

## **United States Environmental Protection Agency Amended Determination**

### **Executive Summary**

On April 14, 2010, the United States District Court, Southern District of Florida, issued an order (the 2010 Order) directing specific steps that the United States Environmental Protection Agency (USEPA) and the Florida Department of Environmental Protection (FDEP) must take to correct deficiencies in USEPA's December 2009 Determination and to carry out USEPA's and FDEP's mandatory duties under the Clean Water Act (CWA) to achieve water quality standards in the Everglades Protection Area. The 2010 Order directed USEPA to issue an Amended Determination no later than September 3, 2010.

This document (the Amended Determination) addresses the requirements, as outlined on pages 44-47 of the 2010 Order, lays out the steps that the State must complete, and where applicable, specifically describes USEPA's actions if the State fails to respond. USEPA's objective in issuing this Amended Determination is to satisfy the Court's directives in the 2010 Order, consistent with the CWA and implementing regulations. This Amended Determination will ensure that the water quality entering the Everglades Protection Area from the Everglades Agricultural Area (EAA) and C-139 Basin achieve the narrative and numeric criteria, by meeting a scientifically sound Water Quality Based Effluent Limit (WQBEL) in permits, in the shortest time possible. Attachment A is an overview map showing the primary features described in this Amended Determination.

In Sections I. and II. of this Amended Determination, USEPA, strikes the language of its 2009 Determination that the Court found invalid and directs the State to correct the deficiencies in the State's Amended Everglades Forever Act (Amended EFA) and the Phosphorus Rule that have been invalidated by the 2010 Order. In the event the State fails to timely correct the deficiencies in the Amended EFA and Phosphorus Rule, USEPA will provide timely notice and promulgate revised standards pursuant to 33 U.S.C. § 1313(c).

In Section III.A., USEPA is notifying FDEP that the narrative and numeric nutrient criteria in the State's water quality standards are not being met for the Everglades Protection Area. Using the most recent information available, data indicate that while levels of total phosphorus (TP) at inflows to the Arthur R. Marshall Loxahatchee National Wildlife Refuge (Refuge), Water Conservation Area (WCA) 2, and WCA 3 have decreased since the 1980s, all parts of the Everglades Protection Area do not yet meet the nutrient criteria and further reductions of TP in the inflows to the Everglades must be achieved if further degradation is to be prevented. USEPA summarizes pertinent analyses of historical data from several sources to document this conclusion, including water quality data, soil phosphorus analyses, and vegetation changes.

In addition, in Section III.B., this Amended Determination describes a two-part WQBEL as a critical component of an enforceable framework to ensure that the Stormwater Treatment Area (STA) discharges will not cause exceedances of the numeric criterion within the Everglades

Protection Area. The USEPA has derived a WQBEL to be implemented in permits for the STA discharges into the Everglades Protection Area. The WQBEL provides that:

TP concentrations in the discharge may not exceed either:

- 10 ppb as an annual geometric mean (GM) in more than two consecutive years; or
- 18 ppb as an annual flow-weighted mean (FWM).

Compliance with both parts of the WQBEL is necessary to assure that the STA discharges will not cause an exceedance of the long-term criterion of 10 ppb. USEPA calculated the WQBEL using a scientifically-based statistical approach in accordance with USEPA procedures. Expressing the WQBEL in this manner ensures the total phosphorus (TP) concentration and flow discharged from the STA to vary within acceptable limits while ensuring that the discharge will not cause an exceedance of the ambient water quality criterion of 10 ppb as a long-term GM in the Everglades marsh. Expressing one component of the WQBEL as a FWM concentration considers high flow loading events to the Everglades Protection Area and is more appropriate than relying only on a limit expressed as a GM concentration. Should FDEP propose an alternative approach to establishing a WQBEL, USEPA will evaluate its scientific rigor to ensure it appropriately implements the water quality criterion in accordance with the Clean Water Act (CWA) and its implementing regulations.

In Section III.C., USEPA is providing clear, explicit, and comprehensive instructions to the State of Florida on the manner and method to obtain the WQBEL, including specific milestones. In developing the defined actions and timetables for achieving the WQBEL for each STA, USEPA conducted extensive modeling and analysis, working with well-recognized experts in wetland treatment systems that have extensive experience working on Everglades restoration. Based on this analysis, the total expected treatment area expansion in the Everglades Agricultural Area needed to meet the WQBEL is approximately 42,000 acres.

The SFWMD recently announced the planned purchase of 8,900 acres of agricultural land in the Eastern Flow Path and 17,900 acres of citrus groves in the Western Flow Path<sup>1</sup> from U.S. Sugar Corporation. These purchases are to be finalized in October 2010. This pending land purchase, in addition to lands already in state ownership (the EAA-A1 and EAA-A2 compartments), provides substantial acreage for attaining the WQBEL identified in this Amended Determination.

In developing the defined actions and timetables, USEPA assumed that no additional source controls will be undertaken. However, USEPA believes that, in addition to the remedies outlined in this Amended Determination, the State should pursue further source controls through improved on-farm best management practices (BMPs) and/or sub-basin treatment approaches as required by the Amended EFA. Reducing the concentration and load of TP entering the STAs

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<sup>1</sup> USEPA refers to three distinct flow paths for runoff water from the EAA and the C-139 Basin. These are the Eastern Flow Path that drains the urban and eastern basins of the EAA through STA 1E and STA 1W to the Refuge; the Central Flow Path that drains the central basins of the EAA through STA 2/Compartment B and STA 3/4 to WCA 2A and 3A; and the Western Flow Path that drains the C-139 Basin and the western part of the EAA through the STA 5, STA 6, and Compartment C complex into WCA 3A.

through improved source control could further optimize the performance of the STAs and could reduce the land area needed to treat the increased flows anticipated in the future as Everglades restoration proceeds.

There may be possible alternative remedies to those proposed by USEPA based on various combinations of improved or expanded source or flow controls and different configurations of STAs and flow equalization basins (FEBs).<sup>2</sup> Given that further refined modeling may identify remedies that are capable of removing TP in order to achieve the WQBEL, USEPA believes it is appropriate to provide an opportunity to the South Florida Water Management District (SFWMD), as the permittee, to provide USEPA and FDEP technical input on remedies identified in the Amended Determination. Therefore, USEPA is offering SFWMD 60 days to submit to USEPA and FDEP any alternative remedies that will achieve the WQBEL as soon or sooner than the remedies identified by USEPA. Any such proposal must be submitted to USEPA and FDEP by November 2, 2010. The proposal must be accompanied by a schedule and specific milestones to ensure timely implementation. USEPA will evaluate any alternatives presented and consider incorporating a revised approach in subsequent permitting, compliance, and/or enforcement proceedings. If USEPA finds the alternative(s) to be acceptable and consistent with the expectations outlined in this Amended Determination, USEPA expects to respond to any alternative remedy proposal provided by SFWMD, with a supplement to the Amended Determination, within 45 days of receipt.

Attachment B summarizes for each flow path the number of additional acres of STA or FEBs that will provide the level of treatment needed to achieve the WQBEL. Attachment B also provides the date that the STAs are projected to be discharging at levels consistent with the WQBEL based on the specified remedy.

The Amended Determination describes specific activities and dates for meeting these milestones along with critical assumptions and factors unique to each flow path. There are several key milestones that are generally applicable including:

1. Completing land acquisition (if necessary);
2. Completing detailed designs for STAs or FEBs;
3. Acquiring all necessary federal and state permits;
4. Completing construction; and
5. Discharging consistent with the WQBEL.

Attachment H and Section III.C.3.(b) identify a potential option for treating water in the Eastern Flow Path that involves building and operating a storage reservoir in the C51 basin. The

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<sup>2</sup> A flow-equalization basin (FEB) is a water storage area that can provide several benefits when used in combination with a downstream STA: provide some initial TP removal; capture peak flows during the wet season thereby reducing spikes in flow that can overload STAs and adversely affect performance; and allow water captured during the wet season to be metered out to the STA into the dry season to keep the STA from drying out.

State did not provide adequate assurance to USEPA of the success of this option prior to the release of this Amended Determination. The USEPA sees benefits with this potential option including: an increase in water flow to the Everglades Protection Area; better quality of water to the Refuge; fewer harmful fresh water diversions to the Lake Worth estuary; and meeting the WQBEL as early as 2017. The State is encouraged to submit adequate assurance of this option to the USEPA in its alternative remedies submittal on or before November 2, 2010.

In Section IV of this document, USEPA directs FDEP to take the following actions related to monitoring TP in the Everglades Protection Area:

1. Rectify deficiencies in the current monitoring network for measuring the achievement of the total phosphorus water quality criterion in the Everglades Protection Area; and
2. Enhance monitoring and reporting requirements, ensuring that water quality, soil TP concentrations, and changes in vegetation are tracked and evaluated to fully assess the individual and cumulative impacts of discharges into the Everglades Protection Area, and to monitor progress toward achieving the ambient water quality criterion for TP.

In Section V.A, USEPA directs FDEP to conform NPDES permits for all STAs consistent with specific instructions which USEPA provides regarding:

1. Removing all reference to the non-conforming elements of the Long Term Plan, the moderating provisions and the extended compliance schedules;
2. Incorporating the WQBEL, including added provisions for providing early warning of possible non-compliance with the WQBEL and reporting excess TP loads if the WQBEL is not met;
3. Updating various items that must be included in each Annual Report, as well as, the pollution prevention and operational plans for each STA; and
4. Requiring water quality, vegetation, and sediment transect monitoring at locations downstream of the discharge points and within the Everglades marsh to determine the extent of phosphorus intrusion resulting from the STA discharges and to determine if these discharges cause or contribute to violations of water quality standards.

The 2010 Order directed USEPA to immediately initiate and carry out its authority to withdraw approval of the State program pertaining to issuance of any new NPDES permits for discharges into, or within, the Everglades Protection Area, or for any future modifications to existing NPDES permits (including through State of Florida Administrative Orders). However, as described in Section V.B., on July 29, 2010, USEPA filed a Rule 60(b) Motion for Modification of Injunction requesting that the Court amend the provision in the 2010 Order that requires USEPA to initiate and carry out partial withdrawal of Florida's NPDES permitting authority and allow the substitution of a new injunctive provision that would apply after the existing permits have been conformed pursuant to the Court's Order. On August 2, 2010, the Court issued an order scheduling oral argument on USEPA's motion for October 7, 2010.

Because the Court has taken USEPA's motion under consideration and USEPA will not know the Court's disposition of its Rule 60(b) Motion prior to issuance of its Amended Determination, and because USEPA believes it lacks authority under the CWA to do a partial program withdrawal, it has not commenced initiation of withdrawal of FDEP's NPDES permitting program for the Everglades Protection Area. Instead, it awaits a ruling by the Court on the pending Rule 60(b) motion.

Section VI explains how all of the components of this Amended Determination provide an enforceable framework for ensuring compliance with the CWA and its applicable regulations. This includes:

1. Requiring the State to amend its water quality standards to bring them into compliance with the CWA;
2. Conforming all NPDES and EFA permits for discharges from the STAs into the Everglades Protection Area to include a WQBEL to meet water quality standards;
3. Providing clear, specific, and comprehensive instructions to the State on actions to ensure compliance with the WQBEL;
4. Exercising USEPA's full CWA enforcement authorities to ensure compliance with the WQBELs; and
5. Exercising USEPA's CWA permitting oversight authority to ensure all future permits comply with the CWA and implementing regulations.

Section VII of the document discusses the important relationship between this Amended Determination and actions being undertaken by the District Court in the case pending before the Honorable Federico A. Moreno, *US v. SFMWD*, Case No. 88-CV-1886-FAM (S.D. Fla.).

**United States Environmental Protection Agency  
Amended Determination**

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## Introduction

In its April 14, 2010 Order (2010 Order), the United States District Court, Southern District of Florida, directed USEPA and FDEP to carry out specific steps to meet their mandatory duties to achieve water quality standards in the Everglades Protection Area.<sup>3</sup> *Miccosukee Tribe of Indians of Florida; and Friends of the Everglades v. United States of America, et al.*, No. 04-21488-GOLD/MCALILEY (and consolidated cases). This document responds to the 2010 Order.

In the 2008 Order, the Court granted partial summary judgment for the plaintiffs and partial summary judgment for the defendants. This 2008 Order decided consolidated cases brought against the USEPA by the Miccosukee Tribe of Indians of Florida (Tribe) and the Friends of the Everglades (FOE). Both the Tribe and FOE sought review of USEPA's determination that the Everglades Forever Act Amendments (Amended EFA) were not new or revised water quality standards subject to review under section 303(c) of the Clean Water Act (CWA) and sought to have the Court order USEPA to disapprove those amendments. The Tribe and FOE also alleged that USEPA's actions approving parts of the Phosphorus Rule (the Phosphorus Rule or TP Rule) as new or revised water quality standards were arbitrary and capricious. Lastly, the Tribe and FOE sought review of USEPA's determination that other parts of the Phosphorus Rule were not new or revised water quality standards.

In its 2008 Order, the Court determined the Amended EFA were new or revised water quality standards and ordered USEPA "to comply with its duty under the CWA to approve or disapprove those changes consistent with the findings and conclusions" set forth in the Court's Order. Order at 99 (para. 1). The Court affirmed USEPA's determinations approving the 10 parts per billion (ppb) numeric criterion for phosphorus and the implementation methodology (the four-part test) as meeting the requirements of the CWA. Order at 99 (para. 6). The Court concluded that subsections (4)(d)(2)(c)<sup>4</sup>, (5)(b)(3), 5(d), and 6 of the Phosphorus Rule do not meet the requirements of the CWA and declared those subsections invalid. The Court set aside USEPA's determinations approving these subsections. Order at 100 (para. 6). The Court also set aside USEPA's determinations that subsections (1), (2), and (5)(a)-(c) were not changes to water quality standards and ordered USEPA on remand "to comply with its duty under the CWA to approve or disapprove those changes in a manner consistent with the findings and conclusions" of the Court. Order at 100 (para. 8).

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<sup>3</sup>This matter has a long history and over the years USEPA has issued a number of determinations that provide additional background on the historical actions that have preceded this amended determination. Footnote 44 of the July 2008 Order summarizes four of USEPA's recent determinations (January 24, 2005, July 27, 2005, May 8, 2006, and May 31, 2006). USEPA determinations from November 5, 2003 and September 15, 1999 contain additional background information.

<sup>4</sup> Subsection (4)(d)(2)(c) is the fourth prong of the four-part test. USEPA raised this issue in the 2009 Determination, noting that the Court's focus appears to be the sentence in the paragraph that follows the four-part test provision: "If these limits are not met, no action shall be required, provided that the net improvement or hydropattern restoration provisions of subsection (6) below are met." See 2009 Determination, page 10, referencing fn 1.

Throughout both the 2008 Order and 2010 Order, the Court refers to this provision as the "no-action" or "escape clause." Order at 82, 85, and 97. Therefore, for purposes of this amended determination, reference to Subsection (4)(d)(2)(c) and Subsection (4)(d)(2) refer to the sentence quoted in this footnote and not the fourth prong of the four-part test.

In response to the Court's 2008 Order, USEPA issued its Determination on December 3, 2009. USEPA's 2009 Determination disapproved the following parts of the Amended EFA: subsection (3), including paragraphs (3)(b), (3)(c), (3)(d), and (3)(e), as well as subparagraphs (4)(e)(2), (4)(e)(3), and subsection (10), and other provisions relating to the Long Term Plan or modification to the compliance date. USEPA also disapproved the following parts of the Phosphorus Rule: subsections (1), (2), (5)(a-d), and (6). Although the Court in its 2010 Order found that USEPA's disapprovals of those provisions were consistent with the requirements of the 2008 Order, several parts of USEPA's 2009 Determination were stricken by the Court in its 2010 Order and those are discussed further in Section I.

