

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.

**STATE PARTIES' RESPONSE TO UNITED STATES' MOTION TO ADOPT
IN PART, AND MODIFY IN PART, THE REPORT OF THE SPECIAL MASTER**

Defendants, Florida Department of Environmental Protection ("FDEP") and the South Florida Water Management District ("District"), serve their response to the motion of the United States to adopt in part, and modify in part, the Report of the Special Master (July 5, 2006) ("Report") ("Motion to Adopt"), the comments of the Miccosukee Tribe about the Report, and the response of Audubon Society and Sierra Club et al.

1. **Standard of Review.** The United States asserts that a "clearly erroneous" standard of review applies to factual findings of the Special Master. (Motion to Adopt at 9-10 (*quoting Martin v. Univ. of So. Alabama*, 911 F.2d 604, 608 (11th Cir. 1990)).) This is incorrect. As provided in the Court's Order Clarifying Role of Special Master in Light of Amendments to Rule 53, dated February 2, 2004, ("Order") the Court is to conduct a *de novo* review of the Special Master's findings of fact and conclusions of law.

(Order at p. 10; *see also* Fed.R.Civ.P. 53(g)(3) (same).) *Martin* involved a prior version of Rule 53 that expressly applied a “clearly erroneous” standard of review to findings of fact. *See Amendments to the Federal Rules of Civil Procedure*, 215 F.R.D. 158, 198-99, 202, and 340 (2003).

2. **Consideration of Appendix B’s high false positive rate is not a collateral attack on the Consent Decree.** The State Parties sought to introduce expert testimony of Dr. Ronald Marks, a retired professor of statistics from the University of Florida. According to Dr. Marks, whenever the Appendix B equation says there has been an exceedance of its phosphorus limits, i.e., two excursions occurring within 12 monthly sampling events, there is a 34% likelihood that the exceedance is not due to an actual water quality problem in the Refuge, but instead, stems from statistical chance caused by use of an annual 10% rejection level in the equation (90% confidence interval) in order to account for natural variability in the Refuge. Stated differently, the Appendix B compliance equation has a 34% false positive rate.¹

The State introduced substantial evidence showing that the water quality at the 14 interior stations in the Refuge is as good as, if not better than, that which existed in 1978-79 and that was used to create the compliance equation. As explained by the State’s experts, in such a case, absent error, the equation should not be claiming there is a

¹ When a test wrongly diagnoses someone or something as having a particular condition or ailment, when in fact it is healthy, this is known as a “false positive” or “Type I error.” *See Webster’s Ninth New Collegiate Dictionary* 447 and 1277 (1989).

violation. (Tr. 1178-85.) While Appendix B's high false positive rate does not, by itself, establish that the Refuge exceedances are due to "error," knowing that the equation has a high propensity to wrongly diagnose a water quality problem (i.e., one-out-of-three times), supports the experts' opinions and further corroborates other evidence showing that something other than a water quality problem is causing the exceedances. *See discussion infra* at 5-9. No party disputed Dr. Marks' calculation of a 34% false positive rate, nor suggested that Type I error is not a recognized type of "error."

The Special Master excluded Dr. Marks' testimony, however, claiming it was an impermissible collateral attack on the terms of the Consent Decree. (Report at 20.) Because the State Parties agreed to be bound by the Appendix B compliance test when settling this case, he reasoned, they shouldn't be heard to complain about its weaknesses now. "That argument is foreclosed by the terms of their bargain." (*Id.*)

The Special Master's analysis might make sense if Appendix B did not include an "error" clause, i.e., it simply provided that the State must meet the phosphorus levels or else. But that is not the case. Appendix B expressly contemplates consideration of error when deciding if an exceedance is a violation. Unless specifically defined in the Decree, the word "error" should be given its ordinary meaning, which in this case, is quite broad. *See e.g., International Erectors, Inc. v. Wilhoit Steel Erectors & Rental Service*, 400 F.2d 465, 468-70 (5th Cir. 1968). *Webster's* defines "error" to include "a deficiency or imperfection in structure or function" or "an act that through ignorance, deficiency, or accident departs from or fails to achieve what should be done." *Webster's Ninth New Collegiate Dictionary* 423 (1989); *see also In re Lewis*, 212 F.3d 980, 984 (7th Cir. 2000)

(equating “error” with false positives). Diagnosing a water quality problem when one does not, in reality, exist, meets this definition.

