobee and Water Conservation Area Regulation Schedules, the Comprehensive Everglades Restoration Plan (CERP), and the entitlement of the Seminole Tribe of Florida to surface water withdrawals under the Water Rights Compact (P.L. 100-228).

**10. Implementation of Source Control Programs.**

A. **Implementation.** The permittee shall continue to implement source control programs in each of the contributing basins in accordance with the Long-Term Plan, Chapter 40E-63, F.A.C., and other applicable programs. Basins that do not presently include source control programs shall be monitored to determine if such programs are necessary in the event that phosphorus loads to the facility from these basins limit the facility or facilities progress towards achieving the technology based effluent limitation (TBEL), hereby incorporated by reference as part of this permit [See Goforth *et al*, Exhibit B (STA-1W) and Exhibit C (STA-1E)], or the applicable permit effluent limit.

B. **Performance.** On an annual basis, the permittee shall evaluate the performance of source controls in the contributing basins and include the findings in the annual report required in Specific Condition 30. The report shall include phosphorus loads from the basins and shall describe trends and compare loads to those assumed during the development of the TBEL.

**C. Improvements.** If the TBEL is not achieved and if the assumed inflow loads in the TBEL are exceeded the permittee shall submit, as part of the annual reporting requirements in Specific Condition No. 30, a report explaining the cause for the excess loads and, if applicable, schedules and strategies for source control improvements necessary to achieve the TBEL in the annual report.

**11. Water Quantity and Flooding Impacts.** The permittee shall be responsible for ensuring that STA-1W and STA-1E are operated so as not to adversely affect adjacent lands with regard to flooding impacts and water supply needs of the region. The permittee shall hold and save the Department harmless for any and all damages, claims, or liabilities that may arise from water quantity and/or flooding impacts resulting from the construction and operation of STA-1W and STA-1E.

**Phosphorus Conditions**

**12. Phosphorus Standard.** Pursuant to Subsection 373.4592(4)(e)2, F.S., the Department adopted a 10 parts per billion (ppb) numeric criterion for phosphorus in the Everglades Protection Area (Rule 62-302.540, F.A.C.), which was approved by the United States Environmental Protection Agency (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 at the earliest achievable date, which will be accomplished through the iterative adaptive implementation process set forth in the Long-Term Plan. (See Subsection 373.4592(3), F.S.)

The Long-Term Plan, and its subsequent revisions, set forth the framework for achieving compliance with the new water quality standard. It is envisioned that Post-2006 improvements, enhancements, and strategies, in conjunction with the Pre-2006 projects, may need to 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-1W and STA-1E 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 water quality standards in the Everglades Protection Area. The Department recognizes that the District will need sufficient time to develop and implement prescribed measures necessary to achieve compliance with the new water quality standard. This permit and the compliance requirements and schedules contained herein shall provide relief, in the interim, from the water quality based effluent limitation (WQBEL) necessary to achieve the 10 ppb numeric criterion[1] until such time as the effluent achieves the WQBEL or no later than December 31, 2016, at which time the WQBEL shall be achieved.

Consistent with the Long-Term Plan and Rule 62-302.540, F.A.C., a technology-based effluent limitation (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). The Tests for Determining Achievement of the STA-1W TBEL and Determining Achievement of the STA-1E TBEL are set forth in Specific Condition 16. The *Technical Support Document for the STA-1W TBEL* (Goforth *et al.*, Exhibit B) and *Technical Support Document for the STA-1E TBEL* (Goforth *et al.*, Exhibit C), further explains the derivation of the TBEL limits for STA-1W and STA-1E and identifies factors which may impact flows and loads associated with the treatment system. At this time, the relationship between waters discharged to, and the resulting water quality in the Everglades Protection Area has not been determined and a WQBEL has not been established under Rule 62-650, F.A.C. as necessary to achieve the phosphorus criterion in Rule 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-1W, via the G-251 and G-310 Pump Stations, and from STA-1E, via S-362 pump stations, shall meet the TBELs identified in the Exhibits B and C. The TBELs shall be revised as appropriate, consistent with the iterative implementation of BAPRT and Rule 62-620.620(3), F.A.C., until such time that the TBELs become consistent with the water quality based effluent limitation (WQBEL) established to achieve the numeric phosphorus criterion.

**13. Start-Up Phase.** During the initial Start-Up Phase of a new treatment 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-1W and STA-1E may operate independently of each other. Under those circumstances, Start-Up Phase operation and monitoring within the treatment area shall be performed as follows:

[1] The 10 ppb numeric criterion is 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 Specific Condition 18. It is recognized that the ultimate WQBEL to be developed may be higher than a flow-weighted mean of 10 ppb.

**A.** ***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.

**B.** ***Start-Up Monitoring.*** On a weekly basis, the permittee shall monitor total phosphorus at the upstream side of a flow-ways inflow structure(s). Total phosphorus shall also be monitored on a weekly basis on the upstream side of the flow-ways outflow structures. For flow-ways with one or more inflow or discharge structures, representative samples at a single structure may be used upon Department discretion.

**C.** ***Phosphorus Start-Up Test.*** The Phosphorus Start-Up Test for an individual flow-way or treatment cell shall be met when the above samples demonstrate, over a four-week period, that 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).

**D.** ***Discharge Operations.*** Discharge operations, from an individual flow-way or treatment 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 or treatment cells that have not met these tests within six months after issuance of the permit, the permittee shall submit status updates regarding progress toward achieving and identifying strategies and timelines to achieve this test.

**E.** ***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 Table 1 and the monitoring program described in this permit.

**14. Stabilization Phase** (Flow-through Operations) – 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 may 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. During the Stabilization Phase, exceedance of the TBEL may occur; however, the STA shall be deemed in compliance with the permit as long as the actions described Specific Condition 17 of this permit are being taken in conjunction with all other applicable permit conditions.