### **Amended Determination**

In the 2010 Order, the Court directed USEPA to issue an Amended Determination no later than September 3, 2010. The 2010 Order contained specific directives to USEPA on steps that need to be taken and included in the Amended Determination. The remainder of this document addresses the requirements of the 2010 Order and lays out the steps that the State of Florida must complete and, where applicable, specifically describes USEPA's actions if the State fails to respond accordingly. The Court's 2010 Order required the following:

1. "All provisions of the 2009 Determination which have been stricken by this Order shall be excluded from the Amended Determination." [2010 Order, page 47, paragraph 8]
2. "On remand, the [US]EPA shall issue an Amended Determination ('Amended Determination') **not later than Friday, September 3, 2010** that meets the requirements of this paragraph and the paragraphs that follow. The Amended Determination shall specifically direct the State of Florida to correct the deficiencies in the Amended EFA and the Phosphorus Rule that have been invalidated in a manner consistent with **Attachments B and C of this Order**. The USEPA shall require the State of Florida to commence and complete rule-making for the Phosphorus Rule within 120 days from the date of the Amended Determination and shall require amendments to the Amended EFA to be enacted by July 1, 2011. In the event the State of Florida fails to timely act, the [US]EPA shall provide timely notice, and the [US]EPA Administrator 'shall promulgate such standard[s]' pursuant to 33 U.S.C. § 1313(c) (Emphasis in original)." [2010 Order, page 44, paragraph 1]
3. "The [US]EPA Administrator, through the Amended Determination, shall notify the State of Florida that it is out-of-compliance with the narrative and nutrient standards for the Everglades Protection Area. The Amended Determination shall provide clear, specific and comprehensive instructions to the State of Florida on the manner and method to obtain enforceable [water quality-based effluent limits] WQBELs within a time certain, consistent with the Clean Water Act and its implementing regulations, the Summary Judgment Order and this Order. The Amended Determination shall specify without equivocation that compliance must occur in accordance with **specific milestones to be established in the Amended Determination** that provides an **enforceable framework for ensuring compliance** with the CWA and its applicable regulations. Furthermore, it shall require the State of Florida to measure on a yearly basis the cumulative impacts and effects of



phosphorus intrusion beyond the 10 ppb standard within the Everglades Protection Area until such time as full compliance with the 10 ppb standard is achieved. I underscore that the [US]EPA must establish **specific milestones** to ensure that the State of Florida does not continue to ignore, and improperly extend, the compliance deadline for meeting the phosphorus narrative and numeric criterion in the Everglades Protection Area (Emphasis in original).” [2010 Order, page 45, paragraph 2]

4. “The [US]EPA, in its Amended Determination, shall direct the State of Florida to conform all NPDES permits for STAs 1, 2, 3, 4, 5 and 6 – along with the accompanying Administrative Orders and Everglades Forever Act permits listed in **Attachment A** to this Order – to the Clean Water Act, the Summary Judgment Order and this Order so as to eliminate all references to the non-conforming elements of the Long-Term Plan, the moderating provisions and the extended compliance schedule through 2016, and to require compliance with the phosphorus narrative and numeric criterion in a manner consistent with the Clean Water Act and the forthcoming Amended Determination. All such permits shall be conformed not later than sixty (60) days of the date of the Amended Determination and shall be promptly filed with this Court (Emphasis in original).” [2010 Order, page 45, paragraph 3]

5. “On remand, the [US]EPA, in its Amended Determination, shall immediately initiate and carry out its authority under Section IX of the Memorandum of Understanding to withdraw approval of the State program pertaining to the issuance of any new NPDES permits for discharges into, or within, the Everglades Protection Area, or for any further modifications to existing NPDES permits (including through State of Florida Administrative Orders) – other than to carry out the requirements of Paragraph 3 [of the 2010 Order], above – until such time as the State of Florida is in full compliance with the Clean Water Act, its implementing regulations, the Summary Judgment Order, this Order, and the forthcoming Amended [US]EPA Determination.” [2010 Order, page 46, paragraph 4]

6. “Other than to carry out the requirements of Paragraph 3 [of the 2010 Order], above, the FDEP is enjoined from issuing any new NPDES permits, or modifications to existing NPDES permits - through State of Florida Administrative Orders, Everglades Forever Act permits or otherwise - for STAs that discharge into, or within, the Everglades Protection Area **until such time** as the State of Florida is found by the [US]EPA and this Court to be in full compliance with the Clean Water Act, its implementing regulations, the Summary Judgment Order, and this Order. All new Administrative Orders and Everglades Forever Act permits issued under the laws of the State of Florida must conform to, and comply with, the Clean Water Act, its implementing regulations, the Summary Judgment Order, and this Order and the forthcoming Amended [US]EPA Determination (Emphasis in original).” [2010 Order, page 46, paragraph 5]

The remainder of this Amended Determination responds to items 1 through 6 listed above. Item 1 is addressed in Section I. Item 2 is addressed in detail within Section II. Item 3 is covered in Sections III and IV. Items 4, 5, and 6 are addressed by Section V. Sections VI and VII describe in further detail USEPA’s expectations with regard to the implementation of the

enforceable framework and the relationship to the case pending before the Honorable Federico A. Moreno, US v. SFMWD, Case No. 88-CV-1886-FAM (S.D. Fla.) (Consent Decree Case).<sup>5</sup>

This Amended Determination also describes an “enforceable framework” to which the Court referred in the 2008 and 2010 Orders. In addition to addressing the factors discussed in the 1999 Determination (which the Court references in both its 2008 and 2010 Orders), this Amended Determination describes additional measures necessary for an enforceable framework: the specific actions and timetables milestones that will need to be carried out to achieve the water quality based effluent limit (WQBEL), described in Section III.B., which is designed to meet the narrative and numeric water quality criteria for total phosphorus in the Everglades Protection Area.

The objective of this Amended Determination is to satisfy the Court’s directives in the 2010 Order, consistent with the CWA and implementing regulations, and to ensure that the water quality entering the Everglades Protection Area from the Everglades Agricultural Area (EAA) and C-139 Basin will achieve the narrative and numeric criteria, by meeting a scientifically sound WQBEL, in the shortest time possible.

## **I. Revisions to USEPA’s 2009 Determination**

As part of this Amended Determination, USEPA is making specific revisions to its 2009 Determination consistent with the Court’s 2010 Order. Pursuant to the Order, “[a]ll provisions of the 2009 Determination which have been stricken by this Order shall be excluded from the Amended Determination.” The following language (shown as stricken text) from the 2009 Determination is removed and no longer valid. Pursuant to its authority under CWA 303(c)(3), USEPA has determined that various aspects of the revised standards in the Amended EFA and Phosphorus Rule are not consistent with the CWA and, therefore, such provisions are invalid. The 2009 Determination is revised accordingly. Attachment D is a copy of the 2009 Determination which shows the stricken text. The remainder of the 2009 Determination remains in effect.

Item 3 on page 2 of the December 3, 2009 Determination is revised as follows:

3. Florida Department of Environmental Protection (FDEP ) is enjoined from issuing any permits for discharges in, or within, the Everglades Protection Area (EPA) under subsection (5)(b)(3), 5(d) and (6) of the Phosphorus Rule, and the “no action” provision of subsection (4)(d)(2)(c). ~~USEPA understands that FDEP is complying with this provision of the Order. FDEP has not issued any permits utilizing these provisions of the Phosphorus Rule and has indicated they do not plan to.~~

The Court’s rationale for striking the last two sentences of item 3 can be found on pages 22-24 and 35 of the 2010 Order. The Court found that FDEP had issued permits utilizing invalidated provisions of the Phosphorus Rule. The Court found that FDEP included compliance schedules

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<sup>5</sup> The 2010 Order discussed the relationship between the Consent Decree Case and the consolidated cases filed by the Tribe and FOE before Judge Gold. 2010 Order at 29. This is discussed in more detail below in Section VII.

that were blanket variances issued without following the procedure for use attainability analysis (UAA) required for variances under the CWA and its implementing regulations.

The second footnote on page 2 of the December 3, 2009 Determination is revised as follows:

FDEP issued National Pollutant Discharge Elimination System (NPDES) permits for Stormwater Treatment Areas (STA) 2, 5, and 6 on September 4, 2007, while this case was pending. ~~Those permits included water quality based effluent limits (“WQBELs”), compliance schedules, and interim limits. The permits did not include moderating provisions or variances. This approach is consistent with the Court’s statements concerning “authorizing compliance schedules in individual permits on a case by case basis.” (Order at 45-46).~~ The permits were not challenged by any parties and became effective at the end of the notice period.

Several locations in the 2010 Order address the Court’s rationale for striking most of the second footnote on page 2. Pages 18-19 refer to USEPA’s failure to recognize the Administrative Orders (AOs) issued by the State in 2009 as inconsistent with the 2008 Order. Pages 22-23 hold that USEPA’s conclusion that State permits did not include moderating provisions or variances is incorrect. Since the Court found that the AOs included moderating provisions or variances, under the CWA, a UAA is required. Furthermore, as indicated on page 24, since “no use attainability analyses have been conducted,” the conclusion that the approach is consistent with the 2008 Order is no longer valid.

The last paragraph on page 10 of the December 3, 2009 Determination is revised as follows:

Lastly, the provisions that USEPA is disapproving today had the effect of being less protective than the numeric criterion. The provisions that USEPA is disapproving today and the provisions that the Court declared invalid are no longer in effect for CWA purposes. The USEPA approved criterion and implementing methodology remain in effect for CWA purposes. ~~Because the criterion and implementing methodology are fully protective of the designated use, there is no need for the state of Florida or USEPA to take any further action pursuant to CWA section 303(c).~~

The Court’s rationale for striking the last sentence of page 10 can be found on page 15 of the 2010 Order. Page 15 describes USEPA’s failure to complete an analysis of the effect of Florida’s non-compliance as well as a lack of further specific direction to the State regarding necessary actions to ensure an enforceable framework. The stricken language of the 2009 Determination is no longer valid and this Amended Determination is intended to address those specific requirements for the State and USEPA. The direction that USEPA is providing to the State in this section (section I) for amending its water quality standards is in accordance with the Court's order and pursuant to USEPA's authority under section 303(c) of the CWA. Under CWA section 303(c), revisions made by the State in response to this Amended Determination must be submitted to USEPA for review and approval.

## **II. Directions for Correcting Deficiencies in Florida's Phosphorus Rule and the Amended Everglades Forever Act**

In its 2010 Order, the Court specified the changes to be made by FDEP to the Phosphorus Rule [see Attachment C, April 2010 Order]. USEPA filed a Rule 60(b) Motion asking the Court to modify its injunction involving specific changes the Court had ordered. Pending the outcome of the Rule 60(b) process, Attachment E reflects the changes USEPA asked the Court to make. If the Court denies this portion of the 60(b) motion, USEPA will take the appropriate actions to modify Attachment E. As required by the Court (Order at 44 – 45) and based on USEPA’s authority under CWA section 303(c)(3), USEPA directs the FDEP to revise 62-302.540, Florida Administrative Code (F.A.C.) [Water Quality Standards for Phosphorus Within the Everglades Protection Area] to be consistent with Attachment E of this Amended Determination. FDEP is directed to complete its rulemaking by January 1, 2011. If FDEP has not finalized revisions to the Phosphorus Rule consistent with Attachment E by this date, USEPA will initiate rulemaking to promulgate the necessary revisions pursuant to CWA section 303(c) consistent with the Court’s 2010 Order (at 44 - 45).

As required by the Court (Order at 44 – 45) and based on USEPA’s authority under CWA section 303(c)(3), USEPA also directs the State of Florida to correct deficiencies in the Amended EFA consistent with Attachment F of this Amended Determination. As noted above, USEPA filed a Rule 60(b) motion asking the Court to modify its injunction concerning the language it struck in the Amended EFA. Pending the outcome of the Rule 60(b) process, Attachment F reflects the changes USEPA asked the Court to make. If the Court denies this portion of the 60(b) motion, USEPA will take the appropriate actions to modify Attachment F. The State of Florida is directed to enact amendments to the Amended EFA by July 1, 2011. If the State of Florida fails to act in a timely manner, USEPA will initiate rulemaking to promulgate revised standards pursuant to CWA section 303(c) to be consistent with the Court’s 2010 Order (at 44 - 45). In its 2010 Order, the Court specified the changes to be made by the State of Florida to the Amended EFA [see Attachment B, April 2010 Order].<sup>6</sup>

The direction that USEPA is providing to the State in this section (section II) for amending its water quality standards is in accordance with the Court's order and pursuant to the USEPA's authority under section 303(c) of the CWA. Under CWA section 303(c), revisions made by the State in response to this Amended Determination must be submitted to USEPA for review and approval.

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<sup>6</sup> In the recent Rule 60(b) motion, USEPA, among other things, asked the Court to modify its injunction involving certain language the Court struck from the Amended EFA in subsection 4(a) which could have the unintended effect of limiting the use of the ad valorem taxes for optimizing, operating and maintaining the Everglades Construction Project (ECP) which includes the existing STAs. An important aspect of the enforceable mechanism that USEPA considered in its 1999 Determination was the identification of funding sources to pay for the restoration projects. The inability to use these taxes for the ECP could limit the ability of the State to fund projects as described in this Amended Determination.

### III. Manner and Method to Obtain Enforceable WQBEL Within Time Certain

#### A. Non-Attainment of Narrative and Numeric Nutrient Criteria Throughout Everglades Protection Area

Pursuant to the Court's Order (2010 Order, p 45), USEPA is notifying the FDEP that the narrative and numeric nutrient criteria<sup>7</sup> are not being met for the Everglades Protection Area.<sup>8</sup> Using the most recent report published by the South Florida Water Management District (SFWMD) and the FDEP, the *2010 South Florida Environmental Report* (the 2010 SFER), the data indicate that levels of total phosphorus (TP) at inflows to the Refuge, WCA 2, and WCA 3 have decreased since the 1980s. However, all parts of the Everglades Protection Area do not yet meet the nutrient criteria, and further reductions of TP in the inflows to the Everglades must be achieved if further degradation is to be prevented and the criteria are to be achieved. We have summarized below the pertinent analyses of historical data from several sources to document this conclusion.

#### 1. Water Quality

The 2010 SFER summarizes the status of attainment with the numeric 10 ppb TP criterion (expressed as a geometric mean), as well as the observed data and trends, in the Everglades Protection Area. Figures 3A-10 through 3A-12 of the 2010 SFER provide the annual geometric mean TP concentrations during the entire period of record from Water Year (WY) 1978-2009 for the Everglades Protection Area inflow and interior sites. As demonstrated in those figures, the concentrations of TP at inflows to the Refuge and WCAs 2 and 3 have decreased; however, the inflow concentrations are still not at or below the applicable 10 ppb criterion (geometric mean). For WY2009, which includes the period May 1, 2008 through April 30, 2009, page 3A-42 of the 2010 SFER indicates that approximately 30% of interior marsh sites within the Everglades Protection Area exhibited annual geometric mean TP concentrations of 10 ppb or higher and approximately 16% of interior marsh sites exceeded the annual geometric mean TP concentration of 15 ppb, the annual maximum cap in the Phosphorus Rule's four-part test for measuring achievement with the TP numeric criterion.<sup>9</sup> Annual data for the phosphorus-impacted stations at the periphery of the Everglades Protection Area indicate concentrations above 15 ppb at all stations (2010 SFER Appendix 3A). Furthermore, WY2009 monitoring along transects downstream of Stormwater Treatment Areas (STA) 1E, 1W, and 2 confirm that at

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<sup>7</sup> See Section III.B.1. for the definitions of the narrative and numeric criteria.

<sup>8</sup> The Court's Order directed USEPA to notify the State that it was out of compliance with the nutrient standards. The CWA does not consider a State to be "out of compliance" with the Act if water quality standards are not being attained. The CWA does require States to take actions to meet standards (e.g., include effluent limits in permits to meet standards) and to take actions when standards are not being attained (e.g., identify impaired waters and develop total maximum daily loads). To carry out the Court's Order, USEPA is notifying the State that it is not attaining their nutrient standards in the Everglades Protection Area.

<sup>9</sup> The TP criterion rule for the Everglades Protection Area, approved by USEPA, includes a four-part assessment methodology (four-part test). The purpose of this test is to serve as an assessment method to determine whether the long-term (decades) 10 ppb geometric mean criterion is being achieved on a short-term (annual) basis. The intent of the four-part test is to place an upper limit on TP concentration in the Everglades marsh and limit the variability in TP concentration allowed by the compliance test to the variability observed at marsh reference sites. Evaluations of this test have concluded that attaining these four concentration requirements together assures that the long-term TP concentration does not exceed the 10 ppb geometric mean criterion (USEPA 2005, Walker 2005).

marsh locations nearest to the STA discharges, at all transects in the Refuge and WCA2A, surface water TP exceeds 15 ppb (2010 SFER at 5-37).

From 2005 to 2009, the average annual TP concentrations being discharged from the urban basins, EAA, and the C-139 Basin into the Everglades Protection Area were 89.9 ppb for the Refuge, 31.0 ppb for WCA 2A, and 33.7 ppb for WCA 3A (2010 SFER executive summary p. 10). For 2009, the average annual TP concentrations discharged from the six STAs ranged from 13 ppb (STA 3/4) to 94 ppb (STA 6) (2010 SFER at 5-12).

## 2. Attainment of the TP Water Quality Criterion

Pages 3A-55 and 56 of the 2010 SFER address whether the TP criterion has been achieved in the Everglades Protection Area. The areas with soil phosphorus concentrations less than 500 mg/kg, in each WCA, including the Refuge, passed all four parts of the criterion test and were therefore considered by USEPA to be in attainment with the 10 ppb TP criterion.<sup>10</sup> However, the areas with soil phosphorus concentrations greater than 500 mg/kg failed one or more parts of the four-part test and therefore exceeded the criterion. Specifically, the WY2009 assessment of the four-part test confirms that surface water in the Refuge, WCA 3A and WCA 2A, at stations near water inflow structures and overlaying areas with high soil TP, still does not meet the TP criterion, with annual geometric mean TP concentrations as high as 61 ppb (site X1) in the Refuge, 35 ppb (F5) in WCA 2A and 23 ppb (CA36) in WCA 3A (2010 SFER App 3A-6).

## 3. Soil and Vegetation Changes

Between 2004 and 2009, four publications by scientists from several agencies and universities independently concluded that soil TP concentrations have worsened in parts of the Everglades Protection Area. In USEPA's 2007 Regional Environmental Monitoring and Assessment Program (R-EMAP) Status Report, USEPA summarized the soil conditions observed in 1995-96 and 2005. An excerpt from pages 62-63 of the 2007 report provides a succinct summary of the soil TP concentrations:

Program data indicate that in 2005 the area of the Everglades with soil TP concentrations exceeding 500 mg/kg was  $24.5 \pm 6.4\%$ , while  $49.3 \pm 7.1\%$  of the 2063 square miles sampled exceeded 400 mg/kg (Figures 45 and 46). This contrasts with  $16.3 \pm 4.1\%$  exceeding 500 mg/kg in 1995-96, and  $33.7 \pm 5.4\%$  exceeding 400 mg/kg. Figure 47 shows the most recent (2003-2005) soil TP data at 1270 locations from all of the programs sampling in the Everglades (R-EMAP, University of Florida – SFWMD, and Florida or federal permit transect monitoring). Depicted as mg/kg, WCA 3A north of Alligator Alley, northern WCA 2A, and the edges of the Refuge most proximate to canals have the highest soil phosphorus in the portion of the Everglades underlain by peat soil (Figure 47). There are also several locations throughout southern WCA 3A and the Park with soil TP in excess of 500 mg/kg. However, these locations have no corroborative

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<sup>10</sup> The Court's 2010 Order struck the definitions of unimpacted and impacted from the Phosphorus Rule. Because these definitions are used in the Rule for provisions that the Court did not strike, USEPA recommended in its July 29, 2010 Rule 60(b) motion to not strike those definitions. (Rule 60(b) motion, pages 19-20)

second indicator of enrichment such as water TP exceeding 10 ppb, presence of cattail, or altered periphyton communities.

Based on the information presented above, the percent of the Everglades with TP soil concentrations in excess of 500 mg/kg in 1995/1996 was approximately 16% (211,000 acres). By 2005, the high TP soil portion of the Everglades was approximately 24% (317,000 acres). In the 10 years between 1995 and 2005, TP-impacted areas increased by approximately 106,000 acres, or 50%.