Rather than undermine the terms of the Consent Decree, the consideration of the equation’s false positive rate conforms with accepted scientific practice. As explained in one learned treatise, when talking about confidence intervals:

The importance of any decision that is to be made from a statistical interval needs to be taken into consideration in selecting a confidence level. For example, at the outset of a research project, one might be willing to take a reasonable chance of drawing incorrect conclusions about the mean of the distribution of a population characteristic and use a relatively low confidence level, such as 90%, or even 80%, because the initial conclusions will presumably be corroborated by subsequent analyses. On the other hand, if one is about to report the final results of a project, and perhaps recommend building an expensive new plant, or releasing a new drug for general use, one might wish a higher degree of confidence in the correctness of one’s claim.

G. Hahn & W. Meeker, *Statistical Intervals* (1991), at 37 (emphasis added); *see also*, C.L. Meinert, *Clinical Trials* (1986), at 77).

Thus, instead of precluding subsequent analysis for error, a confidence interval actually tells the scientist whether additional data should be considered. This makes sense. For example, doctors routinely use stress tests to see if a patient has heart disease. Stress tests, however, have a 20% false positive rate. Do doctors continue to use stress tests, notwithstanding their propensity to misdiagnose? Of course. Do they require heart surgery every time a patient fails it? No. They order more tests because of the potential for false positives. (WMD Exhibit 136 at 9-10; Tr. 978-79.)

Not surprisingly, this was the position advocated previously by the United States' expert witness, Dr. William Walker. As explained by Dr. Walker when discussing the Appendix B equation:

Unless a model can be constructed to explain all of the variance in the data, there is no way to design a compliance test without explicitly adopting a maximum-Type I error. In this case, the .10 value was arrived at by negotiation and with the understanding that results of the test would be interpreted by a scientific panel in light of the inherent risk of Type I error.

William Walker, Ph.D. "Interim Phosphorus Standards for the Everglades," EPA (April 2000) (emphasis added). Accordingly, Type I error is a type of "error" and it should have been considered in accordance with the terms of Appendix B, as well as accepted scientific practice.

3. **Substantial evidence of error exists.** In their Response to the Special Master's Report, the State Parties demonstrated that there is substantial evidence that the exceedances were due to error – even if one does not consider the high false positive rate. As indicated *supra*, 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). This is important because the goal of the Appendix B compliance equation is to return phosphorus levels in the Refuge to those that existed during the 1978-79 baseline period. (Tr. at 1813-15.) Logic dictates that there could not be a true "violation" if the water quality in the Refuge at the time of any exceedance was as good as, or better than, that during the baseline period from which the equation was created. This conclusion was corroborated by the analyses of Dr. Goforth, who examined the relationship between external phosphorus

levels entering the Refuge and resulting changes in water quality at the 14 Refuge monitoring stations. This study demonstrated a weak correlation of approximately 5%, at best, meaning that only 5% of the variability in phosphorus levels at the 14 monitoring stations can be attributed to phosphorus entering the Refuge. This is quantifiable proof that something other than external phosphorus inputs are causing the excursions, e.g., error. (Tr. at 1022, 1025, 1031-32; WMD Exhibits 135 at 2-5 and 138 at 1-3.)

The United States takes issue with Dr. Redfield's analysis claiming it is not fair to compare the current period of record with the 1978-79 baseline because water elevations in the Refuge were permanently raised in 1995. (Motion to Adopt at 19; *see also* Tr. at 1176-77 (discussing 1995 change in water elevation).) This argument makes two fundamental mistakes. First, it overlooks the fact that average phosphorus concentrations entering the Refuge today are also 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., more phosphorus leaves the Refuge today than during the baseline. (WMD Exhibits 156, 157, and 159.)

While one could hypothesize that the long-term decrease in internal phosphorus levels was caused by the permanent increase in water elevation, (given the fact that during the course of a year, monthly phosphorus levels will rise and fall inversely to monthly changes in stage), the United States did not prove this. In fact, Dr. Walker testified that the 1995 change in stage could cause phosphorus levels to go down or up, and the only way to find out is develop a new model. "[T]he increase in regulation

schedule could have had positive or negative impacts on concentration. It is not possible to determine the net effects on concentration without a mathematical model” (USA Exhibit 57 at 25 (emphasis added); *see also*, USA Exhibit 57 at 28 (same).) Given undisputed evidence showing that interior phosphorus concentrations dropped at the same time there was a corresponding drop in phosphorus entering the Refuge, as well as a significant drop in the amount of phosphorus staying in the Refuge, the more logical conclusion is that interior phosphorus levels today are lower because the water quality in the Refuge has improved.