An STA or Flow-way may enter the Stabilization Phase after one of four 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, (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, or (4) planned/unplanned maintenance activities which would cause adverse impacts to the STA's treatment capabilities. If the flow-way is determined by the District to be incapable of operating or performing effectively as a result of the impacts caused by one or more of these circumstances, the District shall submit strategies and timelines identified as being the most effective in restoring the impacted flow-way(s) to the optimal performance level within 60 days from such a determination or occurrence. The timely submittal and implementation of these strategies and timelines in conjunction with the Department's review and approval of such submittals and compliance with all other applicable conditions of this permit shall constitute compliance.

As part of the first annual report following any adverse impact to the facility, and each subsequent year until the facility achieves the TBEL, the 12 month rolling flow-weighted mean TP concentration of the STA outflow shall be assessed as to whether there is a trend in improvement of performance relative to prior years. If the trend analysis

that is applied to this data indicates that there is not a trend in improvement of performance, the permittee shall report as to the causes behind the lack of performance improvement. If during a subsequent annual report the trend analysis applied to these data indicate that there is not a trend in improvement of performance after the affected flow-way has been in flow-through operation for 24 months, the annual report shall include any remedial measures necessary to achieve improved facility performance by the end of next year, and shall provide an estimate of when the TBEL shall be achieved.

**15. Routine Operations Phase** - During the Routine Operations Phase, discharges from the STA shall achieve compliance with the TBEL, as described in Specific Condition 16 of this permit. STA-1W and STA-1E shall achieve the WQBEL, established pursuant to Specific Condition 18, by no later than Dec 31, 2016.

**16. Application of Technology Based Effluent Limits.** The TBEL described above will be applied as follows:

**A.** Compliance shall be tested in each water year (May – April) using data from the monitored representative inflow structures (G-302, G-311, and S-319) and outflow structures (G-251, G-310, and S-362), except as noted below. The result of this compliance testing shall be reported by the District as part of the annual reporting requirements in Specific Condition 30. The compliance calculations will exclude flows made for low flow water supply deliveries. Low flow water supply deliveries are deliveries that pass through the Everglades Protection Area to Dade, Broward or Palm Beach County, and the Big Cypress Seminole Indian Reservation for water supply (wellfield recharge and salt water intrusion prevention) purposes. In addition, low flow water supply deliveries are made at times when water levels in the Water Conservation Areas (WCAs) are below the minimum elevations presented below:

- WCA-1 – 14.5 ft. NGVD measured at the 1-8C gauge
- WCA-2 – 10.5 ft. NGVD measured at the headwater (HW) of the S-11B structure
- WCA-3A – 7.5 ft. NGVD measured at HW of S-333 or 11.0 ft at HW of G-409

These stage thresholds will be reviewed as part of any future analyses associated with revisions to the current regulation schedules (WCA-1: May 1995; WCA-2: June 1989; WCA-3A: November 2000). This method will also exclude water supply deliveries to the Loxahatchee National Wildlife Refuge (Refuge) or Everglades National Park (ENP), which have been requested by Refuge, ENP or U.S. Army Corps of Engineers staff and which cannot be treated by an STA prior to delivery.

**B.** The TBEL shall not apply in water years when rainfall in the source basins tributary to the STA exceeds the maximum annual basin rainfall that occurred during the period of record used for deriving the TBEL (See Goforth *et. al*., 2007). In addition, the TBEL shall not apply in water years when rainfall in the basin tributary to that STA is less than the minimum annual rainfall that occurred during the period of record used for deriving the TBEL for that STA if supplemental flows are not available to maintain wet conditions in that STA. If a year is excluded based upon these criteria, results from adjacent years shall be treated as consecutive in testing compliance.

**C.** The STAs will be deemed in compliance with the TBEL unless the annual flow-weighted mean phosphorus concentration at the monitored representative outflows is greater than the annual limit. The annual limit can be calculated using the methods contained on pages 9-12 of the *Technical Support Document for the STA-1W TBEL* (Goforth et al. 2007, Exhibit B) and the *Technical Support Document for the STA-1E TBEL* (Goforth *et. al.*, 2007, Exhibit C). The method may be revised in the future as appropriate to reflect lower STA limits. Tables 2 and 3 below contain example calculations of the TBEL based on corresponding phosphorus loading rates (PLR).

**17. Improvements, Enhancements and Regional Water Management Projects -** In accordance with the Long-Term Plan, as may be amended with Department approval, the District shall proceed with the planning, design and construction of additional regional water management projects and internal improvements and enhancements that,

when fully implemented, shall result in the improved performance of STA-1W and STA-1E (See Table 4). These projects include:

**A. Internal Improvements and Enhancements**

1. **STA-1W Enhancements.** The Western and Northern flow-ways of STA-1W began Flow-through Operations in July 2006 after being off-line for enhancements and hurricane rehabilitation activities. The Stabilization Phase for these flow-ways shall conclude in approximately June 2008. In addition to these activities, the District is currently in the process of completing the remaining improvements and enhancements identified in the October 2003 Long-Term Plan, and subsequent revisions. Remaining improvements and enhancements previously identified through the Long-Term Plan process and approved by the Department include the Eastern Flow-way Cell 1 internal levee and associated G-248 structures (to be completed prior to December 31, 2007), and the vegetative conversion of Cells 1B and 3 to submerged aquatic vegetation (to be completed prior to October 31, 2008). The Eastern flow-way will enter Stabilization Phase where the flow-way will progress towards its optimal performance. The Stabilization Phase is assumed to last approximately 24 months or no later than November 2010.

