

UNITED STATES DISTRICT COURT  
SOUTHERN DISTRICT OF FLORIDA

Case No. 88-1886-Civ-Moreno

UNITED STATES OF AMERICA,

Plaintiff,

v.

SOUTH FLORIDA WATER MANAGEMENT  
DISTRICT, et al.

Defendants.

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**STATE PARTIES' REPLY MEMORANDUM IN SUPPORT  
OF THEIR OBJECTIONS TO SPECIAL MASTER'S REPORT**

Defendants, South Florida Water Management District ("District") and the Florida Department of Environmental Protection ("FDEP"), submit their reply memorandum in support of their objections to the Special Master's report.

**1. Is the water quality of the Refuge as good now as it was during the 1978-1979 baseline?**

The United States agrees with the State Parties that the goal of the Appendix B compliance equation is to replicate the water quality that existed in the Refuge during the 1978-1979 baseline period. (United States Response to the State Parties' and U.S. Sugar's Objections to the Report of the Special Master, dated October 12, 2006 ("USA") at 10, n. 7.) And, based on its silence, it appears to agree with the State's position that if the water quality in the Refuge now is as good as it was in 1978-1979, then absent some type of error, the equation should not be showing a violation.

The United States does take issue, however, with the State's claim that the water quality is as good now as it was during the baseline. During hearing, the State presented evidence showing that average phosphorus concentrations at the 14 interior Refuge stations are lower now than back in the 1978-79 baseline (9.1 ppb vs. 9.4 ppb). In addition, the State showed that average phosphorus concentrations entering the Refuge today are lower than those during the 1978-79 baseline (~80 ppb vs. ~117 ppb). So, too, is the total mass of phosphorus entering the Refuge (~43 tons vs. ~76 tons). Finally, annual phosphorus retention in the Refuge is much lower now than during the baseline period (~20 tons vs. ~48 tons) (i.e., less phosphorus is staying in the Refuge today than during the baseline.) (WMD Exhibits 156, 157, and 159.)<sup>1</sup>

The United States argues that the State's comparison fails to take into account differences in water elevation (i.e., stage) that existed between the two periods. The State's expert in aquatic biology disagreed, pointing out that annual averages include samples collected at both high and low stages, and as such, take stage into account. This is why the Environmental Protection Agency, when adopting water quality standards for surface waters, uses fixed concentrations as limits instead of concentrations that fluctuate

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<sup>1</sup> The United States' response provides an additional argument in the State's favor. It writes: "Dr. Walker testified that the Type I error component in the equation would produce a maximum 10% risk of a falsely reported excursion only if the State Parties had actually improved water quality in the Refuge to the point where it replicated the pristine 1978-79 conditions." (USA at 11.)

Here, the record shows that the Refuge has experienced a long term excursion rate of 10 percent—which, as Dr. Walker explains, is exactly what it should experience if water quality now is the same as the baseline. Excluding months when compliance cannot be measured, i.e., when stage is too low, and months voided by the TOC, there have been 13 excursions in the 132 sampling events since January 1994. (*See* Tribe Exhibit 346.)

based on stage. (Tr. 1180-85.) Moreover, as shown above, if less phosphorus enters the Refuge today than it did during the baseline (indeed, more than 40% less), and at lower concentrations, it stands to reason that regardless of stage, the water quality should be as good as, if not better, than in the baseline.

District Exhibits 180 and 153 reinforce this latter point. As shown in Exhibit 180, there are fewer instances today, than during the baseline, in which a positive gradient exists allowing water to flow inward from the Refuge's perimeter rim canal to its interior where the 14 compliance monitoring stations are located (i.e., water elevation is higher in the rim canal than in its interior). As indicated, this happens about 50 days a year today versus 150 days during the 1978-1979 baseline. Thus, assuming that a positive gradient means more phosphorus can enter the Refuge's interior, there was a significantly greater likelihood of that happening during the baseline period (when, it is worth noting, concentrations were higher). Furthermore, Exhibit 153 shows that, today, after the S-6 diversion, an increase in stage has little effect on the amount of phosphorus (load) entering the Refuge. The opposite was true, however, during the baseline. There, one sees a strong correlation between increases in stages and increased loads. This means that during the baseline, when more phosphorus entered the Refuge (76 tons versus today's 43 tons), most of it was likely to enter during periods of high stages when the likelihood of a positive gradient was greater.<sup>2</sup>

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<sup>2</sup> The United States provides its own comparison of average phosphorus concentrations. (See USA at 4, n. 2.) There, it compares samples from both periods that were collected: (1) when at least 13 of the 14 monitoring stations had sufficient water from which samples could be collected, and (2) when the stage was between 15.9 to 16.6 feet.