As noted in the 2007 R-EMAP report, other scientific studies also documented increases in Everglades soil TP in recent years. Grunwald, et al. documented spatial expansion of elevated soil TP within WCA 2A from 1990 to 1998, concluding that, within WCA 2A, the mean soil TP concentration increased from 661 mg/kg to 860 mg/kg over this eight-year period.<sup>11</sup> Bruland, et al. analyzed soil TP data within WCA 3 collected from 1992 and 2003 and concluded that the area with soil TP > 500 mg/kg increased from about 21% (124,000 acres) to 30% (177,000 acres) over these 11 years.<sup>12</sup> Marchant, et al. documented an expansion of TP-enriched soils farther into the Refuge from 1991 to 2003.<sup>13</sup> The expansion of the high TP soils could be due to several causes: TP in discharges from the Everglades Construction Projects (the STAs) into the Everglades Protection Area in excess of the 10 ppb criterion; release of TP already present in upstream Everglades soils; and chemical processes in the soil, such as oxidation.<sup>14</sup>

The expanses of cattails in WCA 2A, WCA 3A, and the Refuge are associated with the areas of high TP in soils in the northern parts of WCA 2A and 3A and around the edges of the Refuge. The conversion of open-water sloughs to dense stands of cattail results in the loss of the vegetation mosaic that is a defining characteristic of the Everglades. This conversion results in a loss of wading bird foraging habitat, and is an indicator of a nutrient-induced imbalance in flora and fauna. In the 2007 R-EMAP Report, USEPA found that “the expanse of cattail in the northern WCA 3 is evident, as it is in peripheral portions of the Refuge and WCA 2” and that “cattail was documented as being present, but not necessarily dominant, at 19% of the R-EMAP sites sampled in 2005.” In 2008, SFWMD scientists reported that the surface area of cattail in WCA 2A increased from 13,500 acres in 1991 to 23,000 acres in 1995, and then to 29,200 acres in 2003.<sup>15</sup> While the rate of change between these periods slowed from 2,374 acres/year to 770 acres/year, the vegetation in the Everglades continued to be altered over the 12-year period.

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<sup>11</sup> Grunwald, S., K. R. Reddy, S. Newman and W. F. Debusk. 2004. Spatial variability, distribution and uncertainty assessment of soil phosphorus in a south Florida wetland. *Environmetrics* 15:811-825.

<sup>12</sup> Bruland, Gregory L, Todd Z. Osborne, K. R. Reddy, Sabine Grunwald, Susan Newman and William F. DeBusk. 2007. Recent changes in soil TP in the Everglades: Water Conservation Area 3. *Environmental Monitoring and Assessment* 129:379-395.

<sup>13</sup> Marchant, B. P., S. Newman, R. Corstanje, K. R. Reddy, T. Z. Osborne, R. M. Lark. 2009. Spatial monitoring of a non-stationary soil property: phosphorus in a Florida water conservation area. *European Journal of Soil Science* 60(5):757-769.

<sup>14</sup> The effective treatment area of STAs has increased from about 18,000 acres in WY2003 to 43,000 acres in WY2009. (2004 SFER chapter 4 and 2010 SFER chapter 5).

<sup>15</sup> Rutchey, K, T. Schall and F. Sklar. 2008. Development of vegetation maps for assessing Everglades restoration progress. *Wetlands* 28(3):806-816.

The information presented above demonstrates that excess phosphorus continues to be discharged into the Everglades Protection Area, and that significant areas of the Everglades Protection Area continue to not attain the narrative and numeric water quality criteria.

#### B. WQBEL for the STAs That Implements the Numeric Water Quality Criterion of 10 ppb as a Long-term Geometric Mean

A critical component of an enforceable framework is a specific WQBEL to ensure that the STA discharges will not cause exceedances of the numeric criterion throughout the Everglades Protection Area. The WQBEL derived by USEPA to limit the STA discharges into the Everglades Protection Area has two components:

TP concentrations in the discharge may not exceed either:

- 10 ppb as an annual geometric mean (GM) in more than two consecutive years; or
- 18 ppb as an annual flow-weighted mean (FWM).

Compliance with both parts of the WQBEL will assure that the STA discharges will not cause an exceedance of the long-term criterion of 10 ppb. The background and statistical approach for derivation of each WQBEL component is summarized below. USEPA's WQBEL Technical Support Document (Attachment G) contains more detailed technical analysis and references. In a manner analogous to the two elements of the four-part test to assess attainment of the underlying water quality criterion cited in subsection 1 below, the WQBEL has: 1) a longer-term component (the 10 ppb GM not to be exceeded in more than two consecutive years) that assesses compliance with the water quality criterion well in advance of the criterion's longer timeframe; and 2) a short-term (higher) annual limit (the 18 ppb annual FWM) that caps the maximum TP level that can be discharged in a given year. Should FDEP propose an alternative approach to establishing a WQBEL, USEPA will evaluate its scientific rigor to ensure it appropriately implements the water quality criterion in accordance with the Clean Water Act (CWA) and its implementing regulations.

#### 1. The TP Criterion for the Everglades Protection Area

Because the WQBEL is derived from and must comply with the underlying water quality standard, it is important to understand the underlying TP criterion for the Everglades Protection Area. TP has been measured monthly since the 1970s at reference<sup>16</sup> locations within the Everglades marsh in WCA 2A, 10 to 20 miles downstream of any water inflows. These data demonstrate that TP concentrations at these reference marsh locations naturally fluctuate both spatially and temporally above and below 10 ppb at any individual station. Although TP levels fluctuate, the long-term geometric mean remains at or below 10 ppb, with no indication of biological or ecological impact or imbalance. Technical staff developing the criterion used the geometric mean because it represents the central tendency of environmental data that are log-

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<sup>16</sup> A reference station is a location that identifies the background level of water quality in the Everglades. These sites exhibit the unaltered ecosystem structure and function that are typical of a location with no evidence of phosphorus impacts or imbalance. Reference sites are routinely used to develop water quality criteria.



normally distributed (i.e., a distribution of data that has a preponderance of low values and relatively few high values), consistent with the measured phosphorus levels in the Everglades.

Relying on these data and analyses, in 2005 FDEP adopted and USEPA approved a water quality criterion expressed as a long-term TP geometric mean of 10 ppb for Class III waters in the Everglades Protection Area (see Florida Administrative Code (FAC) Rule 62-302.540). This 10 ppb geometric mean numeric criterion applies in addition to the existing narrative criterion, which states, “[i]n no case shall nutrient concentrations of a body of water be altered so as to cause an imbalance in natural populations of aquatic flora or fauna.” (see FAC Rule 62-302.530(48)(b)). The FDEP TP rule is also consistent with the State of Florida’s Everglades Forever Act (EFA) which similarly specifies, “[i]n no case shall such phosphorus criterion allow waters in the Everglades Protection Area to be altered so as to cause an imbalance in the natural populations of aquatic flora or fauna.” (see Florida Statutes 373.4592(4)(e)2).<sup>17</sup>

To determine whether the long-term criterion is being achieved in the Everglades marsh, the TP criterion rule approved by the USEPA includes a four-part assessment methodology (four-part test). The four-part test includes a longer-term 10 ppb GM value (over five years) that applies across all marsh stations and a short-term (annual) 15 ppb GM value that is the maximum that can occur at any individual marsh station. Use of both values places an upper cap on TP concentration in the Everglades marsh, while accounting for the variability observed at all marsh reference sites.

## 2. Description of Water Quality Based Effluent Limits (WQBEL)

Where technology-based permit effluent limits are not adequate to attain the water quality criterion of a waterbody, the CWA and implementing regulations for the CWA’s National Pollutant Discharge Elimination System (NPDES) program require that discharge limits in NPDES permits be set at levels to meet water quality standards (see CWA section 301(b)(1)(C) and 40 CFR § 122.44(d)(1) and (5)). These limits are known as WQBELs.

The NPDES regulations further require that WQBELs “derive from and comply with” all applicable water quality standards (see 40 CFR § 122.44(d)(1)(vii)(A)). USEPA recommends the use of statistical procedures that translate underlying water quality criteria into defensible, enforceable and protective WQBELs (USEPA 1996). Based on this underlying regulation and as a result of the translation, WQBELs may differ from the underlying water quality criterion.

NPDES regulations require that a WQBEL be expressed as a daily maximum and a monthly average, unless impractical (see 40 CFR § 122.45(d)). However, as a technical matter, USEPA understands that expressing permit effluent limitations for nutrients like phosphorus over shorter terms (for example, as a daily maximum, weekly average, or monthly average) may

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<sup>17</sup> The above summarizes the current situation but it is important to take note of the ongoing federal promulgation of numeric nutrient criteria for Class III waters in the State of Florida. Numeric nutrient criteria applicable to both inland and downstream estuarine and coastal waters of South Florida are expected to be proposed on November 14, 2011, and subsequently finalized on August 15, 2012. The process of developing those numeric nutrient criteria is ongoing at this time. Once finalized and implemented, those criteria may result in different ambient concentrations upstream of the STAs. In all cases upstream values must be protective of the downstream Everglades criterion. Florida Wildlife Federation v. Jackson, Doc. #90, N.D. Fla. Case No. 08-cv-324-RH-WCS.

be impractical and supports expression as annual permit limits since the effects of nutrients are expressed far afield and over longer time periods. Recent USEPA guidance for Chesapeake Bay permitting recognized this issue (USEPA 2004). USEPA is following the same approach for the WQBEL in this situation.<sup>18</sup>

### 3. Basis for Development and Use of a Flow-Weighted and Geometric Mean WQBEL

The naturally nutrient-poor marshes of the Everglades are affected by both the concentration and the load of phosphorus. Once it is discharged into the Everglades, this mass or load of TP cycles within the marsh where it can continue to impact flora and fauna. The higher load received from higher flows may accumulate in the marsh and affect its long-term observed concentrations.

In recognition of the importance of TP loading, all of the current phosphorus limits and water quality standards applied at water discharge structures in the Everglades, including the Park, express TP values as a FWM. In addition, the model used to size the STAs requires that TP data are expressed as a FWM. The FWM concentration is the average level of phosphorus in the water, weighted proportionally for the volume of flow during the time of sampling.

The current STA permits require that phosphorus data are collected weekly at discharge structures, and that the associated water flow rates are measured continuously. The calculation of FWM TP levels from such data gives greater weight to samples taken during high, rather than low, flows. Thus, high flow events resulting in higher TP loads discharged into the Everglades are directly measured and accounted for.

Establishing the annual cap as a FWM accounts for high flow TP loading events that can affect the cumulative delivery of phosphorus to the Everglades. Including a loading component provides additional protection and allows operational flexibility within the expected variability of the design parameters of the STA. In addition, an annual cap provides the means to evaluate performance and compliance on a more frequent basis than over a three-year period.

Because the underlying TP water quality criterion and each component of the four-part assessment methodology associated with that criterion are all expressed as a geometric mean, and to be consistent, USEPA chose to express the first part of the WQBEL as an annual GM. The annual GM cannot be exceeded in more than two consecutive years.

### 4. Method to Derive WQBEL

The WQBEL for STA discharges that USEPA developed is derived from and complies with the TP criterion for the Everglades Protection Area. To derive the WQBEL from the TP criterion, consistent with USEPA regulations, USEPA has applied a statistical approach that translates the 10 ppb long-term geometric mean water quality criterion averaged across the marsh stations to a single point at the discharge of the STAs. Based on the NPDES regulations

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<sup>18</sup> In the 2004 Guidance, USEPA concluded “that permit limits expressed as an annual limit are appropriate and that it is reasonable in this case to conclude that it is ‘impracticable’ to express permit effluent limitations as daily maximum, weekly average, or monthly average effluent limitations.”

cited above, a statistical approach that takes into account the variability of the pollutant concentration in the discharge is an appropriate method for deriving a WQBEL. USEPA relied on a statistical WQBEL approach for the Everglades STAs that used the long-term variability of TP and flows for these systems. (See Attachment G for a detailed analysis of the technical approach.)

As discussed above, the USEPA approach takes into consideration that the STA treatment systems are controlled marsh environments that will discharge variable concentrations of TP over time based on the influent concentrations and load of TP, the types of vegetation, variable flows and the operational practices for each STA. The construction and operation of the existing STAs has provided USEPA with substantial data on how they function. When all six STAs are considered together, there are about 50 years of historical data on TP concentration and flow values. Established statistical methods confirm that a strong relationship exists between the TP long-term GMs and FWMs at STA discharges.<sup>19</sup>

Inherent in the derivation of the WQBEL is an accounting for variability in the TP concentration at the discharge point. USEPA examined the year-to-year variability observed during STA operations over the past several years and compared this range of performance to an expected long-term performance that centers on the protective criterion. Because the STAs are not currently discharging at or below levels necessary to meet the underlying water quality criterion, USEPA statistically adjusted the historical STA TP data to simulate an STA discharging at the criterion - a long-term GM of 10 ppb. By adjusting the actual data to reflect levels that would meet the water quality criterion, USEPA can determine a range of acceptable TP concentrations at the STA discharge point that will meet the 10 ppb GM. Under this approach, a combination of the two values – 18 ppb FWM annual average and 10 ppb GM that cannot be exceeded in more than two consecutive years – are necessary to ensure that all relevant variability is accounted for and that the WQBEL will be stringent enough to meet the criteria as expressed in the 4-part test. Using this approach, the annual FWM TP concentration at the discharge point can be 18 ppb in any one year and still be protective of the marsh, as long as the annual GM of 10 ppb is also not exceeded in more than two consecutive years. This 18 ppb annual FWM discharge limit that must be met at each STA discharge every year represents a shorter term annual cap that helps to assure that the longer term average value would be met and is analogous to the four-part test 15 ppb GM value that must be met every year at each Everglades marsh station. As a result, USEPA is adopting the two-component WQBEL referenced above to be included in the NPDES and EFA permits for the STAs.

## 5. Conclusion

In this section (section III.B), USEPA is providing direction in this Amended Determination on the appropriate WQBEL for the STAs in accordance with the Court's order and in support of effective implementation by the State of its NPDES program authority under CWA section 402(b). USEPA has oversight authority over the state's program to help ensure its

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<sup>19</sup> USEPA's analysis shows a very strong correlation (correlation coefficient = 0.92) between the geometric mean and flow-weighted mean of TP at STA discharges: flow-weighted mean = 1.23 times the geometric mean. Therefore, for example, 10 ppb geometric mean = 12 ppb flow-weighted mean, and 15 ppb geometric mean = 18 ppb flow-weighted mean.

effective implementation, including the authority to object to state permits and issue a federal permit where a state's proposed permit is outside the guidelines and requirements of the CWA.

The WQBEL calculated using the statistical approach described above will allow the TP concentration discharged from the STA to vary within acceptable limits while ensuring that the discharges will not cause exceedances of the ambient water quality criterion of 10 ppb as a long-term GM in the Everglades marsh. Expressing one component of the WQBEL as a FWM concentration prevents annual high flow loading to the Everglades and is, therefore, more appropriate than relying solely on a limit expressed as a GM concentration. Using established statistical approaches, the average annual FWM TP concentration at the discharge point can be 18 ppb in any one year and still be protective of the marsh, as long as the annual GM of 10 ppb is also not exceeded in more than two consecutive years.

### C. Source Controls and Stormwater Treatment Area (STA) Expansions to Meet WQBEL

In the following discussion, USEPA refers to three distinct flow paths for runoff water from the EAA and the C-139 basins to reach the Everglades Protection Area. These are the Eastern Flow Path that drains the urban and eastern basins of the EAA through STA 1E and STA 1W to the Refuge; the Central Flow Path that drains the central basins of the EAA through STA 2/Compartment B and STA 3/4 to WCA 2A and 3A; and the Western Flow Path that drains the western portion of the EAA and the C-139 Basin through the STA 5, STA 6, and Compartment C complex into WCA 3A, flowing onto and through the Federal Reservation of the Seminole Tribe of Florida and the Federal Reservation of the Miccosukee Tribe of Indians of Florida.

As directed by the Court (2010 Order at 45), USEPA is providing clear, explicit, and comprehensive instructions to the State of Florida on the manner and method to obtain the WQBEL, including specific milestones. The total expansion required to meet the WQBEL is approximately 42,000 acres. The expansions identified by the USEPA in this Amended Determination assume that no additional source controls will be implemented that would reduce the inflow concentrations of TP to the current and anticipated expanded STAs. As we discuss below, USEPA expects the State to implement additional source controls consistent with its State law; however, as a conservative assumption, USEPA has designed the expansions based on existing inflow concentrations of TP.

The expansions discussed below include both STAs and flow equalization basins (FEBs). An FEB is a water storage feature located upstream of an STA that captures peak flows during the wet season, reducing flow spikes that can damage vegetation in the STA, and provides some TP treatment. Depending on the design, the FEB may also hold water until the dry season, and provide a needed source of water for the STA. For these reasons, USEPA has incorporated an FEB into the remedy design for the Western Flow Path. USEPA assumes that the FEB will be managed for the purpose of optimizing STA performance.

USEPA believes that further refined modeling may identify flow path-specific remedies that are equal to or better than the remedies presented in this Amended Determination in removing TP in a shorter or similar amount of time. USEPA believes it would be appropriate to provide an opportunity for the SFWMD as the permittee to provide USEPA technical input on

the remedies USEPA identifies in its Amended Determination. Therefore, USEPA is offering SFWMD the opportunity to submit within 60 days alternative remedies that could achieve WQBELs as soon or sooner than USEPA's recommended remedies. If SFWMD provides a sufficient demonstration, including modeling results that demonstrate an alternative approach will provide equal or better assurance of meeting WQBELs in the specified time frames than the remedy presented in this Amended Determination, USEPA and FDEP could take that information into account in evaluating whether there would be an alternative remedy in lieu of the remedy in this Amended Determination. USEPA would expect that any new remedy would need to be accompanied by a schedule and specific milestones to ensure timely implementation. USEPA and FDEP will evaluate the alternative presented and consider incorporating the revised approach in subsequent permitting, compliance, and enforcement proceedings. If USEPA finds the alternative(s) to be acceptable and consistent with the expectations outlined in this Amended Determination, USEPA will respond within 45 days of receiving the alternative remedy proposal with a supplement to the Amended Determination.

## 1. Source Control and Permitting Requirements

Starting with the 1991 Settlement Agreement in the Consent Decree Case, phosphorus control in the Everglades has been based on a combination of best management practices (BMPs) coupled with STAs. Although the specific requirements have changed over the years, the combination of source reduction and treatment continues to be the cornerstone of Everglades water quality restoration.