2. **STA-1E Enhancements.** Following limited emergency operations associated with the 2004 hurricanes, the Central and Western flow-ways of STA-1E began flow-through operations in September 2005. Vegetation enhancements designed to improve the phosphorus removal performance are underway in the Central and Western flow-ways. Although the downstream cells (4N, 4S and 6) of these flow-ways were originally designed for emergent vegetation, vegetation management activities have been enacted to develop submerged aquatic vegetation (SAV). Full conversion to SAV is anticipated to take 2 to 3 years and should be complete by September 2008. It is anticipated that post construction ground elevations in the STA and incomplete backfilling of a north-south oriented canal in Cell 7 may hinder the development of SAV and lengthen the period for full conversion. Until Flow-way 1 has been converted to full flow-through operations, the Central and Western Flow-ways may receive flows and phosphorus loads in excess of their design and as a result may remain in stabilization for an extended period.

**B. Regional Water Management Projects**

1. **Conversion of STA-1E to full flow-through operations.** The Corps of Engineers recently constructed a PSTA Demonstration Project within the Eastern flow-way of STA-1E; that portion of the STA has not yet been transferred to the District and remains under the control of the Corps. The demonstration project is currently beginning start-up activities and is anticipated to be operated over a 24 month period by the Corps. After completion of the demonstration project, in approximately September 2009, test cell levees and structures shall be removed to return the Eastern flow-way to full flow capability by the USACE. For the purpose of forecasting a performance schedule, it is assumed that flow-through in the Eastern flow-way will occur by June 30, 2010 and that the Stabilization Phase will last 24 months (June 2012). It is recognized that additional time will be needed in order for STA-1E to achieve full flow-through operations. Since STA-1W was designed to work in concert with STA-1E, until STA-1E is in full flow-through operation, a portion of the water intended for STA-1E will be captured and treated in STA-1W and the performance of STA-1W is expected to improve after the full flow through operation of STA-1E begins, as flows and phosphorus loads into STA-1W are reduced.

2. **L-8 Diversion Project.** As part of the Comprehensive Everglades Restoration Plan (CERP), the Corps of Engineers and the District are underway with the planning of capital works that will eventually divert upwards of 75,000-100,000 acre feet per year (AF/yr) away from the STA-1E/STA-1W inflow works. The L-8 Diversion Project features shall be completed by December 31, 2014 according to the Master Implementation Schedule. Until the L-8 Diversion Project is completed, a portion of L-8 Basin runoff will continue to be captured and treated by STA-1W and STA-1E, contributing to flows and phosphorus loads

greater than their design values. The performance of STA-1W and STA-1E is expected to improve after the L-8 Diversion Project is complete as flows and phosphorus loads to STA-1W and STA-1E are reduced.

3. **Additional Treatment Area.** The District is presently designing capital works for approximately 6,800 acres of additional treatment area. This area, referred to as Compartment B, will provide additional treatment capacity for waters that presently are captured and treated in STA-1W and STA-1E. When the conveyance improvements referenced below are completed STA-1W and STA-1E performance will improve as flows and phosphorus loads are reduced. The Compartment B build-out project shall be flow-capable by December 31, 2013.

4. **Conveyance Improvements.** In order for STA-1W and STA-1E to receive the full treatment benefit of the expanded area in Compartment B, improvements to the conveyance infrastructure are required. The District is presently designing the conveyance improvements. Construction of the conveyance improvements shall be substantially completed by December 31, 2013.

The District shall report on the progress of the aforementioned projects, project schedule updates, and estimated timeframes for the implementation of future improvements and enhancements as part of the annual report requirements in Specific Condition No. 30 of this permit.

**18. Water Quality Based Effluent Limitation.** The District shall conduct a study to determine the relationship between discharges from STA-1W and STA-1E and the resulting water quality in the Refuge. The final scope of work for this study shall be submitted to the Department by no later than December 31, 2007 for the Department's review and written approval. The District shall prepare and submit a report of its findings, based on the data collected over the course of this study for Department review by no later than December 31, 2009. Based on the findings of this study and Department concurrence with its methods and results, the Department shall establish a WQBEL in accordance with Rule 62-650 F.A.C. and 373.4592 F.S. by December 31, 2010. Establishment of a WQBEL for these facilities shall result in a major modification to this permit.

**19. Operational Envelope.** As a part of the annual reporting requirements in Specific Condition 30, the District shall provide an annual assessment as to whether the facility is operating within or outside the operational envelope. The assessment shall be based on annual inflow volumes and phosphorus loads and shall compare flows and loads to the corresponding average and maximum values contained in the operational envelope described in *Technical Support Document for the STA-1W TBEL* (Exhibit B) and *Technical Support Document for the STA-1E TBEL (*Exhibit C). 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. 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 and 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. Departmental concurrence shall be obtained prior to initiating Lake Okeechobee regulatory or water supply releases that would result in an exceedance of the maximum levels of flow or phosphorus load contained in the operational envelope.

**Conditions for Parameters Other than Total Phosphorus**

**20. Comparison of Outflows to Inflows.** For all water quality parameters indicated in the STA-1W and STA-1E Routine Monitoring Table (Table 1) other than total phosphorus, mercury, and dissolved oxygen, inflow and outflow samples collected at the G-302, G-251, S-319, G-311, G-310, and S-362 shall be used to determine compliance with this Specific Condition. Compliance with this Specific Condition shall be evaluated as follows:

**A.** If the annual average outflow concentration does not cause or contribute to violations of applicable Class III water quality standards, then the STA shall be deemed in compliance with this condition.

**B.** If the annual average concentration at the outflow station causes or contributes to violations of applicable Class III water quality standards, but is of equal or better quality than, the annual average concentration at the inflow stations, then the STA shall be deemed in compliance with this condition.

**C.** If the annual average concentration at the outflow causes or contributes to violations of applicable Class III water quality standards, and also exceeds the annual average concentration at the inflow station, then the STA shall be deemed out of compliance with this condition.