The United States also objects to the comparison because there have been changes in sampling procedures since the baseline. (USA at 4, 5 and 12.) However, the United States' witness on this subject, Dr. William Walker, previously testified that historical sampling methods, crude that they may be, did not cause bias in the data. (Tr. at 1817.) His recent opinion to the contrary also overlooks the fact that, when preparing the Appendix B equation, the parties *excluded* that data they believed to be tainted by poor sampling procedures. (WMD Exhibit 142 at E-17.) There was also evidence presented at hearing that laboratory procedures during the baseline tended to under report phosphorus levels, thereby artificially lowering concentrations. (WMD Exhibit 139.) Finally, no one testified as to how much historic concentrations would change.

The United States points to many other alleged facts that purport to prove that water quality has worsened since the baseline. According to Dr. Walker, the State's failure to achieve an 85% load reduction proves that baseline conditions have not been met. (USA at 11.) Yet, on cross examination, Dr. Walker testified that he never determined whether achieving the 85% load reduction would achieve compliance with

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Applying these restraints, there were two months during the baseline (not three, as reported by the United States) with an average phosphorus concentration of 7.9 ppb (not 7.1 ppb), and twelve during the current six year period of record with an average concentration of 9.1 ppb. (USA at 4, n.2; *see also* WMD Exhibits 161 and 182 (monitoring data).)

Putting aside the question of whether an annual average can be based on two monthly samples, or a six-year average can be based on 7 months of data, this analysis suffers from the fact that, under Appendix B, compliance monitoring is based on samples collected when stage is between 15.42 and 17.14 feet deep, and includes months when as few as 3 stations can be sampled. (*See* App. B at B-6.) Rather than selectively choosing monthly samples to support one's hypothesis, and disregarding other valid compliance data that does not, the better practice is to consider all available water quality data.

Appendix B. (Tr. at 1801-02.) (This testimony is consistent with his admission that he's never quantified the relationship between incoming phosphorus loads and changes in concentrations at the 14 compliance monitoring stations. (Tr. at 1768-71.)) Equally important, in two of the four years in which there were excursions, the State actually met the 85% load reduction. (WMD Exhibit 138 at 3.)

The United States also criticizes the State for failing to consider atmospheric deposition when calculating the Refuge's phosphorus load retention rate since 1999, thereby suggesting that maybe things have not improved as much as the State reports. (USA at 5, n. 4.) It fails to point out, however, that there would have been atmospheric deposition during the baseline period as well, thereby effectively undermining this claim.

The United States does a commendable job in trying to create *the impression* that considerable scientific uncertainty exists out there as to whether the current water quality is as good as the 1978-1979 baseline. Yet, little, if any, of its evidence has to do with actual water quality data. With inflow concentrations and loads lower now—and with an excursion rate consistent with the false positive rate one would expect to see if 1978-1979 conditions existed—there is substantial evidence that water quality is as good now as during the baseline and, as a result, some type of error is causing the exceedances.

**2. Is there a strong correlation between incoming phosphorus concentrations and loads and changes in concentration at the 14 interior monitoring stations?**

As discussed in the State's response, the United States has not quantified, or attempted to quantify, the correlation it claims to exist between incoming phosphorus and changes in interior concentrations. This means that it does not know the rate by which

interior phosphorus levels will change in response to changes in inflow concentrations or loads, or the sensitivity of this relationship. (Tr. at 1768.) Stated differently, the United States does not know if there is a one-to-one ratio between the amount of phosphorus entering the Refuge and changes in phosphorus levels at the 14 interior stations, or, as Dr. Goforth testified, a very weak relationship of no greater than twenty-to-one and of no predictive value. This is important because the United States claims that the exceedances were caused by incoming phosphorus and not error.

Instead of establishing that a correlation exists, the United States provides reasons for why it can't find one. (USA at 8-9.) According to the United States, many things are "frustrating" its attempt to establish a relationship, including periodic pumping at inflow stations that "may" cause phosphorus to be taken up by marsh vegetation (only to be released later); or local variations in topography, vegetation, or water depth that "may" be preventing phosphorus from reaching the 14 stations; or the phosphorus might be bound up in flocculent particles and released later. (*Id.* at 8; *see also* USA Exhibit 57 at 16.)

Yet, all these factors are just as likely to exist on days when excursions occur—as well as on days when they do not. In essence, the United States concludes there is a correlation between excursions, high stages, inward gradient, and loads by looking only at the 9 excursions that have occurred since February 1999, and ignoring what happened during the 54 other months when they did not. This is no different than flipping a coin ten times and, even though there were five heads and five tails, concluding that there is 100% likelihood that the coin will land heads, and discounting the five tails by claiming they may have been due to irregularities in the shape of one's thumb, or in the surface on

which the coin lands, that preclude those tails from being heads. In other words, it is just bad science.