Subsection 4(f) of the 1994 EFA created a comprehensive permitting program for the farmers in the EAA and the C-139 Basin. The EFA requires farmers to obtain permits to develop BMPs to reduce the load of phosphorus leaving their farm basins by a specific amount, to implement a monitoring program to show the effectiveness of the BMP program and compliance with permits, and to continue to conduct research to identify water quality parameters that are not being significantly improved and identify further BMP strategies (see EFA Subsection 4(f)1 – 3, 5 and 6).<sup>20</sup> Under the permitting program, the farmers in the EAA basins have specific requirements to collectively reduce the phosphorus load in their discharges by a minimum of 25%; the C-139 Basin farmers are prohibited from collectively exceeding an annual average load of 28.7 metric tons for three consecutive years based on a specific period of record (1978 to 1988). Under this structure, as long as the farmers implemented BMPs, reduced the level of phosphorus leaving the basin as a whole by the specified amount, and met the taxing requirements of the EFA, no further actions were needed until December 31, 2006.<sup>21</sup> The SFWMD issues and enforces these permits.

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<sup>20</sup> Under EFA Subsection 4(f)(3)(b), a compliance schedule is not available to new land uses and new stormwater management systems.

<sup>21</sup> After Judge Davis found subsection 4(f) of the EFA to be a de facto suspension of water quality standards as it applied to the farm discharges, USEPA issued its 1999 Determination approving subsection 4(f) as a compliance schedule implementing the phosphorus criterion for the farmers. *Miccosukee Tribe of Indians vs. United States*, Case No 95-533-CIV-DAVIS (S.D.FL.), 9/14/08 Omnibus Order. In the 1999 Determination, USEPA approved the compliance schedule (which contained this BMP/STA-based approach), however, stating that "As noted above, the reasonableness and acceptability of the 12 year schedule also assumes that the December 31, 2006 deadline will be met." 1999 Determination, FN 15. In sum, USEPA agreed to let the existing regulatory structure stand until December 31, 2006, but as of that date additional actions could be required and were mandated by the EFA.

In the 2008 Court Order, citing USEPA's 1999 Determination, the Court recognized the December 31, 2006 date as a deadline for complying with the TP criterion. If the water delivered to the Everglades was not achieving applicable water quality standards including the numeric criterion for TP by this date, the State was required to take additional steps to reduce the levels of TP. Under the EFA, this includes SFWMD reissuing the farm permits with specific limits in those permits.

Specifically, Section 4(f) of the EFA provides:

3. The Legislature finds that through the implementation of the Everglades BMPs Program and the implementation of the Everglades Construction Project, reasonable further progress will be made towards addressing water quality requirements of the EAA canals and the Everglades Protection Area. Permittees within the EAA and the C-139 Basin who are in full compliance with the conditions of permits under chapters 40E-61 and 40E-63, Florida Administrative Code, have made all payments required under the Everglades Program, and are in compliance with subparagraph (a)7., if applicable, shall not be required to implement additional water quality improvement measures, prior to December 31, 2006, other than those required by subparagraph 2., with the following exceptions:

a. Nothing in this subparagraph shall limit the existing authority of the department or the district to limit or regulate discharges that pose a significant danger to the public health and safety; and

b. New land uses and new stormwater management facilities other than alterations to existing agricultural stormwater management systems for water quality improvements shall not be accorded the compliance established by this section. Permits may be required to implement improvements or alterations to existing agricultural water management systems.

4. As of December 31, 2006, all permits, including those issued prior to that date, shall require implementation of additional water quality measures, taking into account the water quality treatment actually provided by the STAs and the effectiveness of the BMPs. As of that date, no permittee's discharge shall cause or contribute to any violation of water quality standards in the Everglades Protection Area.

The December 31, 2006 permitting requirements applied equally to the EAA farmers as well as to the C-139 basin farmers.<sup>22</sup> See EFA 4(f)(6).

Despite the regulatory programs in place, concentrations of TP in runoff from the S-5A and C-139 Basins are greater in the last five years than over the full period of record based on

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<sup>22</sup> The C-139 Basin Rule has been amended and is scheduled to go before the SFWMD Board for adoption the week of September 6th, 2010. If adopted, it should become effective in November after public comment.

SFWMD data. The inflow concentration of TP has a significant effect on the outflow concentration of TP at the STA discharge point.<sup>23</sup> USEPA modeling indicates that reductions of TP in the inflow to the STAs can reduce the acreage of STAs required to meet the WQBEL (see Attachment H). As discussed above in Section III.A., portions of the Everglades Protection Area are not achieving either the numeric TP criterion or the narrative nutrient criterion. Although the existing BMP program and the current STAs are providing reductions in the level of phosphorus discharged to the Everglades Protection Area,<sup>24</sup> additional steps are needed to ensure the water quality criteria are achieved. For the purposes of this Amended Determination, the additional steps include expansions of the STAs and/or use of FEBs. However, USEPA believes that the SFWMD could utilize their existing statutory mechanisms, knowledge of inflow concentrations to the STAs, and modeling results, to quantify how a given level of source control can improve the efficiency of the STAs, or possibly decrease the necessary acreage required in the remedies below.

## 2. Expanded Stormwater Treatment: Actions and Milestones

In responding to the Court's order, USEPA evaluated the need for additional STAs or FEBs in each of the three flow paths in order to attain the WQBEL in discharges to the Everglades Protection Area. Based on modeling conducted by USEPA, the existing footprint of the STAs including the ongoing expansions in Compartment B and Compartment C is projected to discharge TP at the following annual FWM concentrations: 34 ppb from STA 1E and STA 1W; 20 ppb from the STA 2 and Compartment B complex; 16 ppb from the STA3/4; and 18 ppb from the STA5, STA 6 and Compartment C complex (see Attachment H for assumptions and model results). Without additional STA acreage and/or source controls, none of these STAs can be expected to meet the WQBEL. USEPA's modeling predicts a significant STA expansion or FEB is needed in all three flow paths. In order to meet water quality standards in the Everglades, the State must build, as expeditiously as practicable, these additional STAs and FEB. For each flow path, the specific actions and milestones, are summarized below along with the underlying assumptions. However, as noted above, the SFWMD can evaluate these options and present alternatives within 60 days of this Amended Determination.

### (a) Modeling Approach

USEPA used an STA phosphorus removal performance model to predict the STA or FEB acreage required in order to meet the WQBEL at the STA's point of discharge into the Everglades Protection Area. This model,<sup>25</sup> developed in 2001, has undergone several enhancements and has been routinely used by SFWMD to evaluate STA expansions. A description of the model, model input and the assumptions used about the inflow water volume and TP concentrations to be treated are provided in Attachment H.

In order to establish the size of the STAs or FEBs required to meet the WQBEL, the outflow TP concentration objective for the STAs must be determined along with an appropriate

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<sup>23</sup> The outflow TP concentration is also influenced by the size of the STA and other factors.

<sup>24</sup> Since 1994, STAs and BMPs have prevented over 3,000 metric tons of TP from entering the Everglades Protection Area. (2010 SFER)

<sup>25</sup> Dynamic Model for Stormwater Treatment Areas (DMSTA). See Attachment H for more information.

margin of safety. USEPA conducted modeling scenarios using three different outflow concentration end points, beginning at the criterion, to assess the sensitivity of the predicted STA expansion acres to the desired end point, and the certainty that the WQBEL will be met. The lower the desired end point (in other words, the more stringent the discharge modeling end point), the larger the projected STA expansion acreage, and the greater the assurance (margin of safety) that the STA will meet the WQBEL. USEPA assessed three end points including a 10 ppb long-term geometric mean (the long-term criterion); a 9.3 ppb long-term geometric mean; and an 8.9 ppb long-term geometric mean.<sup>26</sup>

Traditional wastewater treatment systems are generally designed with a margin of safety to assure compliance with the conditions of environmental permits. In making this decision for the Everglades' wetlands treatment systems, USEPA has considered several factors in specifying the margin of safety. The larger an Everglades wetland treatment system, the more difficult it is to manage the system for optimal treatment, especially maintaining the system as fully flooded throughout drier years. In addition, there is a cost to the public, as a larger margin of safety requires the purchase of additional land to serve as treatment wetlands and operation of these larger systems is more technically challenging. Given these considerations, USEPA concluded that it is appropriate to incorporate a limited margin of safety into the design target for the STAs, and therefore, selected a TP concentration of 9.3 ppb long-term geometric mean as the basis for the additional STA acreage needed to meet the WQBEL.<sup>27</sup>

The inflow concentration of TP assumed in the model is also critical for determining the predicted size of the STA or FEB needed to meet the WQBEL. The higher the inflow concentration assumed, the larger the acreage needed to meet the WQBEL. USEPA assessed the TP concentrations discharged from the EAA and C-139 basins over the period of record as well as over the last five years. The concentrations in the S-5A basin and C-139 basin are higher during the last five years than over the period of record (despite the phosphorus removal attributed to the State's EAA and C-139 Basin regulatory programs). USEPA assumed in the modeling an inflow concentration equal to that observed over the last five years, and therefore, the remedies presented in this Amended Determination are not dependent upon further reductions in TP concentrations in the inflows to the STAs and/or FEBs.

#### (b) General Considerations in Developing the Schedule

In its 2010 Order, the Court instructed USEPA to “establish specific milestones to ensure the State of Florida does not continue to ignore, and improperly extend, the compliance deadline for meeting the phosphorus narrative and numeric criteria in the Everglades Protection Area.” Order at 45. It is clear the Court intends these milestones to reflect a schedule for compliance as soon as practicable. USEPA has assessed historical information and considered other factors to determine specific milestones for each of the three flow paths. The schedule by which the

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<sup>26</sup> These concentrations, which are expressed as a long-term geometric mean, as the Everglades Protection Area marsh criterion is expressed, are equivalent to 12 ppb, 11.5 ppb and 11.0 ppb at the STA discharge when expressed as a FWM. The DMSTA model used to size the STAs requires that TP data are expressed as a FWM.

<sup>27</sup> Lowering the design target from 9.3 ppb to 8.9 ppb results in additional 4000 acres of STA expansion. Given the potential for the STA to dry out, potentially inhibiting treatment performance, there is only an incremental gain in potential treatment performance at an additional cost of tens of millions of dollars. Therefore, USEPA has concluded that a margin of safety to this magnitude is unwarranted.



WQBEL can be met for each of the flow paths depends on many different and complicated factors such as: how fast the State can purchase the additional land needed for the expanded STA or FEB; how long it will take for certain land use changes to be adopted; how fast the State can design and build large STAs or FEBs; and how long will it take a new STA marsh to fully develop and process legacy phosphorus and begin to effectively treat the inflow water down to the levels required to meet the WQBEL.<sup>28</sup> USEPA considered all of these factors as it developed the milestones for each flow path. A general discussion of the factors and information considered by USEPA for each of the major categories of actions is discussed below.

### Land Acquisition Schedule Analysis

Under the scenarios presented here, the SFWMD will need to purchase additional parcels of land to meet the WQBEL at the STA discharges. The SFWMD Board recently voted to purchase 26,800 acres from the U.S. Sugar Corporation for restoration and water quality improvements to the Everglades. Approximately 8,900 acres of the proposed purchase is located in Palm Beach County in the northern part of the S5A basin, and 17,900 acres are in Hendry County within the C-139 annex. This purchase is to be finalized in October 2010. The amount of time required for the State to complete land acquisition is highly variable and has ranged from two to eight years.

USEPA is allowing in this Amended Determination two months for land acquisition in the Western Flow Path where the pending U.S. Sugar Corporation purchase provides adequate land needed for treatment. In the Eastern Flow Path, the State will need to purchase land in addition to the pending U.S. Sugar Corporation purchase. USEPA is allowing three years for the State to complete the purchase of this additional land. For the purposes of this Amended Determination, completion of land acquisition is when the State has access to the property either by permission or by ownership.

### STA Design Schedule Analysis

There are two general phases in the design of an STA: (1) the planning and conceptual design phase, and (2) the detailed design phase, including preparation of plans and specifications. Some of the conceptual design for the STAs presented in this Amended Determination has been accomplished by the DMSTA modeling undertaken to produce this document. The detailed design, which is specific to the parcel of land on which the STA is built, requires access to the land for environmental assessments, testing, and data collection. The test results and other data provide the information needed for the production of detailed plans and specifications for land leveling, locations and sizing of levees, berms, canals and gates, and the hydraulics for how water will be moved into, through, and out of the STA (or FEB), including the size and locations of pumps. For access to the land, SFWMD must have acquired the land through purchase or, at least have been granted permission for access by the land owner before the detailed design phase can begin.

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<sup>28</sup> Some soils in the STA expansion areas have previously been farmed and may contain high levels of phosphorus. When the expanded STAs are flooded, this legacy phosphorus will continue to be released to the water column until the system has stabilized.

Historical information provided by the SFWMD indicates STA design has ranged in the past from two to five years. USEPA is allowing in this Amended Determination two years for design, based on the assumption that the past experience of the SFWMD should greatly facilitate the design process. There is one exception in the Central Flow Path where a shorter design period is needed for an interim shallow storage feature on the EAA A1 site. Flow path by flow path details are provided below.

### Permitting Schedule Analysis

While the design is ongoing, the SFWMD must obtain a number of different authorizations (permits) from local, state and federal agencies before it can initiate construction on a project. These include: an EFA permit from the State for construction of the project; a CWA Section 404 permit from the U.S. Army Corps of Engineers (USACE) for the discharge of dredged or fill material into waters of the US; a Section 10 permit under the Rivers and Harbors Act from the USACE if the project impacts a navigable water; a Clean Air Act permit from FDEP if the project includes a diesel pump station; a CWA Section 402 NPDES permit from FDEP to discharge to waters of the State; a consumptive water use permit from the State; and in some cases, permits from the local government for a land use change. If the project involves alterations to an USACE flood control levee, and a private party (not the USACE) is the applicant, then a 33 U.S.C. Section 408 analysis must be conducted.

The FDEP will not generally accept an EFA permit application until the project design is 30% complete, and will generally not issue the permit until the project design is 90% complete. The federal CWA Section 404 permit requires certification that state water quality standards will be met by the project and cannot be issued until the State EFA permit is issued (which provides the water quality certification).<sup>29</sup> The federal CWA Section 404 permit also must comply with the federal requirements under the National Environmental Policy Act (NEPA), including an Environmental Impact Statement (EIS) where the permit is considered a “major action significantly affecting the quality of the environment.” In some cases, where the CWA Section 404 permit is not considered to be a “major Federal action significantly affecting the quality of the human environment,” an environmental assessment may be conducted.<sup>30</sup> In addition, where the project may affect a threatened or endangered species or its habitat (as do most of the projects in the Everglades), the federal Section 404 permit requires the USACE to initiate a Section 7 consultation with U.S. Fish and Wildlife Service under the Endangered Species Act. The federal Section 404 permit would likely be the lengthiest of the permit processes, and would govern how soon construction on the project could begin. Based on past experience, USEPA assumes that all environmental permitting necessary for construction to begin can be accomplished in 2.2 years, in parallel with the design process. USEPA also assumes that it will take two additional months following the end of design to acquire final permits for those projects that are dependent on 90% design completion. Additional considerations affecting specific flow-paths are provided below.

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<sup>29</sup> In some cases the USACE will issue a permit with a contingency clause that no work may begin until the CWA Section 401 certification and/or NEPA documentation is complete.

<sup>30</sup> USEPA’s schedule is based on individual NEPA actions. It may be more efficient to combine all NEPA analyses into one EIS for all of the projects.

## STA Construction Schedule Analysis

There are two main phases in the construction of an STA: 1) the civil works which include land leveling, and construction of levees, canals, gates, and other structures; and 2) construction and installation of pumps and pump stations.<sup>31</sup> The existing pumps and pump stations used in the Everglades construction projects are among the largest in the world, and were required to be specially designed and built for this purpose. The SFWMD now has prototypes for these pumps and experience in their procurement and installation.

Historical information provided by the SFWMD indicates STA construction has ranged in the past from three to seven years. USEPA is allowing in this Amended Determination three years for construction based on the conclusion that the SFWMD now has considerable experience in the construction of STAs and that a number of experienced construction contractors exist.<sup>32</sup> This timeline assumes that all expansions will need hydraulic improvements, most likely some system of pumps and an associated pump station. Therefore, from the end of the permitting phase, USEPA is allowing three years for the completion of construction. Flow-path by flow-path details are provided below.

## Flooding Schedule Analysis

Approximately two years after construction is started, after the external berm and internal levees and gates are built, but before the pumps and the pump station are completed, an STA expansion is flooded with water.<sup>33</sup> This allows the marsh vegetation to begin to establish, and the existing legacy TP loads in the soil within an STA, if any, to be reduced. USEPA is assuming that within one year (by the time construction is complete), the STA will begin demonstrating net improvement in water quality at the downstream point within the STA on a consistent basis as compared to the inflow concentration. It is at this point that the SFWMD may begin discharging to the Everglades Protection Area.<sup>34</sup> It is assumed that flooding will begin two years after construction has started, with one exception in the Central Flow Path where some flooding has already occurred in the EAA A1 site. Flow-path by flow-path specific details are provided below.

## STA Performance Consistent with WQBEL

Once discharge from the STA begins, the STA will continue to mature and lower discharge concentrations of TP will occur.<sup>35</sup> It is USEPA's judgment (based on the modeling

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<sup>31</sup> For example, in STA 3/4 which is 16,500 acres (26 square miles), there are approximately 39 miles of levees and about 60 water control structures.

<sup>32</sup> The construction schedule does not make any assumptions concerning the length or intensity of the rainy season. Since this has the potential to delay construction some flexibility in the schedule may be needed to accommodate for rainfall conditions.

<sup>33</sup> Flooding depends on rainfall. Some flexibility in the schedule may be needed to accommodate rainfall conditions.

<sup>34</sup> The required net improvement in water quality includes not only TP, but also other parameters, in particular mercury. In the past, net improvement in mercury took longer than net improvement in TP for one STA, thereby controlling the timeframe before which some of the STA could discharge.