**21. Dissolved Oxygen.** The dissolved oxygen parameter shall meet the requirements set forth in the Everglades Marsh Dissolved Oxygen Site Specific Alternative Criteria (DO SSAC, Exhibit D). Compliance with the DO SSAC shall be evaluated annually 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 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.

**22. Public Health, Safety, or Welfare**. Pursuant to Subsection 373.4592(9)(h)3 of the EFA, discharges from the STA-1W and STA-1E project shall not pose a serious danger to the public health, safety, or welfare.

**Factors Impacting Compliance**

**23. Factors Outside the Permittee's Control.** In the event that non-compliance or failure to achieve performance objectives results for any of the reasons other than those below, the permittee shall take appropriate remedial measures.

**A. Anomalous Rainfall.** Compliance with the TBEL shall not be tested in water years when the rainfall in the source basins exceed the range of values that occurred during the period of model simulation used in the development of the TBELs, or when sufficient supplemental flows are not available to maintain an average depth of 0.5 ft in each treatment cell of STA-1W and/or STA-1E. In these instances, results from adjacent years will be treated as consecutive for purposes of testing compliance. The Department may make similar adjustments where emergency discharges occur.

**B. Random Variation.** The permittee shall report any statistical uncertainty in the methodology using acceptable scientific methods.

**C. Other Factors**. Events beyond the permittee's control that may prevent or delay compliance, including natural disasters as well as unavoidable legal barriers or restraints, including those arising from actions or regulations not under the control of the permittee (e.g. Lake Okeechobee Regulation schedule and WCA-1 Regulation schedule).

**D. Emergency Conditions.** Discharges from the G-251 and/or G-310 Pump and/or S-362 Stations and diversion of waters through the G-300 and/or G-301 structures shall also be allowed in accordance with the emergency provisions of Chapter 373, F.S., to avoid hydrological and nutrient overloading the STA, or when water conditions within STA-1W and/or STA-1E may damage existing marsh vegetation. When a diversion event or series of proximal diversion events is anticipated due to aforementioned conditions, the permittee shall notify the Department of the anticipated event.

**SPECIFIC CONDITIONS FOR MONITORING PROGRAM**

In accordance with Subsection 373.4592(9)(h) of the EFA, the following monitoring conditions are intended to assess the water quality of the discharges of STA-1W and STA-1E, to assess the ability of the STA in achieving the design objectives of the ECP, as modified by the Long-Term Plan, and to measure progress towards achieving state water quality standards.

**24. Turbidity Monitoring.** Effective means of turbidity control, such as, but not limited to, turbidity curtains or the discontinuance of flow activity to and from the affected cell(s), shall be employed during all maintenance activities that may create turbidity so that turbidity shall not exceed 0 NTUs above background in the receiving waters which are classified as Outstanding Florida Waters (OFW), and 29 NTUs above background in Class III waters. Turbidity controls and/or preventive operation procedures shall remain in place until all turbidity has subsided and the turbidity level at the point of discharge to receiving waters meets state standards

Turbidity monitoring equipment and personnel trained to use it shall be available on site at all times during maintenance activities that result in project-generated turbidity levels in the receiving water body. The permittee shall monitor turbidity levels at least twice daily at a minimum of 4 hours apart during these activities as follows:

**A.** Monitoring samples shall be taken at the following locations:

1. Background Sample(s): At the project inflow monitoring station G-302, S-319, and G-311
2. Compliance Sample(s): Upstream of the project outflow monitoring stations G-251, G-310 and S-362.

**B.** Turbidity monitoring results shall be summarized quarterly (every three calendar months) by project component, beginning with the first calendar month in which construction or maintenance projects occur that could generate turbidity in receiving waters and continuing until all maintenance is completed. Monitoring data with supporting documents shall be submitted to the Department quarterly during the period of actual construction. The reports shall clearly identify the following information:

1. Permit number;
2. Dates and time of sampling and analysis;
3. A statement describing the methods used in collection, handling, storage and analysis of the samples;
4. A clear description of project component activities taking place at the time of sampling;
5. A map indicating the sampling locations; and,
6. A statement by the individual responsible for implementation of the sampling program concerning the authenticity, precision, limits of detection and accuracy of the data.

**C.** Monitoring reports shall also include the following information for each sample that is taken:

1. Water depth;
2. Depth of sample;
3. Weather conditions; and,
4. Water level stage and direction of flow.

In the event that project-generated turbidity levels in receiving waters exceed the standard 0 NTUs above background in an OFW or 29 NTUs above background in Class III waters, project component activities contributing to elevated turbidity levels shall immediately cease, and the Department shall be notified immediately. Work shall not resume until the work can be conducted in compliance with the aforementioned turbidity standard. In such

cases where turbid conditions will be attributed to activities associated with dewatering, the District shall comply with the turbidity requirements set forth in the dewatering permit issued by the Department in lieu of the above requirements.

**25. Monitoring Program.** Monitoring performed in accordance with this permit shall include the vegetation and water quality and quantity parameters listed below and in the STA-1W and STA-1E Routine Monitoring Table (Table 1) of this permit. At a minimum, the monitoring program for STA-1W and STA-1E shall include the following:

**A. Long-Term Plan Monitoring Program.** The permittee shall continue to implement the portions of the Process Development and Engineering (PDE) component of the Long-Term Plan that are related to this permit. This program shall evaluate the effectiveness of the STAs in improving water quality and maintaining designated and existing beneficial uses of the Everglades Protection Area and tributary waters. Results of the monitoring efforts shall be reported as part of the annual South Florida Environmental Report (SFER).

1. **Aerial Vegetation Photographs and Mapping.** Aerial vegetation photographs and mapping shall be conducted in accordance with the PDE components of the Long-Term Plan.