Dr. Goforth's analysis may have been "simple," however, it was based on accepted statistical procedures and served to corroborate the other evidence upon which he relied when concluding there is, at best, only a weak correlation. (WMD Exhibit 135 at 3; 138 at 1-2.) As pointed out by Dr. Goforth, if a correlation exists, it should have resulted in an excursion when the four hurricanes came through Florida in 2004 with their high loads, stages, and inward gradients. It did not.

**3. Is model bias causing the Appendix B equation to predict erroneously low phosphorus levels during months in late summer?**

Dr. Marks testified that the sample size used to create the Appendix B equation was too small, and that this causes it to generate phosphorus concentrations that are not consistent with the water quality that actually existed during the baseline—especially at stages above 16.5 where the equation relied upon two samples. As explained by Dr. Marks, at a minimum, there needed to be 30 samples to adequately replicate water quality conditions during the baseline period. (Tr. at 827-28; WMD Exhibit 136 at 17; *see also* Tr. at 1219-20 (Redfield).)

The United States does not dispute Dr. Marks' testimony that 30 data points should have been used, but instead, implies that 200 data points were, in fact, used to create the equation. (USA at 13.) A careful reading of Dr. Walker's testimony reveals, however, that he did not testify that 200 data points were actually used to create the equation, i.e., that 200 data points were individually fitted to create in the regression

equation forming the basis of Appendix B. Rather, he states that the 14 monthly samples used to create the equation “relate” to 200 other data points. This is a reference to the fact that in each monthly sampling event, up to 14 stations are sampled. The concentrations measured at the 14 stations, however, are averaged together to create the monthly geometric mean used for compliance purposes. (See WMD Exhibit 161 at 2 (depicting the wide range of individual station concentrations which can be compared to single monthly geometric mean).) It was the latter figure, the monthly average, and not the 14 independent values collected from the 14 stations and which display significantly greater variability, that was used to create the equation.

The United States also disputes Dr. Marks’ testimony that the model was biased. Drs. Marks and Redfield explained that the equation was not based on samples collected from every month of the year, and, in fact, that half the samples were collected from the four month period of July through October – the period when 7 of the nine excursions take place. (WMD 136 at 17-19; Tr. at 849-53.) In addition, the dataset did not include month-to-month samples. These limitations had two effects. First, because not all months were sampled, one does not see the random distribution of excursions that one would expect to see if there were a real water quality problem. Rather, “[t]here is a clear pattern of seasonal under predictions occurring in the fall months when phosphorus levels are beginning to drop, and over predictions occurring in the spring months when the phosphorus levels are rising. . . .” (WMD 136 at 18-20.) Second, the lack of month-to-month samples in the baseline dataset means that the equation cannot accurately replicate monthly changes in the Refuge during the baseline. Stated differently, because only

bimonthly data was used, the equation assumes that phosphorus concentrations will change as quickly in one month as they actually did in two months during the baseline, something Refuge biology tells us is not true. (Tr. at 1221-27.)

Although its response is not entirely clear, the United States seems to argue that the equation is not biased seasonally because excursions will only occur during the initial month of a rapidly rising stage. (USA at 13-14.) “[T]he elevated concentrations themselves do not persist for long—they quickly dissipate due to absorption by vegetation, sediments, and soils.” (*Id.* at 14.) As reflected in USA Exhibit 119, however, while some excursions do take place during the initial month of a rapidly rising stage, many do not and, just as important, there are numerous instances where rapidly rising stages don’t result in excursions at all.

Given the fact that water quality is as good now as it was in the baseline, evidence of model bias corroborates the conclusion that error is causing the exceedances.

**4. There is no need for a subsequent remedial order.**

The Tribe’s Omnibus Response suggests that this Court, under the circumstances of this case, may enforce the Consent Decree and impose a subsequent remedial order without following the procedural and substantive safeguards afforded to a defendant, as set forth in the Eleventh Circuit cases of *Newman v. State of Alabama*, 683 F.2d 1312 (11th Cir. 1982), *Reynolds v. McInnes*, 383 F.3d 1201 (11th Cir. 2003), *Reynolds v. Roberts*, 207 F.3d 1288 (11th Cir. 2000) and *Mercer v. Mitchell*, 908 F.2d 763 (11th Cir. 1990). For the reasons articulated at the hearing before this Court on October 16, 2006, the Tribe is wrong.