<sup>35</sup> STAs are constructed wetlands that are designed and managed to maximize phosphorus removal. Each STA has flowways containing treatment cells that operate in series and are delineated by levees. These treatment cells

conducted for this Amended Determination) that given the proper sizing of an STA, the TP in the discharge from the STA will meet the WQBEL once the STA is properly stabilized and functioning at its design efficiency.<sup>36</sup>

However, a period of time will be needed for the STA to perform at its full treatment capacity. This period of time will vary depending on the conditions of the STA. USEPA expects that intensive management of the STA will be required for fine-tuning it to achieve its desired performance. This may include adjustments in the type and proportion of vegetation which could take several growing periods to accomplish.<sup>37</sup> Hydrologic short circuiting within cells has also been an issue in past STA performance that could require time and effort to identify and correct.<sup>38</sup> While it is possible under the most optimistic scenario for the STA to reach the WQBEL in a shorter amount of time, USEPA believes that a more realistic expectation is for an STA expansion to begin performing in a manner consistent with the WQBEL 2.5 years after the STA is flooded.

There are several scenarios in this Amended Determination where existing STAs will continue to be hydraulically overloaded with runoff water until a portion of the flows can be diverted to new STA or FEB expansions. Once the flows are diverted to the expansion, the existing STA will need to adjust to the new hydraulic condition. There are no data from other STAs for estimating the time it takes an existing STA to adjust to new, albeit preferable, hydraulic conditions. Therefore, the estimate of time for this adjustment is uncertain. USEPA estimates, using best professional judgment, that it will take 9-12 months after excess flows are diverted away for the STA to begin performing in a manner consistent with the WQBEL.

Once an STA begins discharging consistent with the WQBEL, it is delivering water to the Everglades Protection Area that protects the designated use of the Everglades, and will not cause an imbalance in flora or fauna.<sup>39</sup> Compliance with the WQBEL will be determined in accordance with the provisions of the conformed NPDES and EFA permits described in Section V.

### 3. Flow Path by Flow Path: Actions and Milestones

As directed by the Court (2010 Order at 45), and consistent with its authority under CWA sections 104(a)(1), (2) and 104(b)(1) and (7), USEPA is providing clear, explicit, and comprehensive instructions to the State of Florida on the manner and method to obtain the

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contain various types of vegetation such as submerged aquatic vegetation or emergent vegetation. The modeling used to size the STAs in the remedies for this AD assumes some cells are dominated by submerged aquatic vegetation and some cells are dominated by emergent aquatic vegetation.

<sup>36</sup> USEPA recognizes that until such time the WQBEL has been achieved, elevated TP loads will continue to enter the Everglades. In order to assess the cumulative effects of these discharges, specific monitoring will be required to track the phosphorus discharged over time and its effects. See Section IV.

<sup>37</sup> Vegetation management may include repeated herbicide treatments and seeding by helicopter or by hand to establish an STA with the most efficient mix of submerged or emergent aquatic vegetation to maximize TP assimilation.

<sup>38</sup> SFWMD should take extra care to provide proper leveling of the site during construction.

<sup>39</sup> Some soils in the Everglades contain high levels of phosphorus from historical discharges. Release of this phosphorus from the soil to the water column could delay the attainment of the TP criterion in portions of the Everglades beyond the time when the upstream STAs are discharging at the WQBEL.

WQBEL, including specific milestones for building STA expansions or FEBs. A summary of the remedies needed to attain the WQBEL in all STA discharges to the Everglades Protection Area is provided in Attachment B. Based on USEPA modeling, approximately 42,000 additional acres are needed for STA or FEB in order to meet the WQBEL. The remedies are discussed in detail in the following flow-path by flow-path discussion.

### **(a) The Eastern Flow Path**

The Eastern Flow Path drains runoff from the S5A basin and urban basins to the east, through STA 1E or STA 1W into the Refuge. STA 1E and STA 1W were initially designed to discharge at 50 ppb. Both are significantly undersized and not capable of treating the load of TP draining from these basins to levels needed to achieve the WQBEL. According to USEPA modeling conducted for this Amended Determination, assuming no reduction in the inflow concentrations, a 15,000-acre STA expansion is needed to attain the WQBEL. An additional estimated 1,500 acres will be needed for berms, levees, and canals for a total of 16,500 acres.<sup>40</sup>

The SFWMD Board recently voted to purchase 8,900 acres from U.S. Sugar in the northern part of the S5A basin; this purchase is to be finalized in October 2010. Purchase of this land affords the SFWMD with the opportunity to either use this land in place as an STA, or exchange this for land adjacent to the existing STAs. With the U.S. Sugar Corporation purchase, an additional 7,600 acres will need to be purchased for the full STA expansion required.<sup>41</sup>

The area to the east of STA 1E is highly urbanized and does not appear to offer much opportunity for expansion of the STA 1E footprint. As a result, USEPA is assuming that the expansion will occur adjacent to STA 1W. Since STA 1E will not be expanded, the inflow volume must be reduced to a volume that can be effectively treated to the WQBEL. Flow that cannot be treated by STA 1E will be diverted to the expanded STA 1W facility. Since both STA 1E and STA 1W depend upon the STA 1W expansion in order to meet the WQBEL, neither can meet the WQBEL until the additional land is purchased, and the expansion is designed, built and operating. Under this scenario, STA 1E and STA 1W (with the expansion) will treat all existing flows to the Refuge, and no flows will be diverted away from the Refuge for treatment elsewhere. (See the STA 1E and STA 1W summary tables below for milestones and final WQBEL date.)

USEPA has modeled another potentially viable alternative for the eastern flow path for meeting the WQBEL in possibly a shorter period of time. This alternative includes an 8,000-acre STA and a 1,700-acre storage reservoir (44 feet deep) in the C51 basin that is currently under consideration by the South Florida Water Management District (District) and a number of Lower East Coast utilities.<sup>42</sup> Under this alternative, the C51 reservoir would store water and release flows to STA 1E and an expanded STA 1W at a rate and quality that could be treated to the WQBEL.

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<sup>40</sup> See Attachment H, Table 3, ID 3.

<sup>41</sup> USEPA's remedy presented in this Amended Determination assumes that the STA expansion will occur in the area adjacent to STA 1W. If the U.S. Sugar Corporation purchase is used in place as an STA, additional acres may be needed to account for the loss of efficiency in utilizing an STA not contiguous with STA 1W.

<sup>42</sup> See Attachment H, Table 3, ID 6.

It was not possible in the time available for this Amended Determination for the USEPA to have assurance that a number of uncertainties with the C51 reservoir will be addressed. The success of this alternative depends upon a public-private partnership that will require many specific details and arrangements to assure the project moves forward on schedule and in a manner that will assure the right volume and quality of flows are delivered to the STAs. The SFWMD has indicated potential benefits this alternative might provide such as: an increase in flows of water to the Everglades Protection Area; better quality of water to the Refuge; fewer harmful fresh water diversions to the Lake Worth estuary; and meeting the WQBEL as early as 2017. The SFWMD may provide adequate assurance and sufficient information within the 60 day window to document the likelihood of success consistent with the timetable in the Amended Determination.

#### **(i) STA 1E: Milestones and Schedule**

STA 1E was originally designed by the USACE to treat water from the S5A and urban basins to meet a long-term TP outflow concentration of 50 ppb, which was the original design target under the 1992 Consent Decree in the Consent Decree Case. The STA is, therefore, significantly undersized and cannot attain the WQBEL at this time. For the existing STA 1E to meet the WQBEL, approximately 47% of the current flow will have to be diverted to an expanded STA 1W. As a result, STA 1E will not begin to fully meet the WQBEL until flows can be diverted to STA 1W after the STA 1W expansion is complete. This diversion will not occur until November 30, 2018 (see discussion of the schedule for STA 1W below).

STA 1E is also not currently performing to its full capacity due to operational issues involving failed or inadequate structures and elevation in some of the cells. Other culverts are likely to fail in the future, and need to be proactively repaired. Also, Cells 1 and 2 in STA 1E are temporarily operating at a decreased hydraulic capacity for an USACE pilot project (Periphyton Stormwater Treatment Area, or PSTA) which decreases the effective treatment area of the STA. Repairs, re-grading, decommissioning the pilot project, and establishment of the treatment system vegetation are all needed for STA 1E to ultimately meet the WQBEL. In the interim, before flow can be diverted to STA 1W, the repairs and modifications to STA 1E, when completed, will significantly improve the performance of the facility in reducing TP concentrations in the outflow water. For this reason, the repairs to STA 1E need to be made as soon as practicable so that the STA is delivering less TP to the Refuge, although full compliance with the WQBEL will not occur until the expanded STA 1W complex is operational and available to take flows away from STA 1E.

The USACE has either entered into contracts or is seeking approval to complete certain repairs to STA 1E. The anticipated schedule of repairs is built into the following milestones. The State of Florida will need to work closely with the USACE and the District so that the following actions are completed in the timeframes specified below to bring STA 1E to full operational capacity by the dates in the STA 1E summary table below. These activities will be completed in parallel with expansion activities in STA 1W. At the completion of the project, STA 1E will receive an annual average inflow volume of approximately 109,000 acre-ft per year.

<b>STA 1E: Summary of Milestones and Schedule to Meet WQBEL</b>	
<b>Activity Milestone</b>	<b>Date to Complete Activity</b>
Decommission USACE PSTA pilot project (after consultation with the Tribe)	September 30, 2011 <sup>43</sup>
Complete repair/modification work: S-375 culvert repair Repair of 23 culvert joints and seals Re-grading of cells 5 and 7 Trash rakes and screens modifications	March 31, 2015
Improved performance of STA 1E (1 year after repairs and modifications are complete)	April 1, 2016
Flow modification to S-375 culvert (same date as STA 1W expansion is flooded)	November 30, 2017
Divert Flow to 1W (construction at STA 1W is complete.)	November 30, 2018
STA 1E performance consistent with WQBEL (1 year after diversion – allows the STA to adjust to the new hydraulic condition)	November 30, 2019

The State will need to work with the USACE to decommission the periphyton pilot project in STA 1E by September 30, 2011.

The USACE Jacksonville District initiated a pilot project in 2004 to test the efficacy of a periphyton-based treatment system (PSTA). The purpose of the PSTA was to utilize periphyton on a substrate to see if this would improve the phosphorus removal efficiency of the STA. To date, the Jacksonville District has collected approximately seven months of data over the six-year period of pilot project operation. The lack of sufficient water to establish periphyton and provide flow has been a primary reason for the limited amount of data collected. Also, the failure of the S-365A and B culverts contributed to limitations in data collection. The USACE is currently evaluating the data collected from the pilot project in 2010. Based on this analysis, the USACE anticipates decommissioning the pilot project in 2011 after consultation with the Tribe. Once started, decommissioning is expected to take approximately nine months.<sup>44</sup>

<sup>43</sup> The USACE has indicated that this is the earliest possible date for decommissioning the PSTA pilot project.

<sup>44</sup> SFWMD has been conducting a PSTA pilot study in STA 3/4 since 2007. Results indicate that under controlled conditions the pilot project has discharged TP at 8-12 ppb FWM (SFER 2010 at 5-150).

The State will need to work closely with the USACE so that the repairs and modifications to STA 1E listed below are completed by March 31, 2015.

*Complete S-375 culvert repair:* Culvert S-375 is a multi-bay gated culvert separating two distribution cells. Water intrusion through the culvert seals and joints causes erosion at the base of the culvert leading to the failure of the structure. The structure can no longer pass the design flows from one cell to another, and repairs are needed to allow the proper flow of water through the STA.

*Complete repair of culvert joints and seals:* STA 1E has 44 internal 8 ft-by-8 ft precast segmented concrete box culverts that allow the flow of water to be distributed across treatment cells and into the perimeter canal. The SFWMD performed a survey identifying 23 culverts that have degraded joints and seals which may cause failure of the culverts in the future (similar to the problem at S-375.) These conditions must be corrected to prevent culvert failure in the future.

*Complete re-grading of cells 5 and 7:* SFWMD commissioned a topographic survey of STA-1E in 2005. This survey indicated that Cells 5 and 7 (19% of the treatment area) are, on average, 0.73 feet and 1.19 feet too deep, respectively, in relation to the design elevation. The SFWMD has concluded that the increased depth prevents the establishment of emergent vegetation growth, and re-grading of Cells 5 and 7 is necessary to correct the elevation. The re-grading of the cells will require a significant volume of fill to bring the bottom elevation of the cells up to the appropriate grade. USEPA assumes that, to the extent practicable, the fill material used for re-grading will be relatively low in TP legacy concentrations. The USACE and the State (SFWMD) should take all steps possible to ensure the top of the fill material in Cells 5 and 7 has low legacy TP concentrations.<sup>45</sup>

*Trash rakes and screens modifications:* During severe tropical events, the amount of floating vegetation at the pump stations exceeds the trash rake system's capacity. While the equipment installed by the USACE matches the plans and specifications, the USACE agrees with the SFWMD that the current system will not perform at an acceptable level during a storm event, and the USACE is currently planning to undertake modifications to the trash and rake system.

The State will need to manage STA 1E so that improved performance of the STA will occur by April 1, 2016.

After the repairs and modifications to STA 1E are complete, it is assumed that within 1 year, the discharge from STA 1E will show reductions in the amount of TP released to the Everglades Protection Area. While the STA will not be able to meet the WQBEL until additional flows can be diverted to STA 1W, the improvements in TP loading will benefit the Everglades Protection Area.

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<sup>45</sup> The USACE indicated to the USEPA that it is assessing the USACE's responsibility to fund and implement the re-grading of Cells 5 and 7. If the USACE determines it will not complete the re-grading, the State, working with the SFWMD, will need to take the measures necessary to meet the WQBEL at STA 1E by November 30, 2019.



The State (SFWMD) will need to modify S-375 to increase its flow capacity to the design flow of the pump station by November 30, 2017.

The design capacity of the S-375 culvert is not large enough to move adequate flows from STA 1E to STA 1W to allow STA 1E to achieve the WQBEL. SFWMD will either need to enlarge S-375 or build a parallel culvert to properly balance flows across STA 1E and 1W. This modification will also require a 33 U.S.C. Section 408 review since C-51 was originally designed as a federal flood control project and this levee is part of that system. However, given the other actions planned for this STA, this review will not add to the timeframe for achieving the WQBEL. The modification will need to be accomplished by the date at which flooding begins in expanded STA 1W.

The State will need to begin diverting approximately 47% of the flow currently going to STA 1E to the expanded STA 1W complex by November 30, 2018.

As discussed above, in order for STA 1E to meet the WQBEL, the flow to this STA must be reduced. The flows diverted from STA 1E will be treated in the expanded STA 1W; therefore, the expansion of STA 1W must be completed and ready to accept flows before flows can be diverted away from STA 1E. Based on USEPA's DMSTA modeling, flows in excess of an annual average inflow volume of 109,000 acre-ft per year must be diverted away from STA 1E for it to perform consistent with WQBEL.

The State will need to provide discharge water from STA 1E that is consistent with the WQBEL by November 30, 2019.

STA 1E will continue to be hydraulically over-loaded while the STA 1W expansion is under design and construction. Once flows are diverted away from STA 1E, it will take the STA some period of time to adjust to the new hydraulic conditions. There are no data from other STAs for estimating the time it takes an existing STA to adjust to new, albeit preferable, hydraulic conditions. Therefore, the estimate of time for this adjustment is uncertain. USEPA is estimating, using best professional judgment, that it will take up to 12 months after excess flows are diverted away for STA 1E to begin performing in a manner consistent with the WQBEL. At this point, the STA is to be delivering water to the Everglades Protection Area that protects the designated use of the Everglades, and does not lead to an imbalance in flora or fauna. Compliance with the WQBEL will be assessed in accordance with the terms of the conformed NPDES and EFA permit described in Section V.

## **(ii) Expanded STA 1W: Milestones and Schedule**

STA 1W is significantly undersized to treat the current volume of inflow water to meet the WQBEL. In addition, approximately 47% of the current flow going to STA 1E must be diverted to an expanded STA 1W in order for STA 1E to meet the WQBEL. According to modeling conducted by USEPA for this Amended Determination, a 15,000-acre STA expansion of the STA 1W facility is needed for both STA 1E and STA 1W to meet the WQBEL. An additional 1,500 acres will be needed for levees, berms and canals for a total of 16,500 acres.<sup>46</sup>

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<sup>46</sup> See Attachment H, Table 3, ID 3.

At the completion of the project, the expanded STA 1W complex will effectively treat to the WQBEL an annual average inflow volume of 321,000 acre-ft per year.

The State of Florida will need to complete the following actions in the timeframes specified below to bring STA 1W to full operation to attain the WQBEL. The requirements are summarized in the table below, and are then discussed in greater detail.

<b>STA 1W Expansion - Summary of Schedule to meet WQBEL</b>	
<b>Activity Milestone</b>	<b>Date to Complete Activity</b>
Complete land acquisition for 15,000 acre STA expansion (3 years) <sup>47</sup>	September 30, 2013
Complete expansion design (2 years)	September 30, 2015
Acquire all necessary environmental permits needed to begin construction of the STA 1W expansion (2 months after the end of design)	November 30, 2015
STA 1W expansion flooding starts (2 years after construction starts)	November 30, 2017
Complete construction (3 years after permitting); flows from STA 1E can now be diverted to STA 1W	November 30, 2018
STA performance consistent with WQBEL (2.5 years after flooding)	May 31, 2020

The State will need to complete its purchase (including any land exchange) needed to build a 16,500-acre STA expansion in the eastern flow path by September 30, 2013.

As discussed above, the State announced its intention to purchase 8,900 acres from U.S. Sugar in the northern part of the S5A basin; this purchase is to be finalized in October 2010. The 8,900 acre tract is about 15 miles north of STA 1W, by canal. The State will either use this land in place as an STA, or exchange this for land adjacent to, or in close proximity to, STA 1W.<sup>48</sup> The SFWMD is evaluating whether a possible exchange could provide land adjacent to the Refuge that is suitable for an STA.

Assuming current flows and loading, this purchase provides approximately 54% of the land needed for the expanded STA. An additional 7,600 acres would need to be purchased to

<sup>47</sup> Approximately 8,900 acres is currently under contract to be purchased by the SFWMD in the northern S5A Basin from the U.S. Sugar Corporation.