Second, the United States’ claims of an “apples to oranges” comparison is not justified. When one compares two water samples by examining the concentration of a chemical in each, such as when comparing 9.1 ppb to 9.4 ppb, one is, in fact, making a fair comparison. This is especially true when comparing annual averages which take monthly fluctuations into account. Because organisms in the water cannot tell the difference between water with 9.1 ppb phosphorus when they are in water two feet deep versus three feet, today’s water quality is, in fact, better now than the 9.4 ppb that existed during the baseline. (Tr. 1183-85.)

The United States also takes issue with Dr. Goforth’s correlation analysis, suggesting that a strong correlation does exist between phosphorus entering the Refuge and changes in water quality at the 14 interior monitoring stations, only that it takes place at times of high stage when phosphorus leaves the Refuge’s perimeter rim canal and enters its interior. (Motion to Adopt at 20-21.) This argument has one significant problem. Dr. Walker testified he never quantified, or attempted to quantify, this

perceived correlation. This means that he does not know the rate by which interior phosphorus levels will change in response to changes in inflow concentrations, or the sensitivity of this relationship. (Tr. at 1768.) Stated differently, he 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.

The illusory nature of Dr. Walker's correlation was confirmed during cross-examination. According to Dr. Walker, a correlation exists because "some excursions were temporally correlated with external loading events and hydraulic gradients sloping from the rim canal towards marsh." (USA Exhibit 57 at 15.)

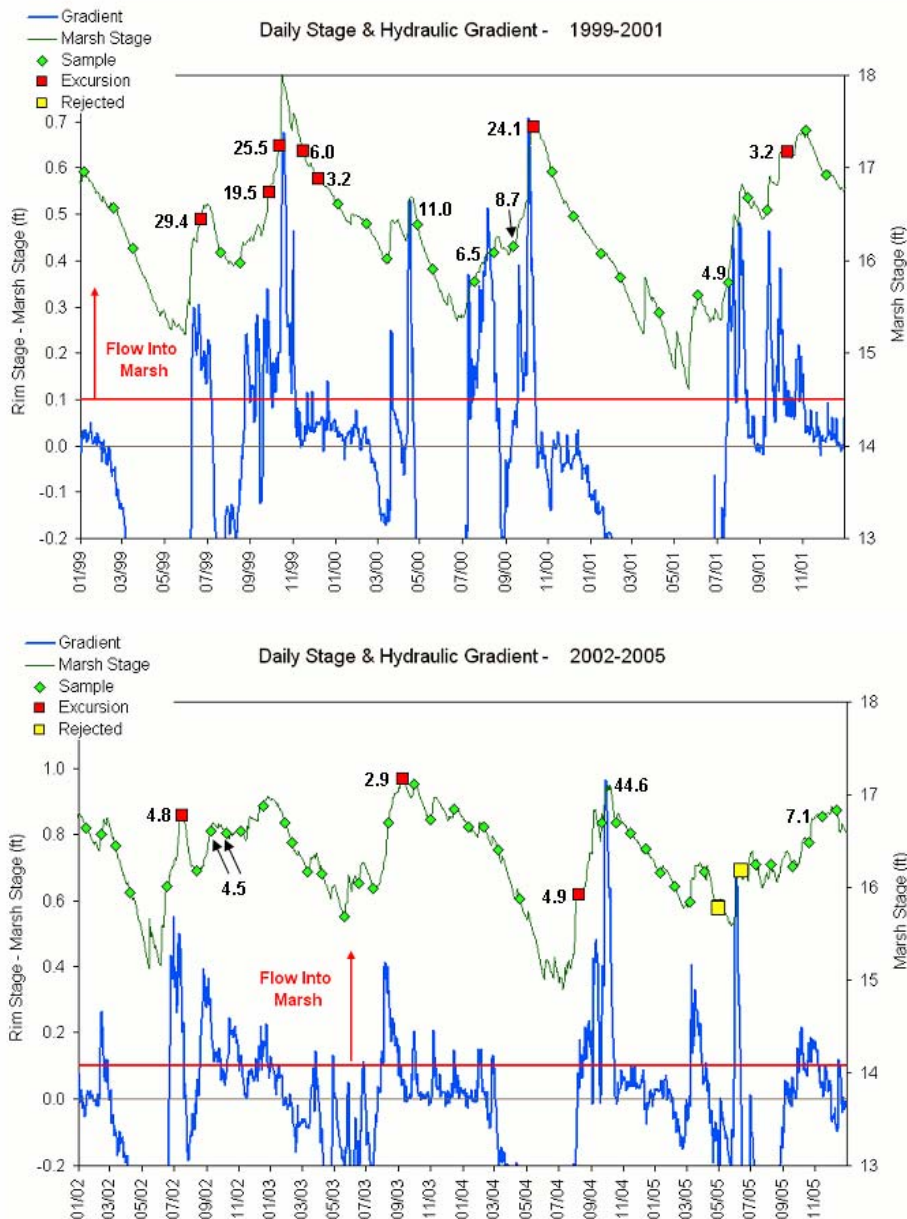
I have to start from my conceptual model and I'm testing the model by looking at these time series and looking at the data over different time fields. And based on the frequency, based on the fact that it's more often than not, I'm seeing there is an association. That is enough for me to, you know, express my opinion. That does not – I do not have to have – to be able to explain away all the times that it didn't occur. That could be due just to uncertainty or any number of factors.

