

No. 142, Original

In the

Supreme Court of the United States

STATE OF FLORIDA,

Plaintiff,

v.

STATE OF GEORGIA,

Defendant.

Before the Special Master

Hon. Ralph I. Lancaster

STATE OF FLORIDA'S POST-TRIAL RESPONSE BRIEF

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INTRODUCTION

After five weeks of trial and the exchange of lengthy post-trial briefs, the factual disputes in this matter have significantly narrowed. Several key facts are now undisputed, and many others are no longer subject to reasonable dispute. Those facts establish that Florida is entitled to the equitable apportionment it has requested.

First, there is no dispute that flows to the Apalachicola River Basin in the past decade have been lower for longer periods than at any time in recorded history. Dkt. No. 628, Ga. Post-Trial Br. 73, 75; Dkt. No. 629, Fla. Post-Trial Br. 19-20. This is clearly evident from objective data maintained by the U.S. Geological Survey (“USGS”) at the northernmost point of Florida’s Apalachicola River. *See* FX-D-1 (Chattahoochee gage data); JX-128. The same unmistakable pattern of historic low flows is clearly evident throughout Georgia’s Flint River Basin, including at the Bainbridge gage on the Flint River and the Iron City gage on Spring Creek. FX-D-2 (Bainbridge gage data); Zeng PFD ¶¶ 4 n.1, 22 (Zeng Demo. 3); Bedient PFD ¶ 37 n.4; Fla. Post-Trial Br. 20-21; *see* FX-56 at GA01643082; FX-49b at GA00278839.

Second, there is no dispute that Georgia’s upstream consumption of water has grown dramatically since the 1970s, and has been a major cause for record low flows in the Flint River Basin. Georgia’s own trial witnesses, including its experts, plotted the impact of Georgia’s consumption on streamflow and unambiguously found that: (1) Georgia consumption has been higher in recent drought years than at any time in recorded history; and (2) this consumption substantially reduced the already low flows during those years. *See, e.g.*, Zeng PFD ¶¶ 22-23 (Zeng Demo. 3) (calculating peak depletions of almost 1,900 cubic feet per second (“cfs”) in recent dry years, approximately 1,400 cfs of which was attributable to agricultural consumption in the Flint River Basin); *see infra* at 20-22 (discussing dozens of internal Georgia documents reaching similar conclusions). Although the parties certainly quarrel about the total quantity of

Georgia's burgeoning consumptive impacts (Georgia estimates roughly 1,900 cfs, while Florida estimates 3,500-4,000 cfs), the parties *agree* that Georgia's consumption has grown substantially and that its consumption has substantially exacerbated the effects of climatic drought. *See infra* at 19-26 (discussion of impacts of consumptive use).

Third, although Georgia initially took the position in this case that the U.S. Army Corps of Engineers (the "Corps") would offset any and all positive impacts to Florida generated by reducing Georgia's consumption, Georgia has now conceded that this is not true. *E.g.*, Ga. Post-Trial Br. 8-9 (contending now that only certain Corps "offsets" would occur during certain periods of certain drought years). In addition, the Corps has now confirmed that reductions in Georgia consumption would benefit both Florida and the Corps itself, either immediately by increasing inflows of water into the system or over time by providing a critical cushion that would "delay the onset of drought operations," "extend the Corps' ability to meet all project purposes" during a drought (including resource conservation), and "quicken the resumption of normal operations after a drought ends." Dkt. No. 630, U.S. Post-Trial Br. as *Amicus Curiae* 2 ("U.S. Post-Trial Brief"); *see id.* at 14. The Corps also has explicitly confirmed that a cap on Georgia's consumption is unlikely to adversely affect the Corps' operations. *Id.* at 3 n.1.