<sup>48</sup> USEPA's modeling is based on an assumption that the expanded STA will be built adjacent to the current STA 1W footprint. If a decision is made to use the 8,900 acre parcel purchased from U.S. Sugar Corporation in its current location, additional modeling will need to be conducted to determine a revised STA expansion acreage needed to meet the WQBEL. It is unclear whether use of the northern parcel in place will be as efficient as an expansion adjacent to STA 1W. Additional acreage, beyond 7,600 acres, may be needed under this scenario.

meet the STA expansion needs. If there are no ready and willing sellers in this area, then land acquisition may require the SFWMD to use its full authorities to acquire the land for the needed expansion. Past experience suggests that this will complicate the land acquisition process, and lengthen the amount of time to complete the purchase. Given this uncertainty, USEPA's schedule provides the State three years to complete the process.

The State will need to complete the detailed design including all plans and specifications for the 15,000-acre STA 1W expansion by September 30, 2015.

The detailed design, which is specific to the parcel of land on which the STA is built, requires access to the land for environmental assessments, testing, and data collection. The test results and other data provide the information needed for the production of detailed plans and specifications for land leveling, locations and sizing of levees, berms, canals and gates, and the hydraulics for how water will be moved into, through, and out of the STAs, including the size and locations of pumps.

The State will need to acquire all necessary environmental permits needed to begin the STA 1W expansion construction by November 30, 2015.

See Section III.C.2.(b) above for discussion of the environmental permitting process.

The State will need to have the STA 1W expansion site ready for flooding by November 30, 2017.

Approximately two years after construction is started, after the external berm and internal levees and gates are built, but before the pumps and the pump station are completed, the STA 1W expansion will be flooded internally with water. This allows the marsh vegetation to begin to establish, and the existing legacy TP loads in the soil within an STA, if any, to be reduced. USEPA is assuming that approximately one year after flooding, the STA will begin demonstrating net improvement in water quality at the downstream point within the STA on a consistent basis as compared to the inflow concentration. Once net improvement has occurred and the pumps and pump stations are completed, the State may begin discharging from the STA to the Everglades Protection Area.

The State will need to complete construction of the STA 1W expansion by November 30, 2018.

Construction includes two main phases: 1) the civil works which include land leveling, and construction of levees, canals, gates, and other structures; and 2) construction and installation of pumps and pump stations. Therefore, from the end of the permitting phase, USEPA is allowing three years for the completion of construction, including hydraulic improvements.

The State will need to discharge water from the expanded STA 1W facility (including the current STA 1W facility plus the 15,000-acre expansion) that is consistent with the WQBEL by May 31, 2020.

See Section III.C.2.(b) – STA Performance Consistent with WQBEL (above) for a discussion of factors affecting the date by which the STA can meet the WQBEL. The expanded STA 1W facility will be built in an area of existing agricultural production where significant legacy loads of TP may be present in the soil. The new treatment marsh will need to overcome the legacy loads of soil TP before TP removal from the inflow water will begin to occur. The USEPA estimates that it will take the expanded STA facility up to 2.5 years after flooding to begin to perform consistent with the WQBEL. At this point, the STA is to be delivering water to the Everglades Protection Area that protects the designated use of the Everglades, and does not lead to an imbalance in flora or fauna. Compliance with the WQBEL will be assessed in accordance with the terms of the conformed NPDES and EFA permit described in Section V.

### **(b) The Central Flow Path**

The central flow path drains runoff from the S-2, S-6, and S-7 basins through STA 2 and STA 3/4 into WCA 2A and 3A. A project is currently well underway to expand the Central Flow Path by 6,800 acres in the Compartment B North Build-Out (Comp B NBO) and Compartment B South Build-Out (Comp B SBO). Modeling conducted by USEPA for this Amended Determination indicates that, even with the Compartment B expansions, the Central Flow Path will need an additional 15,600-acre STA expansion to meet the WQBEL. An additional 1,560 acres will be needed for berms, levees and canals for a total additional acreage of 17,160 acres.<sup>49</sup>

Within the Central Flow Path, there are two large parcels of land currently owned by the State that are designated under the Comprehensive Everglades Restoration Program (CERP) as water storage sites. These are the EAA A1 and the EAA A2 compartments. The SFWMD estimates the A1 site to have approximately 15,000 acres of potential STA effective treatment area, and the A2 site to have approximately 14,000 acres of potential STA effective treatment area. The A1 site is contiguous with STA 3/4 and the Comp B NBO and, as such, is strategically located for an expansion of the current STAs.

The A1 site alone is not large enough to fulfill the complete needs of the Central Flow Path for expanded STA acreage. A portion of the 14,000-acre A2 site, currently owned by the State, could provide the additional acreage needed without a lengthy land acquisition process. The A2 site is currently designated as a CERP water storage project for future construction. This land is currently under lease-back to farmers and notice will need to be served on those landowners regarding State plans to use this site for treatment or storage.

USEPA considered including an option in this Amended Determination for utilizing the A1 site as a deep reservoir in the event the Consent Decree Court rules to deny the State's motion for relief in building the A1 site as a reservoir. Such an option has been developed by

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<sup>49</sup> See Attachment H, Table 3, ID 3.

USEPA and can be provided at such time that a decision to deny the State's motion is issued. However, on August 30, 2010, the Special Master issued his Report of the Special Master (SM Report), recommending the court relieve the SFWMD of its obligation to build the A1 reservoir. The Special Master based that recommendation on changing circumstances and the affect it could have on the ability to build other restoration projects. "If the District is required to build a reservoir on Compartment A-1, the ability of the State Parties to expand STA 3/4 by utilizing adjoining land (see Figure 1 above) will be eliminated and the cost to the District of having to build the A-1 Reservoir, make the Cross-Bolles Canal improvements, and build ECART, will significantly foreclose its financial ability to develop additional STAs to satisfy water quality standards ...." SM Report at 56-57. "The estimates provided to the Special Master are that something between \$724 and \$815 million would be required to build A-1 Reservoir and related canal improvement projects." SM Report at 58. Based on the Special Master's Report, USEPA is including in the Amended Determination one remedy based on an STA expansion in the A1 compartment. Should the Consent Decree Court rule to deny the State's motion, the alternative remedy for A1 as a deep storage reservoir can be provided in a timely fashion.

**(i) STA 2, STA 3/4 and Compartment B: Milestones and Schedule**

USEPA is assuming in this remedy that the A1 site will be utilized in full as a 15,000-acre STA. Any additional STA acreage needed can be obtained from the A2 site. Since the A1 site provides 15,000 acres of effective STA treatment area, an approximate 600-acre STA expansion will be needed at the A2 site. (Any remaining area within the A2 not needed as an STA could be developed for water storage.) USEPA believes the WQBEL can be attained in STA 3/4 and Comp B NBO by December 31, 2014 if the A1 site is first utilized as an interim shallow storage reservoir, and later converted to an STA. This will allow water to be stored in the A1 site and allocated to STA 3/4 and Comp B NBO at a flow and TP load that can meet the WQBEL.<sup>50</sup> The remaining central basin flows will be directed to STA 2 and the Comp B SBO. STA 2 and Comp B SBO will achieve the WQBEL when the A1 site and A2 site STA expansions are designed, built, and in operation. The SFWMD will need to make improvements in the canal conveyance from the S6 Basin to the expanded STAs in the Central Flow Path (such as the Cross-Bolles Canal system) to divert flows away from STA 2 and Comp B SBO in excess of the volume that can be effectively treated to the WQBEL. At the completion of these projects, the Central Flow Path STA complex will be discharging to WCA 2A and WCA 3A about 987,000 acre-ft of average annual flow (see Attachment H).

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<sup>50</sup> See Attachment H, Table 3, ID 5.

The State of Florida will need to complete the following actions in the timeframes specified below to bring STA 2 and Compartment B SBO to full operation to attain the WQBEL. The requirements are summarized in the table below.

<b>STA 2 and Comp B SBO: Summary of Schedule to Meet WQBEL (A1 and A2 utilized as STAs)</b>	
<b>Activity Milestone</b>	<b>Date to Complete Activity</b>
Assumes Consent Decree Court Rules on use of the A1 site	September 30, 2011
Complete NEPA review for land use change of A1 and A2	May 31, 2013
Complete Design for STA in A1 and A2 (2 years after Consent Decree Court rules on use of A1)	September 30, 2013
Acquire all necessary environmental permits needed to begin construction of STAs in A1 and A2 (2 months after design is complete)	November 30, 2013
Expansion flooding in A2 starts (2 years after construction begins)	November 30, 2015
Complete construction of STAs in A1 and A2 (3 years after permitting)	November 30, 2016
Complete improvements in the canal conveyance from S6 to expanded STA 3/4 complex (A1 and A2 STAs)	December 31, 2016
STA 2 and the Comp B SBO STA performance consistent with the WQBEL (2.5 years after flooding)	May 31, 2018

The State will need to work with the federal agencies to complete the required NEPA review by May 31, 2013.<sup>51</sup>

Before any progress can be made on design and construction of an expanded STA on the A1 site, the Court in the Consent Decree Case must grant the State’s motion for relief from building the site as a reservoir. If the decision in the Consent Decree Court is made one year from now and the ruling is in favor of the State, the State can file a new permit application with the USACE who can begin the NEPA process to change the use of the A1 site and a portion of the A2 site from water storage to an STA. The estimated timeframe for completion of the NEPA process is approximately 1.5 years. USEPA encourages the USACE and the SFWMD to use an efficient approach to conducting the required NEPA review.

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<sup>51</sup> As noted above, there is a potential for one NEPA analysis to be completed for all of these projects.

The State will need to complete the detailed design including all plans and specifications for the A1 and A2 STA expansion by September 30, 2013.

USEPA is assuming that a detailed design for converting the use of the A1 and part of the A2 compartments from a reservoir to a STA can begin as soon as the Consent Decree Court rules on the A1 case. SFWMD should have access to the land immediately to begin testing and other data collection since the land is currently owned by the State. Given these assumptions, the State will need to complete the detailed design within two years after a decision is reached by the Court in the Consent Decree Case.

The State will need to acquire all necessary environmental permits needed to begin construction on the A1 and A2 expansion by November 30, 2013.

See Section III.C.2.(b) above for discussion of the permitting process.

The State will need to have the A2 expansion site ready for flooding by November 30, 2015.

Approximately two years after construction is started, after the external berm and internal levees and gates are built, but before the pumps and the pump station are completed, the STA expansion will be flooded internally with water. This allows marsh vegetation to begin to establish itself within the STA, and the existing legacy TP loads in the soil within an STA, if any, to be reduced. USEPA is assuming that approximately one year after flooding, the STA will begin demonstrating net improvement in water quality at the downstream point within the STA on a consistent basis as compared to the inflow concentration. Once net improvement has occurred and the pumps and pump stations are completed, the STA can begin discharging to the Everglades Protection Area.

The State will need to complete construction of the A1 and A2 expansions by November 30, 2016.

Construction includes two main phases: 1) the civil works which include land leveling, and construction of levees, canals, gates, and other structures; and 2) construction and installation of pumps and pump stations. USEPA is allowing three years for construction, including hydraulic improvements.

The State will need to complete improvements in the canal conveyance from S6 basin to the A1/A2/STA 3/4 complex by December 31, 2016.

STA 2 and Comp B SBO are not adequately sized to treat all flows from the S6 Basin. To avoid a lengthy land acquisition process to buy land adjacent to STA 2, USEPA's remedy will need the State to improve canal conveyance to move water away from STA 2 and Comp B SBO to STA 3/4 and the A1/A2 expansions.

The State will need to provide discharge water from the expanded A1 and A2 facilities (including the current STA 2 and Comp B SBO facilities) that is consistent with the WQBEL by May 31, 2018.

The expanded A1/A2 facility will be built in areas where some of the land has been lying fallow (the A1 compartment), and some of the land is in current agricultural production (the A2 compartment). A portion of the new treatment marsh may need to overcome legacy loads of soil TP before TP removal from the inflow water will begin to occur. USEPA estimates that it will take the expanded STA facility 2.5 years after flooding to begin to perform consistent with the WQBEL. At this point, the STA is to be delivering water to the Everglades Protection Area that protects the designated use of the Everglades and does not lead to an imbalance in flora or fauna. Compliance with the WQBEL will be assessed in accordance with the terms of the conformed NPDES and EFA permit described in Section V.

The State of Florida will need to complete the following actions in the timeframes specified below to bring STA 3/4 and the Comp B NBO into full attainment with the WQBEL. The requirements are summarized in the table below.

<b>STA 3/4 and Comp B NBO - Summary of Schedule to meet the WQBEL A1 as FEB and later converted to STA + A2 STA</b>	
<b>Activity Milestone</b>	<b>Date to Complete Activity</b>
Assumes Consent Decree Court rules on use of the A1 site	September 30, 2011
Complete NEPA review for land use change of A1 and A2	May 31, 2013
Complete design for A1 interim shallow storage reservoir	May 31, 2013
Acquire all necessary environmental permits needed to begin construction of A1 as interim shallow storage reservoir (2 months after design is complete)	July 31, 2013
Complete construction and begin diverting flows to the A1 interim shallow storage reservoir (8 months after permitting)	March 31, 2014
STA 3/4 and Comp B NBO performance consistent with WQBEL (9 months after flows diverted to A1 FEB)	December 31, 2014



The State will need to work with the federal agencies to complete the required NEPA review by May 31, 2013.

Before any progress can be made on design and construction of an expanded STA on the A1 site, the Court in the Consent Decree Case must grant the State's motion for relief from building the site as a reservoir. If the decision in the Consent Decree Court is made one year from now and the ruling is in favor of the State, the State can file a new permit application with the USACE who can begin the NEPA process to change the use of the A1 site and a portion of the A2 site from water storage to an STA. The estimated timeframe for completion of the NEPA process is one year and eight months. USEPA encourages the USACE and the SFWMD to use an efficient approach to conducting the required NEPA review.

The State will need to complete the detailed design including all plans and specifications for the A1 interim shallow storage reservoir by May 31, 2013.

Some construction has already occurred at the A1 site for a reservoir. Some perimeter berms are in place, grubbing and clearing have occurred, and some land leveling activities have taken place. USEPA is assuming that a detailed design for converting the use of the A1 parcel to an interim shallow storage reservoir can begin as soon as the Consent Decree Court rules on the A1 case. Given these assumptions, the State will need to complete the detailed design within approximately one year and eight months after a decision is reached by the Court in the Consent Decree Case. This design process will run in parallel with the NEPA process for changing the use of the A1 compartment from storage to treatment.

The State will need to acquire all necessary environmental permits needed to begin construction on the A1 interim shallow storage reservoir by July 31, 2013.

See Section III.C.2.(b) above for discussion of the permitting process. The schedule for A1 interim shallow storage reservoir allows the State one year and ten months after the Consent Decree Court rules on the A1 site to obtain the necessary permits for constructing the A1 site as an interim shallow storage reservoir.

The State will need to have construction of the A1 site interim shallow storage reservoir complete and flooded by March 31, 2014.

It is assumed by USEPA that the A1 site can be constructed as a shallow storage reservoir by March 31, 2014. The State has already made significant progress in building this site as a reservoir, and it is assumed that completing construction (which involves finishing the external berm) can be accomplished quickly.

The State will need to provide discharge water from STA 3/4 and the Comp B NBO facilities that is consistent with the WQBEL by December 31, 2014.

Once flows can be diverted to the A1 interim shallow reservoir, the STA 3/4 and Comp B NBO STAs can begin to adjust to the new favorable hydraulic conditions. STA 3/4 has been performing well even at the current over-loaded conditions. USEPA is assuming that STA 3/4

and Comp B NBO will take nine months to adjust and begin to perform consistent with the WQBEL. See Section III.C.2.(b) – STA Performance Consistent with WQBEL (above) for a discussion of factors affecting the date by which the STA can meet the WQBEL.

### **(c) The Western Flow Path**

The Western Flow Path drains runoff from the C-139 basin and some runoff from the S-3 and S-8 basins through STA 5 and STA 6 into discharge canals that ultimately discharge to WCA 3A. A project is well underway to expand STA 5 and STA 6 by 4,100 acres in the Compartment C build out. Modeling conducted by USEPA for this Amended Determination indicates that, even with the Compartment C expansion, the Western Flow Path will need a 7,000-acre FEB to meet the WQBEL in STA 5, STA 6 and Compartment C.

Compartment C is currently under construction, and is planned for completion in February 2012. Construction was recently halted in response to the discovery of cultural resources. Consultation among the SFWMD, Seminole and Miccosukee Tribes, the State Historic Preservation Office and the USACE is being reinitiated under section 106 of the National Historic Preservation Act 16 U.S.C. 470 (1966). Upon completion of this consultation process, the SFWMD plans to report to the Special Master in the Consent Decree Case on the costs and timelines associated with remediation of the cultural resource sites. The deadline for completion of this process is not known at this time.<sup>52</sup>

USEPA is assuming these issues will be resolved and Compartment C will remain on schedule to be flooded in the 2012 wet season (approximately July 2012). Once Compartment C is operational, some inflows currently going to STA 5 and STA 6 can be diverted to Compartment C for treatment. This diversion to Compartment C will reduce the hydraulic over-loading in STA 5 and STA 6 and improve their overall performance, resulting in less TP loading to the Everglades. However, until the additional 7,000-acre FEB is operational, STA 5, STA 6 and Compartment C will be unable to meet the WQBEL.

USEPA explored the concept of requiring the State to meet the WQBEL in the existing STA 5 and STA 6 facilities shortly after flows could be diverted to Compartment C, and concluded the STAs will not be able to meet the WQBEL until the C-139 FEB facility is built and operational. STA 5 and STA 6 have performance problems related to hydraulic over-loading during the wet season and dry-out of portions of the STA during the dry season. Soils in STA 5 and STA 6 are sandy and far more permeable than the peat or muck soils in the central and eastern flow paths. As a result, water seeps through the soils into the ground water during the dry season causing dry-out of the STAs. When the dry part of the STA is re-flooded with water, TP from the soils is released into the water column, causing spikes in the outflow of the STA. This drying-out is associated with poor performance in STA 5 and 6, and may also result in poor performance in Compartment C. Given current performance issues in STA 5 and STA 6, these STAs will need to operate as a unit with the Compartment C and the C-139 FEB in order for effective treatment to occur. Therefore, STA 5, STA 6, and Compartment C will not meet the WQBEL until the STA expansion is fully operational.