(Tr. at 1790) (emphasis added).

Yet, Dr. Walker never presented any written or scientific analysis showing that excursions did, in fact, occur more frequently in cases of external loading events and inward sloping hydraulic gradients. Nor did he explain what criteria he used when he tallied up the excursions and concluded that they occurred frequently enough to satisfy him. Absent this information, neither the Court—nor anyone else—can review the six years of sampling data since February 1999 and replicate Dr. Walker's analysis. Rather, the Court must simply take Dr. Walker's word for it, i.e., the *ipse dixit* of Dr. Walker that

“the frequency is more often than not” and, just as important, that the frequency is of any real significance when understanding the cause of the excursions. *See Kumho Tire Co., Ltd. v. Carmichael*, 526 U.S. 137, 157 (1999).

Modified USA Exhibit 119, Figure 1 below, demonstrates this point. There, actual monthly phosphorus loads have been superimposed upon the stage and excursion analysis prepared by Dr. Walker for the compliance period of record. If one counts monthly sampling events that involved gradients from the rim canal of 0.3 feet or greater (as measured in blue when compared to the left side of the exhibit), eight of the ten excursions meet this criteria (June, September, October, and November 1999; October 2000; October 2001; June 2002; and August 2003). Yet, during the same period of time, one also finds ten instances when there was a gradient of 0.3 feet or greater and there was no resulting excursion (April, July and August 2000; July and August 2001; September 2002; August 2003, September and October 2004, and April 2005). Similar results are reached when one uses a 0.4 gradient or tries to find a correlation among loads, gradient, and excursions.



Perhaps the most glaring weakness in Dr. Walker’s analysis was seen during the months of August, September, and October 2004, when Florida suffered its worst hurricane season in decades. There, an excursion took place in August prior to the arrival of any storm and any significant jump in gradient. Yet, during September and October 2004—when four hurricanes slammed the State, a year’s worth of phosphorus entered the

Refuge (66 tons), and gradients spiked dramatically—no excursions took place.

Dr. Walker’s “correlation” is just as likely to not exist, as it is to exist—a toss of a coin—and as such, is not a correlation at all.

4. **Judicial estoppel does not preclude the State Parties from introducing evidence of false positives or modeling error and bias.** The United States contends that judicial estoppel prevents the State Parties from claiming that “error” includes Type I error, model bias, and the like. (Motion to Adopt at 15-18.) There are several problems with this argument. First, the State Parties never stated in a motion or pleading that they would not assert Type I error or model bias as a defense. In fact, the opposite is true. Because Appendix B expressly contemplates consideration of “error,” the State is acting consistent with its prior pleadings. For this reason, the United States’ reliance on *New Hampshire v. Maine*, 532 U.S. 742 (2001), is without merit. There, the State of New Hampshire took a position in subsequent litigation that was contrary to its unambiguous statements made in prior litigation. As stated by the Court, “[b]ecause New Hampshire, in the 1977 proceeding, agreed without reservation that the words ‘Middle of the River’ mean the middle of the Piscataqua River’s main channel of navigation, we conclude that New Hampshire is estopped from asserting now that the boundary runs along the Maine shore.” 532 U.S. at 745 (emphasis added); *see also, Id. at 750* (positions must be “clearly

inconsistent”); *see generally, Burnes v. Pemco Aeroplex, Inc.*, 291 F.3d 1282 (11th Cir. 2002) (necessity of divergent positions under oath).²

Second, the State Parties are pursuing their false positive argument in the manner envisioned by the United States in 1996 when this issue first arose. In response to the Settling Parties’ 1995 motion to modify the Settlement Agreement, the Defendant Intervenor Farm Bureau presented testimony showing that the Appendix B compliance model generates false positives at a high rate and, as a result, the Settling Parties should examine evidence of false positives. In its post-hearing responsive memorandum, the United States stated then:

He [the Farm Bureau witness, Dr. McClave] urged that before we make decisions about enlarging STA’s or imposing more stringent BMP requirements, we assure that the process is not producing a high false positive rate.