2. **Mercury Monitoring Program**. The permittee shall monitor mercury, report the results obtained, and take all necessary actions as specified in the document entitled "Mercury Monitoring Program," which is hereby incorporated by reference and made a part of this permit as Exhibit E (STA-1W) and Exhibit F (STA-1E).

3. **Routine Research and Monitoring Program**. The permittee shall conduct long-term monitoring at the G-302, G-311, S-361 and S-319 inflow structures, the G-251, G-310 and S-362 outflow pump stations, and report the results to the Department in accordance with the annual reporting requirements of this permit for the parameters listed in the STA-1W and STA-1E Routine Monitoring Table (Table 1) of the "Monitoring Required" section of this permit. Data from this program may provide the basis for additional permit compliance requirements. The District shall also monitor additional stations as defined in the PDE element of the Long-Term Plan.

**26. Diversions.** The District shall notify the Department and the Refuge within 48 hours of any unanticipated diversions of flow through the G-300 and/or G-301 gated structures and the District shall notify the Department as soon as practicable in advance of anticipated diversions, with the exception of routine maintenance. 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-300 and G-301 structures shall be monitored for the parameters Total Phosphorus and Flow as required in Table 1 below. As soon as practicable after cessation of all diversions, the District shall submit a summary of the data collected for these parameters, and identify the duration of the diversions.

**A. STA-1W Diversion Limit.** To limit discharge concentrations resulting from diversion events, discharges of waters from the EAA to the L-7 Canal from the G-301 diversion structure and the discharge pump stations from STA-1W shall not exceed a 50 ppb maximum annual discharge limit. The 50 ppb maximum annual discharge limit shall be calculated as an annual flow weighted mean total phosphorus concentration for combined discharges from the EAA during the May-April Water Year from the G-301 diversion structures and from the G-251 and G-310 pump stations.

**B. STA-1E Diversion Limit.** To limit discharge concentrations resulting from diversion events, discharges of waters from the EAA to the L-40 Canal from the G-300 diversion structure and the discharge pump station from STA-1E shall not exceed a 50 ppb maximum annual discharge limit. The 50 ppb maximum annual discharge limit shall be calculated as an annual flow weighted mean total phosphorus concentration for

combined discharges from the EAA during the May-April Water Year from the G-300 structure and the G-362 pump station.

The 50 ppb maximum annual discharge limit for waters from the EAA shall be enforceable after all of the additional components of the control program set forth in Specific Condition 17 of this permit are operational. By including a 50 ppb maximum annual discharge limit in this permit, the Department is not determining, admitting, or waiving any adjudicating permittee's or the Department's rights, claims, or defenses of the permittee, the Department, or any other party to any matters relating to compliance with requirements of the Everglades Consent Decree, as modified, entered in the case styled *United States v. So. Fla. Water Management Dist., et al.*, case No. 88-1886-CIV-Moreno (S.D. Fla.).

**27. STA-1W Transect Monitoring.** The permittee shall conduct monitoring at a series of sites located along transects downstream of the STA-1W discharge site to characterize the effects of the STA-1W discharge on adjacent marsh areas of the Refuge (See Figure 3). Table 5 below identifies seven (7) sampling sites located along a transect originating at the Rim Canal adjacent to the STA-1W discharge point and extending to the southeast toward the center of the Refuge into an unimpacted portion of the marsh. 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. Any alteration in the monitoring program approved by the Department shall occur in the form of a modification to this permit.

Monitoring sites LOXA104 are located in the Rim Canal and will be used to evaluate changes in water quality occurring between the Rim Canal and the actual marsh. Of the remaining six sites, four are located in areas currently identified as impacted (i.e., sediment TP concentration greater than 500 mg/kg) with the final two sites located in areas currently identified as unimpacted. Water quality grab samples will be collected at each of the transect sampling sites identified in Table 5 below on a monthly basis and analyzed for total phosphorus (TP) and specific conductance. In addition, sediment samples will be collected at each marsh site every 3 years. The sediment samples will be subdivided into floc (if present) and the upper 10 cm of sediment with each component being analyzed separately for TP and bulk density. The depth of any floc layer will also be recorded. To assure that the samples collected are representative of ambient conditions, all marsh sampling will be conducted in accordance with the marsh sampling protocols provided in the SFWMD's Field Sampling Quality Manual as refined in the District's Monitoring Plan for Everglades Protection Area WCA-1, Project: EVPA.

**28. STA-1E Transect Monitoring.** The permittee shall conduct monitoring at a series of sites located along a transect downstream of the STA-1E discharge site to characterize the effects of the STA-1E discharge on adjacent marsh areas of the Refuge (Figure 4). Table 6 below identifies five sampling sites located along a transect originating at LOXA-135 sampling site in the rim canal adjacent to the STA-1E discharge point and extending to the LOXA-139 sampling site located in an unimpacted portion of the marsh. 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. Any alteration in the monitoring program approved by the Department shall occur in the form of a modification to this permit.

The monitoring site closest to the discharge point (LOX-135) is located in the rim canal and will be used to evaluate changes in water quality occurring between the discharge point and the actual marsh. Of the remaining four marsh sites, LOXA-136 and LOXA-137 are located in areas currently identified as impacted (i.e., sediment TP concentration greater than 500 mg/kg) with the final two sites located in areas currently identified as unimpacted. Water quality grab samples will be collected at each of the transect sampling sites identified in Table 6 below on a monthly basis and analyzed for total phosphorus (TP) and specific conductance. In addition, sediment samples will be collected at each marsh site every three years. The sediment samples will be subdivided into floc (if present) and the upper 10 cm of sediment with each component being analyzed separately for TP and bulk density. The depth of any floc layer will also be recorded. To assure that the samples collected are representative of ambient conditions,

all marsh sampling will be conducted in accordance with the marsh sampling protocols provided in the SFWMD's Field Sampling Quality Manual as refined in the District's Monitoring Plan for Everglades Protection Area Water Conservation Area 1 (WCA1), Project: EVPA.