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<sup>52</sup> See South Florida Water Management District's Responses to Questions Posed by the Special Master During the Hearing on July 26-30, 2010.

The SFWMD recently announced a pending purchase of 17,900 acres of citrus groves from the U.S. Sugar Corporation in the C-139 basin annex. This purchase is to be finalized in October 2010. This large parcel of land is located west of, and adjacent to, Compartment C and STA 6, making it an optimal location for the expansion of the STA 5/STA 6/Compartment C complex. Therefore, even though land acquisition is needed in the Western Flow Path, this does not significantly lengthen the schedule for meeting the WQBEL since land acquisition is anticipated to be complete approximately two months after the Amended Determination is filed (or by November 2, 2010).<sup>53</sup>

When Compartment C and the 7,000-acre FEB are fully operational, the western STA complex including STA 5, STA 6, Compartment C, and the C-139 FEB will be capable of treating the existing run-off from the C-139 basin (an average annual inflow volume of 200,000 acre-ft per year) to the WQBEL.

**(i) STA 5, STA 6, Compartment C, and C-139 expansion: Milestones and Schedules**

The State of Florida will need to complete the following actions in the timeframes specified below to bring Compartment C to full operation. The requirements are summarized in the table below.

<b>STA 5, STA 6 and Comp C - Summary of Schedule to meet the WQBEL</b>	
<b>Activity Milestone</b>	<b>Date to Complete Activity</b>
Complete construction of Compartment C	February 29, 2012 <sup>54</sup>
Compartment C is flooded (in 2012 wet season after cultural resource issue resolved)	July 1, 2012
Begin discharge from Compartment C (1.5 yrs after flooding)	January 1, 2014
Improved performance of STA 5 and STA 6 (1 yr after diverting flows to Comp C)	January 1, 2015
Complete construction of C-139 expansion and begin to divert flows away from STA 5, STA 6 and Compartment C	September 30, 2016

<sup>53</sup> USEPA is assuming the State’s purchase of the U.S. Sugar Corporation property in the C-139 Basin will be finalized in November 2010. If this land acquisition is not finalized, this could affect the schedule for meeting the WQBEL in the Western Flow Path.

<sup>54</sup> This date is contingent upon completion of the cultural resource concerns in Compartment C.

STA 5, STA 6, Compartment C complex performing consistent with the WQBEL (1 year to adjust to new hydraulic condition)	September 30, 2017
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The State will need to complete construction of Compartment C by February 29, 2012.

Compartment C is currently under construction. The levees and canals are scheduled to be completed by December 2010. The pumps and pump station will be fully operational by February 2012. USEPA is assuming issues with cultural resources, which have halted work in Compartment C, will be resolved so that the following schedule can be met. USEPA is also assuming that Compartment C will be completely flooded during the 2012 wet season (late spring to early summer). Once discharge from Compartment C begins, a portion of the inflows currently being treated by STA 5 and STA 6 can also be treated by Compartment C.

The State will need to have Compartment C ready and flooded by July 1, 2012.

In the case of the Western Flow Path, USEPA is assuming that flooding is likely to only be possible during the wet season. In this case, while the external berm and internal levees may be complete in the Fall of 2011, flooding will occur in the wet season of 2012.

The State will need to have Compartment C showing net improvement and begin discharging by January 1, 2014.

After flooding, marsh vegetation can begin to establish itself within the STA, and the existing legacy TP loads in the soil within the Compartment C STA, if any, can be reduced. Once the Compartment C STA begins demonstrating net improvement in water quality at the downstream point within the STA on a consistent basis as compared to the inflow concentration, the SFWMD may begin discharging to the Everglades Protection Area.

The State will need to manage STA 5 and STA 6 so that improved performance of the STAs will occur by January 1, 2015.

After excess flows are diverted away from STA 5 and STA 6 to Compartment C, it is assumed that within one year, the discharges from STA 5 and STA 6 will show reductions in the amount of TP released to the Everglades Protection Area. While the STAs will not be able to meet the WQBEL until flows can be diverted to the C-139 expansion, the improvements in TP loading will benefit the Everglades Protection Area.

The State will need to complete construction of the C-139 expansion by September 30, 2016.

Construction includes two main phases: 1) the civil works which include land leveling, and construction of levees, canals, gates, and other structures; and 2) construction and installation of pumps and pump stations. USEPA is allowing three years for construction, including hydraulic improvements.

The State will need to discharge water from the STA 5/STA 6/ Compartment C complex that is consistent with the WQBEL by September 30, 2017 and consistent with the water quality standards for the downstream Miccosukee and Seminole Tribal waters.

The C-139 FEB is in areas that are currently in citrus production. The past construction of STAs in areas of prior citrus production has not demonstrated large legacy loads of soil TP. Since this FEB will operate in series with STA 5, STA 6 and Compartment C and will discharge through STA 5, STA 6, or Compartment C, the FEB is not required to directly meet the WQBEL, but flow equalization in this upstream facility controls when STA 5, STA 6, and Compartment C will meet the WQBEL. It is assumed that it will take STA 5, STA 6, and Compartment C one year after the hydraulic loading is reduced to adjust to the new hydraulic condition. At this point, the STAs will be delivering water to the Everglades Protection Area that protects the designated use of the Everglades, and does not cause an imbalance in flora or fauna. Compliance with the WQBEL will be determined in accordance with the provisions of the conformed NPDES and EFA permit for this STA discussed in Section V.

<b>C-139 Expansion - Summary of Dates</b>	
<b>Activity Milestone</b>	<b>Date to Complete Activity</b>
Complete land acquisition for C-139 FEB	November 30, 2010
Complete NEPA Review	May 31, 2013
End of design for C-139 FEB (2 years after land acquisition)	June 30, 2013
Acquire all necessary environmental permits needed to begin construction of the C-139 expansion (one year and ten months after end of design)	August 31, 2013
C-139 expansion flooding starts (in wet season following 1 year and 10 months after construction starts)	July 1, 2015
Complete construction of C-139 expansion (3 years after permitting)	September 30, 2016
Flows now going through the C-139 FEB into STA 5/6 and Comp C	September 30, 2016

The State will need to complete its purchase of 8,800 acres needed to build a FEB in the C-139 annex by November 3, 2010.

The State announced a pending purchase of 17,900 acres in the C-139 annex. The purchase is to be finalized in October 2010.

The State will need to work with the federal agencies to complete the required NEPA review by May 31, 2013.

In order to obtain a CWA Section 404 permit to build an FEB in the C-139 basin, a NEPA review will need to be conducted. The USACE can begin the NEPA process as soon as the land purchase is finalized. The USACE is considering the development of a regional EIS. In this case, the NEPA process for the C-139 FEB will be on the same schedule as the EIS for the Central Flow Path. The estimated timeframe for completion of the NEPA process is approximately two years and seven months. USEPA encourages the USACE and the SFWMD to use an efficient approach to conducting the required NEPA review.

The State will need to complete the detailed design including all plans and specifications for the 7,000-acre FEB in the C-139 annex by June 30, 2013.

The detailed design, which is specific to the parcel of land on which the STA is built, requires access to the land for environmental assessments, testing, and data collection. The test results and other data provide the information needed for the production of detailed plans and specifications for excavation, berms, canals and gates, and the hydraulics for how water will be moved into, through, and out of the FEB, including the size and locations of pumps.

The State will need to acquire all necessary environmental permits needed to begin construction on the C-139 FEB by August 31, 2013.

See Section III.C.2.(b) above for discussion of the environmental permitting.

The State will need to start flooding the C-139 FEB in the 2015 wet season by July 1, 2015.

Approximately two years after construction is started, after the external berm and internal levees and gates are built, but before the pumps and the pump station are completed, the FEB may be flooded internally with water. However, in the case of the western STAs, USEPA is assuming that flooding is likely to only be possible during the wet season.

The State will need to complete construction of the C-139 expansion by September 30, 2016.

Construction includes two main phases: 1) the civil works which include land leveling, and construction of levees, canals, gates, and other structures; and 2) construction and installation of pumps and pump stations. USEPA is allowing three years for construction, including hydraulic improvements.

The State will need to begin diverting flows through the C-139 expansion and into STA 5, STA 6 and Compartment C by September 30, 2016.

As soon as construction is complete on the C-139 FEB, flows can be diverted away from STA 5, STA 6, and Compartment C into the C-139 FEB. From the C-139 FEB, flows will be

allocated to STA 5, STA 6, and Compartment C at a rate that the TP loading can be treated by the STAs to the WQBEL.

#### **IV. Measure and Submit Annual Reports on Cumulative Impacts until Water Quality Standards Attained**

Pursuant to the 2010 Order at 45, the State is directed to “measure on a yearly basis the cumulative impacts and effects of phosphorus intrusion beyond the 10 ppb standard within the Everglades Protection Area until such time as full compliance with the 10 ppb standard is achieved.” Monitoring and reporting was a critical element of the enforceable framework in USEPA’s 1999 Determination. At that time there was an extensive monitoring and reporting program in place that met those requirements. This program continues today.<sup>55</sup> The FDEP and SFWMD currently have a monitoring program for assessing TP throughout the Everglades Protection Area with results reported in the annual South Florida Environmental Report (SFER).

However, there are enhancements to this monitoring program that would be needed to fully address the Court’s 2010 Order to monitor and report on cumulative effects. Therefore, USEPA is directing FDEP to conduct or perform other actions related to monitoring of TP and its cumulative impacts in the Everglades Protection Area. In addition, the SFER needs to report on an annual basis the total volume of water discharged into the Everglades Protection Area from the EAA and C139 Basins, the annual FWM TP concentration, and the TP load. The SFER also needs to report the loads of TP that would have been discharged had the annual FWM TP concentration been at 18 ppb and the annual GM TP concentration been at 10 ppb (WQBEL).

A. Rectify two limitations with the current application of the total phosphorus water quality criterion in the Everglades Protection Area. The State is to review the application of the four-part test and submit to USEPA a methodology for how it intends to address the two deficiencies specified below by January 31, 2011.

The TP criterion rule for the Everglades Protection Area includes a four-part assessment methodology (four-part test) that was affirmed by the Court in 2008. (F.A.C. 62-302.540(4)). The purpose of this test is to assess whether or not the long-term (decades) 10 ppb geometric mean criterion is being achieved on a short-term (annual) basis. The four-part test places upper limits on TP concentration in the Everglades marsh using temporal and spatial scales to limit the variability or range of TP concentrations throughout the Everglades to the variability observed at the unimpacted marsh reference sites. The objective is to determine whether the TP criterion is met throughout all of the Everglades Protection Area. Results are reported annually by FDEP in the SFER. As of 2009, FDEP applies the four-part test via a network of 58 water quality sampling stations within the Refuge, WCA2 and WCA3 (2010 SFER 3A-11 to 3A-14, Appendix 3A-6). However, there are two limitations with the State’s current application of the four-part test to the Everglades Protection Area.

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<sup>55</sup> Subsection (4)(d) [Everglades research and monitoring program] specifically identifies the research and monitoring required as well as the submission of an annual report (providing the results of the research and monitoring) to the Legislature.

(1) Failure to consistently assess achievement of the criterion in drier parts of the Everglades Protection Area: The first limitation involves the lack of application of the TP criterion to drier portions of the Refuge and northwestern WCA3A. At the time that the TP Rule was approved in 2005, the four-part test station network was being established. Paragraph 7 of the Rule incorporates a data quality screening protocol that limits the applicability of the Rule to only those stations that have a minimum of six months of data within a given water year. Now that five years of data are available (2010 SFER Appendix 3A-6), it has become apparent that a consequence of this six-minimum sample requirement is that from 2005 to 2009, the TP criterion typically was not consistently applied to two drier portions of the Everglades Protection Area: three stations in the Refuge (A108, LOX 3 and LOX 5) and one station in WCA3A (CA35) immediately north of the Federal Reservation of the Miccosukee Tribe of Indians of Florida. This latter station is of particular interest because it is FDEP's only four-part test station upstream of these tribal waters that can assure that the downstream waters are protected as required by the CWA.

To correct this limitation, FDEP needs to assess the application of the four-part test every five years and assure that the criterion is applied in a manner that is protective of these drier portions of the Everglades Protection Area. FDEP should report the first review with any suggested corrective measures to USEPA by January 31, 2011.

(2) Gaps in the spatial coverage of the monitoring network in the Refuge (WCA1): The application of the four-part test needs minor adjustment to the station locations within the Refuge in order to fill in gaps in the spatial coverage. Two stations need to be added to the four-part test network in the Refuge; a station midway between X4 and LOX 11, and a station midway between LOX 7 and LOX A137. See page 3A-11 of the 2010 SFER.

B. Prepare an annual report due on March 1 of each year starting on March 1, 2011 summarizing TP water quality, vegetation, and soils data from each transect monitoring site. The report must provide a summary of whether the TP conditions at each site are improving, worsening, or remaining unchanged.

Sampling along transects downstream of the STAs is necessary to determine the extent of phosphorus intrusion into the Everglades marsh due to STA discharges above the 10 ppb WQBEL, and to determine whether these discharges cause or contribute to violations of water quality standards. This type of sampling is useful for understanding the spatial extent of impacts, as well as changes in condition, including improvement, at a location over time. STA 1E and 1W discharge directly into the Refuge. The discharge from STA 2 presently travels two miles in a canal before it flows into the Everglades Protection Area. The EFA permits for these STAs currently require downstream monitoring along transects. The conformed<sup>56</sup> NPDES permits for these three STAs will also require monitoring along transects downstream of the STA discharge for the purpose of documenting TP intrusion into the Everglades Protection Area, and determining whether STA discharges are causing or contributing to water quality standards violations and are causing other ecological impacts.

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<sup>56</sup> As described in more detail in section V.A., USEPA is providing a strikethrough "conformed" version of all current STA NPDES and EFA permits in Attachment I.



In addition to requiring annual reporting of monthly monitoring for surface water TP concentration, the soil TP concentration must also be determined at the transect stations in the 0-10 cm soil profile once every two years. Also, beginning in the dry season of 2011, the extent of macrophyte indicators of phosphorus enrichment such as, but not limited to, cattail, will be quantified each year during the dry and wet seasons using established methods.<sup>57</sup> Any modification to the monitoring plan or methods must be pre-approved by USEPA. If future modifications to water delivery patterns result in water from STA3/4 being discharged directly southward into WCA3A, then the same transect monitoring program will be required in the STA3/4 NPDES permit beginning two years before discharge.<sup>58</sup> The conformed permits reflect these requirements.

C. Assure that stratified random sampling is conducted every five to seven years throughout the Everglades Protection Area in order to document soil TP conditions and temporal trends. The next sampling is to be completed by December 2012<sup>59</sup> (unless an adjustment to this date is needed to integrate with monitoring conducted through the CERP) and a final report provided to the USEPA by December 2013.

An additional monitoring design is required in order to quantitatively determine the magnitude, extent, and expansion of phosphorus pollution and cumulative impacts throughout all of the Everglades Protection Area. Phosphorus levels in soil are a key indicator of enrichment. Various sampling designs have been previously used by scientists in the Everglades to make quantitative statements about soil phosphorus.<sup>60</sup>

By January 31, 2011 the most appropriate sampling design will be determined subject to review by USEPA. This will include the specific location and number of sampling stations. The design will be subjected to scientific review and submitted to USEPA for approval by February 28, 2011. This monitoring effort should be integrated as appropriate with monitoring conducted through the CERP or other restoration or natural resource management activities. This comprehensive monitoring and reporting program will ensure that the progress being made in restoration of the Everglades can and will be documented. This will also ensure that as the additional STAs or FEBs are being constructed, the status of the Everglades will be monitored to document further degradation or improvement. Ultimately, this program will provide some of the information needed to determine whether restoration is complete.

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<sup>57</sup> SFWMD 2010 *Project WCA-2A Monitoring Plan for STA 2 and Compartment B Build-out Downstream Monitoring Plan*. SFWMD-FIELD-MP-071-01. (January 20, 2010)

<sup>58</sup> Part of the long term goal of Everglades restoration is to restore sheetflow to the Everglades that will require modification to how the water is delivered to the Everglades Protection Area.

<sup>59</sup> The most recent sampling for soil TP throughout the Everglades was completed in 2008 for WCA 2 and in 2005 for the rest of the Everglades Protection Area.

<sup>60</sup> Previous soil TP sampling efforts have sampled about 200 to 1000 individual sites per event, with the specific location and number of sample stations determined by different scientific and statistical methods, each of which has strengths and weaknesses. The District has used a grid approach and a stratified random design (2006 SFER at 6-49 to 6-50). USEPA R-EMAP has used a stratified version of a random probability-based design. This approach allows quantitative determinations across space about the status of an ecological condition, such as in 2005 soil TP exceeded 500 mg/kg in 24.5 +/- 6.4% of the Everglades Protection Area. (see Scheidt, D. J. and P. I. Kalla. 2007. Everglades ecosystem assessment: water management, water quality, eutrophication, mercury contamination, soils and habitat. Monitoring for adaptive management: a R-EMAP status report. USEPA 904-R-07-001. United States Environmental Protection Agency, Atlanta, Georgia.)

D. Assure that maps that accurately depict the spatial extent of cattail and a summary report are completed on a recurring basis for the Refuge, WCA 2, WCA 3, and the Park. The first report and maps are to be completed by dates detailed below (unless an adjustment to this date is needed to coordinate with monitoring conducted through the CERP) and a final report provided to the USEPA by dates detailed below.