It is interesting to observe that the Tribe did not cite one case from the Eleventh Circuit in support of its legal position and, with the exception of *Alexander v. Hill*, 707 F.2d 780 (4th Cir. 1983), did not cite cases that involved negotiated consent decrees. It did, however, reference United States Supreme Court cases that support the position of the State. For example, the Tribe cited *Smith v. Bounds*, 813 F.2d 1299 (4th Cir. 1987), which, unlike the instant case, deals with a violation of a Constitutional right and alleged foot-dragging by the State of North Carolina. Even though the federal district court in that case had the clear authority to act and enter an order to show cause why State officials should not be held in contempt, the Court held that the district court did not need to do so since it is invested with broad equitable powers. The predicate existed, however, for a contempt proceeding. The Fourth Circuit reminded us, however, of the principle of equitable restraint as taught by the United States Supreme Court. In *O’Shea v. Littleton*, 414 U.S. 488, 500 (1974), the Court stated that “[a] federal court should not intervene to establish the basis for future intervention that would be so intrusive and unworkable.” Rather, “the object is to sustain the special delicacy of the adjustment to be preserved between federal equitable power and State administration of its own law.” *Id.*

If this Court were to enter the order recommended by the Special Master and endorsed by the Tribe and the other Plaintiff-Intervenors, the Order would require the State to comply with a portion of the *Long-Term Plan for Achieving Water Quality Goals* (Long-Term Plan), which is a requirement imposed on the State Parties by the Everglades Forever Act, Section 373.4592, Florida Statutes. State law requires an open and transparent process for modifications to the Long-Term Plan. However, if this Court

enters the recommended order, any modifications to that order requiring compliance with the Long-Term Plan would need to take place in this Court after litigation and hearings. As *O'Shea* teaches, this would result in an intervention that would establish the “basis for future intervention that would be so intrusive and unworkable.” *O'Shea* at 500. In addition to this violating the spirit of the principle of equitable restraint, it would be an unnecessary burden on this Court since a State process is in place to deal with the implementation and modification, if necessary, of the Long-Term Plan.

Although there was discussion at the October 16, 2006, hearing on the ability of the State to modify the Long-Term Plan, the Florida Legislature clearly set forth a detailed and reasonable procedure for implementation and modification of the Long-Term Plan. In Section 3(b) of the Everglades Forever Act, *supra*, the Legislature found that:

the Long-Term Plan provides the best available phosphorus reduction technology based upon a combination of the BMPs and STAs described in the Plan provided that the Plan shall seek to achieve the phosphorus criterion in the Everglades Protection Area. . . . Revisions to the Long-Term Plan shall be incorporated through an adaptive management approach including a process development and engineering component to identify and implement incremental optimization measures for further phosphorus reductions. Revisions to the Long-Term Plan shall be approved by the department. In addition, the department may propose changes to the Long-Term Plan as science and environmental conditions warrant (emphasis added). (2006)

Fla. Stat. § 373.4592(3)(b); *see also* WMD Exhibit 13 at 1-20 to 1-24 (discussing revision process).

The Eleventh Circuit described this Consent Decree as follows:

Nothing in this Agreement is intended to abrogate the District's and DER's duties to act in accordance with Florida law. Indeed, the Agreement requires the District and DER to fulfill their obligations under existing state law.' 847 F.Supp at 1572. The district court concluded that . . . '[t]he Agreement effects a transfer of these proceedings to a state administrative forum.' *Id.* at 1582. . . . [T]he Agreement commits the State to perform certain remedial measures which are fully authorized by State law. The essence of the Agreement is to achieve compliance with State law (emphasis added).

*U.S. v. South Florida Water Mgmt. Dist.*, 28 F.3d 1563, 1569 (11th Cir. 1994).

In light of this discussion by the Eleventh Circuit, it is interesting to note that the Tribe cites to *Frew v. Hawkins*, 540 U.S. 431 (2002) on pages 4 and 5 of its Omnibus Response. That case makes reference to *Pennhurst State Sch. & Hosp. v. Halderman*, 465 U.S. 89 (1984), which states that "it is difficult to think of a greater intrusion on state sovereignty than when a federal court instructs state officials on how to conform their conduct to state law." *Id.* at 106.

In light of the teachings by the United States Supreme Court on the principle of equitable restraint, the delicate balance of the adjustment to be preserved between federal equitable power and State administration of its own laws and intrusions on state sovereignty when state law is involved, not to mention the case law of the Eleventh Circuit requiring compliance with procedural and substantive safeguards when enforcing a consent decree, the proper course for this Court to take is to restrain from entering a subsequent remedial order and allow the State to achieve compliance with State law.

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**CERTIFICATE OF SERVICE**

I hereby certify that a true and correct copy of the foregoing has been served by Electronic Transmission and U.S. Mail this 20th day of October, 2006, on the following:

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