**29. Inspection Reports.** The permittee shall submit Inspection Reports to the Department evaluating the integrity and functionality of the above ground dikes/levees and structures, including pump stations. The cover letter of the Inspection Report should summarize site conditions and work that was completed in response to inadequacies that may have been found during regular inspections. Inspection Reports shall be prepared under the guidance of a professional engineer and submitted semi-annually to the Department. Every five years, as a minimum, the permitted facilities shall be inspected by a Florida registered professional engineer and the subsequent Inspection Report shall be signed and sealed. The District may request a modification to this condition if the facility is included in a formalized inspection program that has been reviewed and approved by the Department.

**30. Annual Monitoring Reports.** All studies, monitoring reports, and technical submittals required by this permit shall be submitted to the Department in an "Annual Report." The annual reporting requirements under this permit shall be incorporated into the South Florida Environmental Report (SFER) and submitted to the Department no later than March 1st of each year. Each Annual Report shall present the information for the previous water year, from May 1st to April 30th. If additional reporting modifications are required, and upon approval by the Department, the permittee may modify the Annual Report submission date to coincide with multiple reporting requirements and time periods needed for data acquisition and analysis. In addition to the permit number, and name of the permit administrator, the Annual Reports shall contain, at a minimum, the following information:

**A. Quality Assurance and Quality Control.** Sampling and monitoring data shall be collected, analyzed, reported and retained in accordance with Chapter 62-160, F.A.C. Any laboratory test required by this permit shall be performed by a laboratory that has been certified by the Department of Health (DOH) under Chapter 64E-1, F.A.C., where such certification is required by Rule 62-160.300, F.A.C. The laboratory must be certified for all specific method/analyte combinations that are used to comply with this permit. The analytical method used shall be appropriate so as to determine if the sample complies with Class III surface water quality standards as specified in Chapter 62-302, F.A.C. All field activities including on-site tests and sample collection, whether performed by a laboratory or another organization, must follow all applicable procedures described in DEP-SOP-001/01 (February 1, 2004). Alternate field procedures and laboratory methods may be used if they have been approved according to the requirements of Rules 62-160.220 and 62-160.330, F.A.C.

**B. Water Quality Data**. Records of monitoring information shall include all applicable laboratory information specified in Rule 62-160.340(2), F.A.C. including the following:

1. Date, location, and time of sampling or measurements;
2. Person responsible for performing the sampling or measurements;
3. Dates analyses were performed and the appropriate code as required by Chapter 62-160, F.A.C.;
4. Laboratory/Person responsible for performing the analyses;
5. Analytical methods used, including MDL and PQL;
6. Results of such analyses, including appropriate data qualifiers, and all compounds detected;
7. Depth of sampling;
8. Flow conditions and weather conditions at time of sampling; and,
9. Monthly flow volumes.

In addition, the following records must be kept on file for reference during the duration of the project but are not required to be submitted in annual reports.

10. Field sampling and laboratory quality manuals

11. Sampling and analysis notes, as required under Chapter 62-160, F.A.C. and NELAC Quality Systems (2003), respectively.

**C. Performance Evaluation.**

1. Records of the operations status of the STAs during the water year, stating whether each STA(or particular cells or flow-ways therein) is in start-up, stabilization or routine operations;
2. A comparison of inflow water quality data with outflow water quality data using the student's t-test with a 95% confidence interval;
3. A comparison of outflow phosphorus concentrations with the TBELs for STA-1W and STA-1E and between the current reporting year and previous years; and,
4. An assessment of the inflow volumes and phosphorus loads during the year relative to the anticipated operational envelope contained in *the Technical Support Document for the STA-1W TBEL*(Exhibit B) and *the Technical Support Document for the STA-1E TBEL*(Exhibit C).

Calculations for any reporting that requires averaging of measurements shall be weighted by flow value.

**D. Herbicide and Pesticide Tracking.** The permittee shall provide, in each annual report, information regarding the application of herbicides and pesticides used to exclude/eliminate undesirable vegetation and pests within STA-1W and STA-1E. Such reporting shall include the names, concentrations, locations, and quantities of all herbicides and pesticides used, and a statement certifying that the permittee has adhered to manufacturer application guidelines.

**E. Implementation Schedules.** The Annual Report shall provide details on the following:

1. Implementation of projects affecting flows and loads to STA-1W and/or STA-1E;
2. Source Control implementation and optimization;
3. STA design modifications;
4. Improvements, enhancements, and strategies that have been initiated and/or completed within the previous year;
5. Any delays in the implementation of the improvements, enhancements, or strategies and the duration of the delays;
6. The operational status of the STA, stating whether the STA is in routine operations or stabilization. If the facility is in non-routine operations during the reporting period, the report shall also include the date at which the facility entered the start up or stabilization phase and the length of time it remained or is expected to remain in that phase;
7. Achievement of effluent limitations set forth in the TBEL and/or implementation of STA Recovery Plans;
8. Whether revisions and/or additions to the improvements, enhancements, and strategies are recommended;
9. Implementation of remedial measures in the event of noncompliance with permit conditions.

**31. Removal of Parameters.** Upon demonstration that a specific parameter(s) is not present or is found consistently to be in compliance with Class III Water Quality Standards, the permittee may request a modification to the monitoring program as appropriate. A minimum of one year's worth of data, for those parameters being sampled quarterly or more frequently, will be required prior to the Department approving any modification to the monitoring program. Parameters sampled semi-annually or annually will be examined on a case-by-case basis. The Department may approve a reduction of the monitoring frequency or waive the monitoring requirement for parameters that consistently are reported as in compliance with state water quality standards.