Vegetation maps have been used to document the spatial extent and spread of cattail throughout the Everglades Protection Area.<sup>61</sup> Maps that accurately depict the extent of cattail, a biological indicator of phosphorus enrichment and imbalance, are to be completed for each region of the Everglades Protection Area (the Refuge, WCA2, WCA3 and the Park). These efforts should be integrated as appropriate with monitoring conducted through the CERP. The summary report must quantify the extent of cattail and the rate of expansion, if any, throughout the Everglades region. Deadlines for acquiring the imagery and completing the cattail maps and report are as follows:

Region	Date of most recent cattail map imagery	Image Acquisition	Cattail Map and Report Completed
WCA2A	2003	March 2011	March 2012
WCA3A and WCA3B	2004	March 2012	December 2014
Refuge	2004	March 2013	March 2014
Park (freshwater)	2009	March 2014	December 2015

## V. NPDES and EFA Permits

In this Amended Determination, USEPA’s development and description of the WQBEL in section III.B, in accordance with the Court's 2010 Order, supports the effective implementation by the State of its NPDES program authority under section 402(b) of the CWA. USEPA has oversight authority over the State's program to help ensure its effective implementation, including the authority to object to state permits and issue a federal permit where a state's proposed permit is outside the guidelines and requirements of the CWA. The 2010 Order established that the permits must be conformed based on the court’s finding that FDEP violated the injunction in the Court’s 2008 Order on Summary Judgment by taking action in “administrative orders” that are incorporated into NPDES permits and that provide for an extended compliance period for attainment of the water quality standards for phosphorus under the NPDES permits. 2010 Order at 18-21. After FDEP conforms the NPDES permits to include the WQBELs, judicial review of the conformed permits would be available in Florida tribunals.

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<sup>61</sup> Rutchey, Ken, Ted Schall and Fred Sklar. 2008. Development of vegetation maps for assessing Everglades restoration progress. *Wetlands* 28(3):806-816; Sklar, F. T. Dreschel and K. Warren. 2009. Chapter 6: Ecology of the Everglades Protection Area. *In* 2009 South Florida Environmental Report – Volume I. South Florida Water Management District and Florida Department of Environmental Protection. West Palm Beach, Florida.

### A. Conforming STA NPDES Permits and EFA Permits.

Pursuant to the Court's Order, FDEP is directed to take the following actions related to the existing NPDES and EFA permits for discharges from the STAs:

1. Conform all existing STA NPDES and EFA permits to the CWA, the Court's 2008 Order, and the Court's 2010 Order, by eliminating all references to the non-conforming elements of the Long-Term Plan, the moderating provisions, and any extended compliance schedules through 2016.
2. Incorporate into conformed permits a WQBEL as identified in this Amended Determination.
3. Conform all permits within 60 days of this Amended Determination.

Attachment I to this Amended Determination includes a redline/strikethrough version of each current STA NPDES and EFA permit that USEPA has prepared for use by FDEP that addresses the Court's Order that all non-conforming elements of the existing permits be eliminated. USEPA has also provided specific instructions in the Attachment I permits that: 1) incorporate the WQBEL, including added provisions for providing early warning of possible non-compliance with the WQBEL and reporting excess TP loads if the WQBEL is not met; 2) update various items that must be included in each Annual Report; 3) update the pollution prevention and operations plans; and 4) require various water quality, vegetation, and sediment monitoring in downstream Everglades marsh transects to enable future evaluation of the extent of phosphorus intrusion due to STA discharges and evaluation of the extent to which STA discharges cause exceedances of water quality standards (as required in Section IV.B. above). A detailed explanation of USEPA's changes to the Attachment I permits is provided in Attachment J.

### B. Elimination of Compliance Schedules in NPDES and EFA Permits for Discharges into the Everglades Protection Area

Florida's implementing regulations have a general provision authorizing compliance schedules for new or revised water quality standards.<sup>62</sup> That State statutory provision, at section 403.0885, mirrors the federal NPDES regulation regarding compliance schedules in permits at 40 C.F.R. § 122.47. This is the provision under which FDEP included the administrative orders/compliance schedules in the current STA permits. USEPA's previous approval in USEPA's 1999 Determination authorized a compliance schedule based on section 403.0885 for

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<sup>62</sup> EPA's interpretation of the CWA section 301(b)(1)(C), articulated in In the Matter of Star-Kist Caribe, Inc., 3 E.A.D. 172, 175, 177 (1990), is that the section's July 1, 1977 deadline for meeting WQBELs prohibits compliance schedules only for water quality standards adopted and approved before July 1, 1977. EPA interprets section 301(b)(1)(C) to allow for compliance schedules in permits for WQBELs based on post-1977 water quality standards, provided that state law clearly indicates, either in water quality standards or implementing regulations, that compliance schedules are authorized.

EFA subsection (4)(f)(4), that lapsed on December 31, 2006. In the 2010 Order, in addition to finding that the 2006 date cannot be extended as it relates to subsection (4)(f)(4), the Court also found that FDEP may no longer rely on the section 403.0885 provision to authorize compliance schedules in STA permits. Thus, while Florida has a general provision authorizing compliance schedules for WQBELs, for CWA purposes, the State's specific deadline for the Everglades Protection Area (December 31, 2006) is controlling for discharges of phosphorus into the Everglades Protection Area. Attachment I reflects the necessary revisions to remove compliance schedules (or Administrative Orders under Florida regulation) from the permits. Therefore, compliance schedules for WQBELs in the NPDES and EFA permits for discharges into the Everglades Protection Area are no longer authorized.

Further extensions of time for compliance with the required WQBELs in an NPDES or EFA permit for STA discharges might be authorized if FDEP develops and USEPA approves a variance from the water quality standard that recognizes the existing impairment to the designated use and downgrades the use after USEPA approval of a use attainability analysis. Absent a regulatory revision, schedules for coming into compliance with WQBELs could be included in an appropriate enforcement mechanism (see discussion in Section VI below).

While both USEPA regulations (at 40 CFR Part 131) and the 2010 Order (at 11) recognize the ability and processes that states may use to downgrade the designated uses of a water body, either through short-term recognition of an impaired use with a variance or for a more extended downgrade after the completion of a use attainability analysis, USEPA does not advocate either approach because USEPA believes the designated uses are attainable. Moreover, with regard to the timely implementation of additional control measures, any such revisions to the water quality standards would require additional time and personnel to proceed through the state's rulemaking process, thus diverting those resources from achieving the shared water quality goals for the Everglades Protection Area.

FDEP will need to submit the conformed NPDES permits to USEPA for review. USEPA will review the permits to confirm that FDEP has conformed the permits consistent with the CWA and its implementing regulations, the Court's Orders, and this Amended Determination.<sup>63</sup> Pursuant to the Court's 2010 Order, FDEP must conform its permits within 60 days (November 2, 2010).

### C. Initiation of Withdrawal of State Authority to Issue New NPDES Permits or Future Modifications of NPDES Permits for Discharges Into, or Within, the Everglades Protection Area

The Court's Order directed USEPA to "immediately initiate and carry out its authority under Section IX of the Memorandum of Understanding to withdraw approval of the State program pertaining to issuance of any new NPDES permits for discharges into, or within, the Everglades Protection Area, or for any future modifications to existing NPDES permits (including through State of Florida Administrative Orders." (2010 Order at 46). This provision only applies to newly issued permits, so the withdrawal would not affect the State's authority to comply with the Court's order that FDEP conform the existing permits within 60 days of this

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<sup>63</sup> In USEPA's 60(b) motion, USEPA proposed a procedure for EPA review of new, re-issued, or modified NPDES permits subsequently issued (in lieu of partial program withdrawal).

Amended Determination. The Court's Order further provides that Florida's program authority be withdrawn until such time as the State is in full compliance with the CWA, its implementing regulations, the Court's 2008 and 2010 Orders and this Amended Determination. (Id.)

On July 29, 2010, USEPA filed a Rule 60(b) Motion for Modification of Injunction requesting the Court to replace the provision in the 2010 Order that requires USEPA to initiate and carry out partial withdrawal of Florida's NPDES permitting authority with a new injunctive provision that would apply after the existing permits have been conformed pursuant to the Court's Order. On August 2, 2010, the Court issued an order scheduling a hearing on USEPA's motion for October 7, 2010.

In its Rule 60(b) motion, USEPA proposed that the Court modify its Order to impose a process by which, after the existing permits are conformed, USEPA reviews and corrects (if needed) any subsequent State permitting action before the action is proposed. That process would then rely on USEPA's existing permit-by-permit oversight authority under CWA section 402(d) to review proposed permitting actions developed by FDEP. Under this approach, USEPA would provide up-front substantive direction to FDEP regarding any permitting action that the State contemplates proposing (much as the Court's 2010 Order currently requires for conformance of the existing permits). USEPA has clear authority under the CWA to review draft NPDES permits for legal and substantive adequacy, to object to permits when appropriate, and to take over the permit at issue if FDEP were to fail to adequately respond to a USEPA objection.

Because the Court is considering USEPA's Rule 60(b) motion and has scheduled a hearing for a date after USEPA must issue the Amended Determination, USEPA is not initiating program withdrawal proceedings in this Amended Determination.

#### D. FDEP Enjoined from Issuance of NPDES and EFA Permits

The Court's 2010 Order also included the following self-implementing injunction against the State of Florida:

“Other than to carry out the requirements of Paragraph 3 [of the 2010 Order], above, the FDEP is enjoined from issuing any new NPDES permits, or modifications to existing NPDES permits - through State of Florida Administrative Orders, Everglades Forever Act permits or otherwise - for STAs that discharge into, or within, the Everglades Protection Area until such time as the State of Florida is found by the [US]EPA and this Court to be in full compliance with the Clean Water Act, its implementing regulations, the Summary Judgment Order, and this Order. All new Administrative Orders and Everglades Forever Act permits issued under the laws of the State of Florida must conform to, and comply with, the Clean Water Act, its implementing regulations, the Summary Judgment Order, and this Order and the forthcoming Amended [US]EPA Determination. (Order at 46-47).”

No further action is required by USEPA to implement the Court's injunction.

## **VI. Enforceable Framework for Ensuring Compliance with the CWA and Applicable Regulations**

In setting aside USEPA's determinations in the 2008 Order, the Court made several references to the 1999 Determination and the detailed analysis that USEPA conducted of the "enforceable framework" that supported USEPA's 1999 approval of the compliance schedule implementing Everglades Forever Act (EFA) subsection 4(f) as a new or revised water quality standard. (2008 Order at 31). In the Background section of the 2008 Order, the Court noted: "Most importantly, [US]EPA considered whether there was 'an *enforceable framework* that ensured the numeric water quality criterion for phosphorus would be met by the December 31, 2006, deadline in the EFA or sooner if possible.' (emphasis added by Court). It [USEPA] essentially concluded that the Everglades would be protected because '[t]he EFA incorporated a permitting scheme, and adopted provisions to ensure that by December 31, 2006, *discharges into the Everglades Protection Area will no longer cause or contribute to any violations of state water quality standards*.' (emphasis added by Court)." (2008 Order at 31).

In its 1999 Determination, USEPA reviewed the EFA and other available information to determine if the compliance schedule set out in the EFA was needed, was as short as practicable, and did not preclude earlier compliance. USEPA explained that it "considered whether there was an enforceable framework that ensured the numeric water quality criterion for phosphorus would be met by December 31, 2006 deadline in the EFA or sooner if possible." (1999 Determination at 9). In making its determination, USEPA evaluated eight factors and concluded that the 2006 compliance schedule in the EFA "is necessary, is being enforced, and serves the purposes of the CWA to enhance water quality." (*Id at 18*).

In the 2010 Order, the Court required USEPA to specify an enforceable framework for ensuring compliance with the CWA and its applicable regulations. (Order at 45). USEPA believes that all of the components of its Amended Determination together represent an enforceable framework for ensuring compliance with the CWA and its implementing regulations.

First, Florida's water quality standards for the Everglades will be amended to bring them into compliance with the CWA and its implementing regulations either through action by the State of Florida or USEPA. A significant amendment will be that the water quality standards will no longer include any reference to the extended compliance deadline of 2016.

Second, to ensure that all NPDES and EFA permits for discharges from the STAs into the Everglades Protection Area include effluent limitations as stringent as necessary to meet the water quality standards for the Everglades Protection Area, USEPA has provided clear instructions to the State of Florida on how the current permits must be conformed to comply with the CWA and its implementing regulations. USEPA's instructions include specifying what the appropriate WQBEL is for each of the STAs. Importantly, USEPA has instructed the State that the permits may not include any compliance schedules. The new WQBELs must be effective

upon the date the permits are effective. Consistent with the Court's Order, FDEP is to conform the permits within 60 days of the Amended Determination.

Third, USEPA has also provided clear, specific and comprehensive instructions to the State of Florida on what actions must be taken to ensure compliance with these new WQBELs. USEPA has specified the actions that must be taken to ensure expansion and proper operation of each of the STAs in order to meet the new WQBELs.

Fourth, USEPA is prepared to exercise its full CWA enforcement authorities to ensure the actions it has identified as necessary for compliance with the new WQBELs and achieve attainment of the water quality standards are implemented according the milestones set forth in the Amended Determination.

Fifth, if the Court grants USEPA's Rule 60(b) Motion, USEPA will exercise its CWA permit oversight authority to ensure that all new NPDES permits or future modifications of permits that FDEP will issue for discharges into the Everglades Protection Area fully comply with the CWA and implementing regulations. USEPA has authority under CWA section 402(d) to object to any State NPDES permit that does not comply with the requirements of the CWA. When USEPA objects, unless the State revises the permits to address USEPA's objection, exclusive authority to issue such permits transfers to USEPA.

USEPA believes that the above actions all serve to create an enforceable framework for ensuring compliance with the CWA and its implementing regulations.

## **VII. Relationship to U.S. v. SFWMD, Case No, 88-CV-1886-FAM (S.D. Fla.)**

In the 2010 Order, the Court discussed the distinctions and similarities between the Consent Decree Case and the case in front this Court.

To be sure both cases directly concern the problems facing the Everglades. The crucial distinction is that the Consent Decree Case turns on a consent decree created pursuant to *State law* – not the Clean Water Act. Thus while the Federal Clean Water Act implications here subsume certain matters pertinent to the Consent Decree Case, this federal statutory action – which concerns the entire Everglades Protection Area, - casts a wider net. Both cases address, however a crucial similarity: the fact that the December 31, 2006 deadline promised in the Consent Decree and mandated in the [US]EPA 1999 Determination has not been met. . . . While the parallel proceeding share certain features, they are not identical, nor are the available remedies the same, though careful consideration should be given [to] accomplishing related goals in a manner consistent with the Congressional mandate set forth in the CWA. 2010 Order at 29 – 30.

The Court went on to require USEPA to reconcile the obligations and commitments under the Consent Decree with the Amended Determination that mandates CWA compliance. USEPA is defined as part of the United States in the Consent Decree Case and participates in all aspects of that case. As a result, USEPA is in the position to reconcile the obligations and commitments in either forum.

Currently there are several outstanding motions in the Consent Decree Case that are parallel to the actions in this case. The existing 1992 CD as amended includes construction deadlines and acreages for all the STAs. Consent Decree, Paragraph 10, and Appendix C. It also requires the implementation of on-farm best management practices program. Consent Decree, Paragraph 12, and Appendix E. As discussed in the 1999 Determination, implementation of those remedies was an important factor in approving the December 31, 2006 compliance schedule.

In this Amended Determination, USEPA has developed a comprehensive set of water quality remedies that require expanding the footprint of all the STAs in each of the flow-ways in the EAA, including those remedies needed to address water quality in the Refuge. As noted in the August 11, 2010 post hearing brief filed by the United States in the Consent Decree Case, the United States intends to provide the Amended Determination to the Consent Decree Court in response to the Special Master's August 30, 2010 report, so that the Court may consider the comprehensive remedies developed by USEPA. See United States' Post Hearing Memorandum In Support of State Motion for Relief Under FRCP 59(e) and 60(b) From Order to Construct EAA A1 Reservoir, August 11, 2010, at 1-2.

The current status of the Consent Decree Case centers around the March 31, 2010 Order (2010 Consent Decree Order) granting two motions filed by the Tribe. In that Order, the Court mandated that the EAA A1 Reservoir be constructed and the court also found that the State and SFWMD were in violation of certain other aspects of the Consent Decree. These issues were referred to the Special Master for hearings. Subsequently, the SFWMD filed a Rule 59(e) and 60(b) motion seeking to be relieved of the commitment to construct the EAA A1 Reservoir. The basis for that motion is that underlying facts have changed and the EAA A1 property is physically situated such that the lands would be better used as an STA or a FEB, but not as a deep water storage reservoir. The Special Master held hearings on the motion the week of July 26, 2010 and has issued a recommendation to the Court on August 30, 2010. That recommendation states that the State should be granted relief from building the reservoir on the EAA A1 site. The United States filed its own enforcement motion in the Consent Decree case on July 15, 2010. See Motion of Plaintiff United States of America for Resolution of Liability Issues (D.E. 2179).

USEPA has considered the EAA A1 Reservoir land as an important option for expanding STA 3/4, thereby compressing the timeframe for compliance with the WQBEL. USEPA is awaiting the Consent Decree Court's ultimate disposition of this matter. The Special Master is also scheduling hearings on both the liability issues identified in the Tribe's motions and the ultimate remedies needed to meet the water quality requirements of the 1992 Consent Decree for the Refuge.

In sum, USEPA will continue to participate in the Consent Decree Case, to reconcile the obligations and commitments in both forums. This section (section VII) is intended to be purely descriptive, and is not intended to have any binding effect in the Consent Decree Case.




## VIII. Conclusion

As explained above, USEPA concludes that the narrative and numeric criterion for TP in the State's water quality standards are not being met for all parts of the Everglades Protection Area. While levels of TP in discharges from the STAs into the Everglades Protection Area have decreased since the 1980's, further reductions of TP in the inflows to the Everglades Protection Area must be achieved if further degradation is to be prevented. In this Amended Determination, USEPA is providing clear, specific, and comprehensive instructions to the State on revisions to its existing water quality standards and actions to be taken to assure the STA discharges comply with the water quality criterion for TP. USEPA has identified a WQBEL to be incorporated into the discharge permits for the STAs, and the milestones to be accomplished for attaining the WQBEL at each STA discharge. USEPA will use its full Clean Water Act enforcement and permitting authority to assure that these milestones are accomplished.

USEPA agrees with the Court that water quality standards in the Everglades need to be attained as soon as possible. A total STA/FEB expansion of approximately 42,000 acres divided among the three flow paths is needed to fully accomplish this goal. These large treatment systems require a significant amount of time to design, permit, construct, and optimize. The State will need to move forward expeditiously to meet the milestones identified in this Amended Determination.

9/3/2010  
Date

  
A. Stanley Meiburg  
Acting Regional Administrator