Fourth, the evidence has also clearly demonstrated that increasing flows would "alleviate" harm to both the Apalachicola Bay and River. *See* Dkt. No. 128, Order on Ga.'s Mot. to Dismiss 14 ("MTD Order"). Georgia suggests that Florida is not entitled to relief unless it can show that the requested relief eliminates 100% of the harm. *See* Ga. Post-Trial Br. 88. Of course, this is not how an equitable apportionment works, and Georgia has no legal authority to support its position. *See New Jersey v. New York*, 283 U.S. 336, 346-47 (1931); MTD Order 10, 13 (recognizing that the Supreme Court has "broad authority in equitable apportionment cases to

afford the relief most appropriate in light of all the circumstances”); *infra* at 51-54, 63. Further, Georgia put on no evidence to dispute the findings by the U.S. Fish and Wildlife Service (“USFWS”) and U.S. Environmental Protection Agency (“EPA”) that harms to the Apalachicola ecosystem could be alleviated by additional flows necessary for the health of the ecosystem. *See generally* FX-599; *see, e.g.*, FX-D-23 (demonstrating that Apalachicola River flows failed to meet those necessary levels over and over again since the late 1990s); *infra* at 39-40, 65.

Fifth, Georgia cannot, and has not, seriously questioned that Florida itself has taken numerous significant steps to conserve water and steward resources in its part of the Apalachicola-Chattahoochee-Flint River Basin (“ACF Basin”). Unlike Georgia, Florida has put absolute caps on the amount of water its farmers can use on crops, even though there are a miniscule number of farmed acres in the Apalachicola when compared with Georgia. Fla. Post-Trial Br. 64-65; *see* Cyphers PFD ¶¶ 25, 36-39. Indeed, Florida’s small ACF Basin population consumes a tiny amount of water in comparison with Georgia. And Florida has expended hundreds of millions of dollars to set aside thousands of acres of natural areas to preserve the Apalachicola River and Bay. Fla. Post-Trial Br. 61-63; *see, e.g.*, Steverson PFD ¶¶ 18-19, 22. Georgia chose not to cross-examine the Secretary of Florida’s Department of Environmental Protection on these issues, thus conceding the entirety of his important testimony. Georgia’s argument that thousands of cfs of Apalachicola River flow somehow mysteriously disappear in this sparsely populated area is entirely unfounded, and demonstrates the lengths to which Georgia will go to try to cloud the record with unscientific and unsubstantiated theories.

Finally, Georgia has failed to establish that its own conduct as to the waters at issue has been “equitable” in ways that matter here. To be sure, Georgia argues at length that it has worked to reduce its own municipal consumption in Atlanta, and suggests that Florida is asking

this Court to shut down “the economic foundation of the country’s ninth largest metropolitan area as well as a multi-billion dollar agricultural sector that provides key crops and generates thousands of jobs.” Ga. Post-Trial Br. 1. This is a straw man. Florida is not seeking to starve Atlanta of water, or to cause any economic collapse. It is simply asking the Court to ensure that Georgia takes responsibility for its own consumption and acts equitably in conserving a shared natural resource in the same ways that numerous other areas of the United States already do.

As Florida demonstrated at trial, the consumption cap remedy Florida seeks can be satisfied with multiple relatively low cost common sense conservation measures that Georgia itself has previously contemplated. *See infra* at 51-56, 67-71. Georgia declined to call its lone agricultural expert (Dr. Suat Irmak), and Georgia’s economist admitted that he failed to assess the costs or benefits of many of these key proposals. Nor has Georgia offered any meaningful explanations for why these common-sense measures cannot be accomplished, or why Georgia ignored a mountain of internal documentation over the past 20 years admitting again and again that Georgia needed to remedy its “over-allocation” of ACF water resources. Likewise, over and over again, Georgia ignored pointed warnings from federal agencies identifying a need for “immediate” action to solve the problem. *E.g.*, FX-48 at GA00186367.