**32. Addition of Parameters.** If the Department has reason to believe that additional parameters are necessary to determine whether discharges from the STAs may cause or contribute to water quality violations, those parameters shall be added to the monitoring section of this permit as a permit modification.

**33. Public Health, Safety, or Welfare.** Data from existing STAs and the monitoring and compliance requirements of this permit, provide reasonable assurances that discharges authorized by this permit will not pose a serious danger to the public health, safety, or welfare. If warranted by additional information, the Department may include additional monitoring or compliance conditions in this permit, in accordance with Subsections (9)(g) and (11)(a)2, of the EFA.

**34. Emergency Suspension of Sampling.** Under hurricane or tropical storm warnings, or other extreme weather conditions, the permittee's normal sampling schedule may be suspended if necessary. The permittee shall notify the Department of any anticipated sampling suspension associated with hurricanes, tropical storms, or other extreme weather events that may require deviation from the normal sampling schedule. Within 14 days following the cessation of emergency conditions, the permittee shall notify the Department of when normal sampling is expected to resume.

**Renewals and Modifications**

**35. Permit Renewal.** At least 60 days prior to the expiration of this permit, the permittee shall apply for renewal of this permit. Renewal may be for a period of up to 5 years in accordance with Subsection 373.4592(9)(f) of the EFA.

**36. Permit Modifications for STA Optimization.** Pursuant to Subsections (3)(b)-(e) and (9)(j) of the EFA and the PDE component of the Long-Term Plan, the permittee may submit proposed modifications to STA-1W and/or STA-1E through the adaptive implementation process identified in the Long-Term Plan. Within 30 days after receipt of such a submittal, the Department shall notify the permittee as to whether a permit modification is necessary. Minor modifications can be processed in letter format. The Department shall determine whether the modification is minor or major based on the nature and magnitude of the proposed modification and the potential for the modification to have environmental impacts that are significantly different from those previously considered by the Department for the activity, pursuant to Rule 62-343.100, F.A.C. The permittee shall be required to publish a notice of application pursuant to Subsections 373.413 (3) and (4), F.S., as applicable, for any requested permit modifications determined to be major in accordance with this Specific Condition.

**37. Department Review and Approval.** Where conditions in this permit require Department review and approval of remedial actions or plan modifications to be implemented pursuant to this permit, the Department will consult with the permittee to ascertain whether mutual agreement can be reached. If mutual agreement on the remedial actions or plan modifications cannot be reached, the action of the Department will be deemed final agency action and will be subject to judicial or administrative review, as appropriate.

**38. Reopener Clause.** The permit may be reopened to adjust effluent limitations or monitoring requirements should future water quality based effluent limitation (WQBEL) determinations, water quality studies, Department approved changes in water quality standards, or other information show a need for a different limitation or monitoring requirement.

**MONITORING REQUIRED:**
In addition to any other monitoring requirements set forth in this permit, the permittee shall conduct routine monitoring as set forth for the specified parameters in the following table. Reporting of results shall be as provided in the applicable General and Specific Conditions of this permit.

**Key for Table 1**

Sample Type:
G = Grab sample
C = Soil Core
FPC = Flow proportionate composite sample
INSITU = In Situ field sample
CAL = Calculated parameter
PR = Pump record
RG = Rain Gauge

Sample Frequency:
W = Weekly
BI-W = Once every other week
WF = Weekly when flowing
M = Monthly
DAV = Daily averages of continuous sampling
DAC = Daily accumulation of continuous sampling

**Table 1. STA-1W and STA-1E Routine Monitoring Table**

| PARAMETER | UNITS | SAMPLE TYPE | SAMPLING FREQUENCY | SAMPLING LOCATION |
|---|---|---|---|---|
| Alkalinity | mg/l | G | BI-W | G-302, S-319, S-361, and G-311 Inflow;G-251, G-310, and S-362 Outflow |
| Dissolved Oxygen | mg/l | INSITU | W | G-302, S-319, S-361, and G-311 Inflow; G-251, G-310, and S-362 Outflow |
| Mercury | See attached Exhibit E & F (Mercury Monitoring Program) | | | |
| pH | SU | INSITU | W | G-302, S-319, S-361, and G-311 Inflow; G-251, G-310, and S-362 Outflow |
| Specific Conductance | µmhos | INSITU | W | G-302, S-319, S-361, and G-311 Inflow; G-251, G-310, and S-362 Outflow |
| Temperature | Deg C | INSITU | W | G-302, S-319, S-361, and G-311 Inflow; G-251, G-310, and S-362 Outflow |
| Total Phosphorus (Water) | mg/l | FPC/G | W | G-302, S-319, S-361, and G-311 Inflow; G-251, G-310, and S-362 Outflow;G-300 and G-301 |
| Total Nitrogen | mg/l | G | BI-W | G-302, S-319, S-361, and G-311 Inflow; G-251, G-310, and S-362 Outflow |
| Turbidity | NTU | G | See Specific Condition 24 | G-302, S-319, S-361, and G-311 Inflow; G-251, G-310, and S-362 Outflow |
| Nitrate + Nitrite | mg/l | G | BI-W | G-302, S-319, S-361, and G-311 Inflow; G-251, G-310, and S-362 Outflow |
| Sulfate | mg/l | G | BI-W | G-302, S-319, S-361, and G-311 Inflow; G-251, G-310, and S-362 Outflow |
| Flow | CFS | PR | DAV | S-319, G-251, G-310, and S-362 Outflow |
| Flow | CFS | CAL | DAV | G-302, S-319, S-361, and G-311 Inflow; G-251, G-310, and S-362 Outflow; G-300 and G-301 |
| Rainfall Volume | in | RG | DAC | Rainfall Sampling Station |