It would be difficult to disagree with Dr. McClave’s recommendation. However, the problem he poses is certainly not now before the Court. *If the Consent Decree’s process indicates a violation of the interim levels when they become applicable in the future the federal parties will undoubtedly turn to the State parties and ask that the obligations be met. If the State parties share Dr. McClave’s concerns, they will presumably raise them at that time.* If the settling parties cannot resolve their differences through the Technical Oversight Committee, the question will be forwarded to their principals. If, and only if, the principals cannot agree will the issue return to this Court—with the settling parties on opposite sides. Agriculture will have an opportunity at that time to make its arguments in support of the State parties.

² For the same reason, the statements *made by FDEP* during the 1995 and 1996 administrative proceedings do not give rise to judicial estoppel. Nowhere does FDEP state that it will not offer evidence of Type I error.

(United States' Post-Hearing Memorandum, dated January 31, 1996, at 37–38 (emphasis added).)

Finally, none of the other criteria identified in *New Hampshire* or *Burnes* are present, i.e., intent to make a mockery of the court, success in persuading a court to adopt the prior position, or unfair advantage. Judicial estoppel does not apply.

5. The State's alleged failure to develop a model and do other research is immaterial with regard to whether there is substantial evidence of error.

At page 27 of the Report, the Special Master suggests that the State's failure to undertake research and computer modeling contemplated by the Consent Decree, or the TOC's failure to designate a technical panel of scientists to evaluate compliance with the Decree, is evidence that may be considered when deciding whether the State has met its burden in demonstrating substantial evidence of error. (Report at 27; *see also* Sett. Agr. at ¶ 11 and App. D.)

The absence of evidence is not, by itself, evidence of an element to a claim or defense. The parties briefed the issue of what constitutes "substantial evidence." The State Parties contend that the traditional definition should apply, i.e., "that which a reasoning mind would accept as sufficient to support a particular conclusion and consists of more than a mere scintilla of evidence but may be somewhat less than a preponderance." *State v. Edwards*, 536 So. 2d 288, 292 n.3 (Fla. 1st DCA 1988) (*quoting Black's Law Dictionary* 1281 (5th Edition 1979)); *see also DeGroot v. Sheffield*, 95 So. 2d 912, 916 (Fla. 1957). The United States argued for a "preponderance of the evidence"

standard. (United States' Prehearing Memorandum of Law Concerning Evidentiary Issues and Other Matters, dated October 10, 2005, at 15-16.) Yet, regardless of which burden of proof applies, the ultimate decision of who carried that burden must be predicated on the evidence introduced into the record, not what could have been.

6. The request by the Miccosukee Tribe, Audubon Society, and Sierra Club et al., to order the State Parties to implement the Projects identified in Appendix A to the Report should be denied.

Without explanation or legal citation, the Miccosukee Tribe, Audubon Society, and Sierra Club et al., urge the Court to adopt the Report in its entirety, including the Special Master's recommendation that the State be ordered to implement the projects identified in Appendix A of the Report. In response, the State Parties incorporate their arguments and authorities set forth in their Response to the Special Master's Report. In addition, the State Parties would point out that if this Court imposes a supplemental remedial order as recommended by the Special Master, this Court would be requiring the State to comply with State law since all of the proposed remedies are contained in the District's *Long-Term Plan for Achieving Water Quality Goals* (WMD Exhibits 13-15), which is a requirement imposed on the State parties by the Florida Legislature in the Everglades Forever Act, Section 373.4592, Florida Statutes. As the Supreme Court instructs, "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."

Pennhurst State Sch. & Hosp. v. Halderman, 465 U.S. 89, 106 (1984). *See also, Frew v. Hawkins*, 540 U.S. 431, 439 (2004).

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I hereby certify that a true and correct copy of the foregoing Response has been served by electronic transmission and U.S. Mail this 12th day of October, 2006, on the following:

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