The evidence overwhelmingly shows that, while it has recognized the problem, Georgia has consistently refused to take sufficient measures on its own to conserve water—particularly for Flint River Basin agriculture. This action is the last opportunity to address this problem, and exactly why the Supreme Court has the authority to equitably apportion shared assets when one State refuses to act as a responsible steward of those resources. Without a remedy here, Georgia’s upstream consumption will remain wholly unconstrained and continue to grow, and the harm demonstrated over past decades not only will persist but will worsen.

ARGUMENT

I. AS THE COURT HAS ALREADY CORRECTLY RECOGNIZED, THE ARMY CORPS IS NOT AN INDISPENSABLE PARTY

After more than a month of trial, Georgia's lead argument in its post-trial brief is the same one that the Supreme Court declined to embrace in allowing this original action to proceed and that this Court rejected in denying Georgia's motion to dismiss: Georgia's belief that this action cannot proceed at all because the Corps is an indispensable party. But Georgia has pointed to no evidence from the trial that undermines the basis for this Court's decision properly rejecting that argument, and the United States' own post-trial filing only further confirms that this Court can award meaningful relief *without* involving the Corps at all.

Georgia's renewed request to dismiss the case under Rule 19 largely rehashes the same arguments the Court already correctly rejected on the basis of the pleadings. Georgia is free to renew the issue, but it has to point to something that has *changed*. It cannot. As the Court previously recognized, the Rule 19 issue boils down to three inquiries: (1) whether Florida would have an alternative remedy if the case were dismissed; (2) whether granting relief solely against Georgia in this case would prejudice the United States or the parties; and (3) whether any such relief would be adequate. In denying Georgia's motion to dismiss, this Court correctly answered each of those questions in the negative, and no evidence presented at trial undermines any of this Court's conclusions. Before addressing each of these factors, we briefly describe relevant conclusions of the recent amicus brief submitted by the United States.

The United States' brief begins with the simple proposition that a consumption cap remedy would likely be beneficial both for the Corps and for Florida. U.S. Post-Trial Br. 2. This is because lower levels of consumption in Georgia will increase the total "basin inflow" above Jim Woodruff Dam, which will in turn result in "either an increase of pass-through flow

into the Apalachicola, no immediate increase of flow into the Apalachicola but additional storage of water in the federal projects, or both.” *Id.* The Corps can only manage water that reaches its dams—*i.e.* water that Georgia does not consume. “Basin inflow” measures how much water reaches the dams *after* Georgia consumes as much as it wants. *See id.* With a cap on Georgia consumption, more water will enter the system, and more water will reach Florida, either immediately or after a short delay during drought operations. In short, the United States has confirmed this Court’s understanding of the Corps’ operations. *See* MTD Order 14-15, 20.