**Table 2. Interim TBELs for STA-1W As A Function of PLR**

| Phosphorus Loading Rate $g/m^2/yr$ | Annual Phosphorus Limit ppb | Phosphorus Loading Rate $g/m^2/yr$ | Annual Phosphorus Limit ppb | Phosphorus Loading Rate $g/m^2/yr$ | Annual Phosphorus Limit ppb |
|---|---|---|---|---|---|
| 0.973 | 28 | 1.500 | 30 | 2.050 | 34 |
| 1.000 | 28 | 1.550 | 31 | 2.100 | 34 |
| 1.050 | 28 | 1.600 | 31 | 2.150 | 34 |
| 1.100 | 28 | 1.650 | 31 | 2.200 | 34 |
| 1.150 | 29 | 1.700 | 32 | 2.250 | 35 |
| 1.200 | 29 | 1.750 | 32 | 2.300 | 35 |
| 1.250 | 29 | 1.800 | 32 | 2.350 | 35 |
| 1.300 | 29 | 1.850 | 32 | 2.400 | 36 |
| 1.350 | 30 | 1.900 | 33 | 2.450 | 36 |
| 1.400 | 30 | 1.950 | 33 | 2.500 | 36 |
| 1.450 | 30 | 2.000 | 33 | | |

**Table 3. Interim TBELs for STA-1E As A Function of PLR**

| Phosphorus Loading Rate $g/m^2/yr$ | Annual Phosphorus Limit ppb | Phosphorus Loading Rate $g/m^2/yr$ | Annual Phosphorus Limit ppb | Phosphorus Loading Rate $g/m^2/yr$ | Annual Phosphorus Limit ppb |
|---|---|---|---|---|---|
| 0.972 | 25 | 1.500 | 29 | 2.050 | 33 |
| 1.000 | 25 | 1.550 | 29 | 2.100 | 34 |
| 1.050 | 26 | 1.600 | 30 | 2.150 | 34 |
| 1.100 | 26 | 1.650 | 30 | 2.200 | 34 |
| 1.150 | 27 | 1.700 | 31 | 2.250 | 35 |
| 1.200 | 27 | 1.750 | 31 | 2.300 | 35 |
| 1.250 | 27 | 1.800 | 31 | 2.350 | 36 |
| 1.300 | 28 | 1.850 | 32 | 2.400 | 36 |
| 1.350 | 28 | 1.900 | 32 | 2.412 | 36 |
| 1.400 | 28 | 1.950 | 32 | | |
| 1.450 | 29 | 2.000 | 33 | | |

**Table 4. Schedule of Compliance Activities**

| Activity | | Completion Date |
|---|---|---|
| **STA-1W and STA-1E Internal Improvements and Enhancements** | STA-1W Western Flow-way Achieve Stabilization Test | June 2008 |
| | STA-1W Northern Flow-way Achieve Stabilization Test | June 2008 |
| | STA-1W Construction of Eastern Flow-way Enhancements | December 2007 |
| | STA-1W Establishment of Eastern Flow-way Vegetation | October 2008 |
| | STA-1W Eastern Flow-way Achieve Stabilization Test | November 2010 |
| | STA-1E Central and Western Flow-way Achieve Stabilization Test | September 2008 |
| | STA-1E PSTA Demonstration Project Completed by USACE | September 2009 |
| | STA-1E Eastern Flow-way Flow Capable by USACE | June 2010 |
| | STA-1E Eastern Flow-way Achieve Stabilization Test | June 2012 |
| **Regional Water Management Projects** | L8 Diversion Project by USACE | December 2014 |
| | Additional Treatment Area (Compartment B) Flow Capable | December 2013 |
| | Conveyance Improvements Completed | December 2013 |
| | Compartment B Enters Stabilization | February 2015 |
| | Compartment B Stabilization | December 2016 |

**Table 5. STA-1W Transect Sampling Sites.**

| Station | Latitude | Longitude | Impacted/Unimpacted |
|---|---|---|---|
| LOXA-104 | 26.597982 | -80.440045 | Rim Canal |
| LOXA-104.5 | 26.594111 | -80.439111 | Impacted |
| LOXA-105 | 26.591899 | -80.436094 | Impacted |
| LOXA-106 | 26.592206 | -80.431281 | Impacted |
| LOXA-107 | 26.587390 | -80.421445 | Impacted |
| LOX-107U | 26.581200 | -80.412000 | Unimpacted |
| LOXA-108 | 26.577960 | -80.405853 | Unimpacted |

**Table 6. STA-1E Transect Sampling Sites.**

| Station | Latitude | Longitude | Impacted/Unimpacted |
|---|---|---|---|
| LOXA-135 | 26.623355 | -80.316123 | Rim Canal |
| LOXA-136 | 26.618793 | -80.318667 | Impacted |
| LOXA-137 | 26.615103 | -80.321703 | Impacted |
| LOXA-138 | 26.606817 | -80.326665 | Unimpacted |
| LOXA-139 | 26.593325 | -80.337154 | Unimpacted |

DONE AND ORDERED on this 16 day of November, 2007 in Tallahassee, Florida.

**STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION**

Mimi A Drew for
Michael W. Sole
Secretary

MS/jb/jh

**FILING AND ACKNOWLEDGMENT**

FILED, on this date, under Section 120.52(7), F.S., with the designated deputy clerk, receipt of which is hereby acknowledged.

Clerk 11/16/07 Date

**PARTIES REQUESTING NOTICE:**
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United States Sugar Corporation, c/o Bubba Wade
Seminole Tribe of Indians of Florida, c/o Stephen A. Walker, Esq.
Sugar Cane Growers Cooperative, Roth Farms, Inc., and Wedgeworth Farms, Inc., c/o William H. Green, Esq.
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