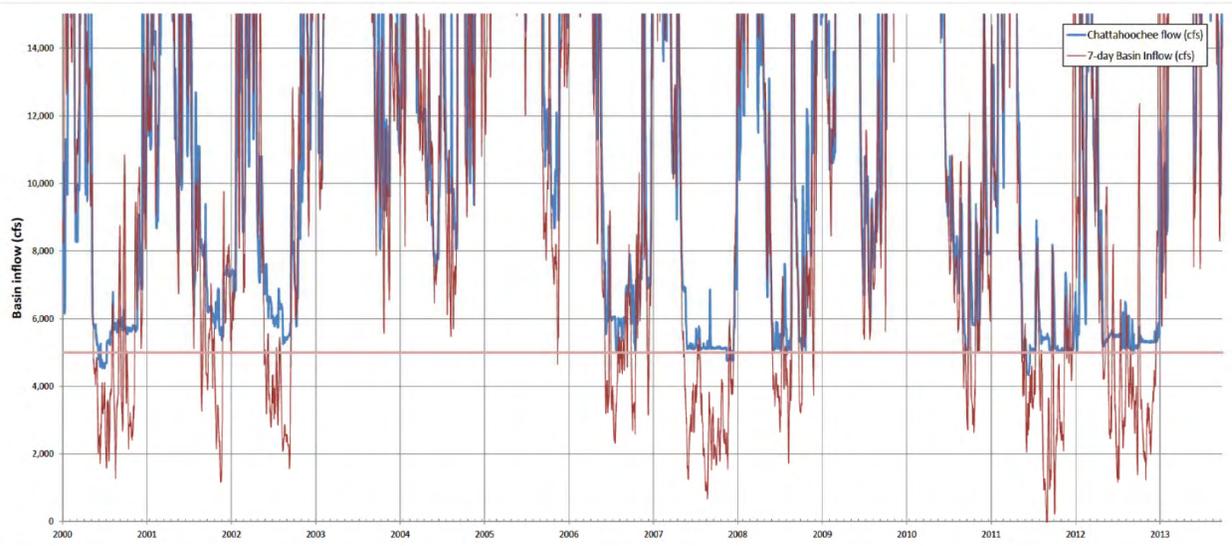
Regarding “drought operations” in particular, the Corps explained that “additional basin inflow” resulting from a decrease in Georgia consumption would increase reservoir levels, “delay the onset of drought operations,” “extend the Corps’ ability to meet all project purposes” during an extended drought, and “quicken the resumption of normal operations after a drought ends.” U.S. Post-Trial Br. 2, 14. “Project purposes” include conservation of downstream “fish and wildlife resources,” including those in Florida. USACE Final Environmental Impact Statement at 2-59, 2-61, 2-62 (“FEIS”) (“Each year, in coordination with USFWS and state fishery agencies, [the Corps] works to ... provide necessary releases to support fish spawning in downstream river reaches during designated periods. At other times of the year, [the Corps] cooperates by manipulating releases and lake levels to improve fisheries, in both the reservoirs and the downstream river reaches.”).¹ The Corps also clarified, repeatedly, that its 5,000 cfs minimum flow floor is not a “target” and that it may exercise its discretion to release more than

¹ The FEIS is available at http://www.sam.usace.army.mil/Portals/46/docs/planning_environmental/acf/docs/01_ACF_FEIS_Dec%202016_Volume%201.pdf?ver=2016-12-07-164912-723.

5,000 cfs even during “extreme low flow” periods, “with additional discretionary releases as necessary to meet other project purposes.” U.S. Post-Trial Br. 8, 17; FEIS at 2-75.²

To understand the Corps’ position, it is important to distinguish between “droughts” and “drought operations.” The Corps does not enter into “drought operations” every time a drought occurs. To put the Corps’ statements into historical perspective, the Corps triggered “drought operations” for a five-month period in 2008 and for a ten-month period in 2012-13. *See* FX-511b; FX-511f; FX-511g. For example, 2011 was a terrible drought year, yet the Corps did not enter drought operations at all. *See* FX-511e. If Georgia consumption reductions resulted in more water in the system, there is no question that the likelihood and duration of drought operations would be further minimized. U.S. Post-Trial Br. 2, 14. Moreover, the evidence presented at trial (and the data depicted below) showed that the Corps regularly released more than 5,000 cfs during recent drought periods, including as a discretionary matter during drought operations and frequently in many other periods when basin inflow was below 5,000 cfs. *See, e.g.,* Shanahan PFD ¶ 60 and Table 4.

² Although the Corps has released a final Environmental Impact Statement for a potential revision to its water control manual, it will not finalize any changes to that manual until at least mid-January. U.S. Post-Trial Br. 4-5. The Corps’ proposed revision is at the request of Georgia, to accommodate increased Georgia upstream consumption in the future. USFWS has objected, and continues object, to certain of the proposed Corps changes. JX-168 at 205 (recommending the Corps “work closely with USFWS to develop alternatives [to the Corps proposal] that are protective of fish and wildlife resources in the ACF Basin”). Thus, there is no certainty at this point as to exactly what—if any—changes will be finally adopted. *See id.* at 205, 263. The Corps’ brief indicates that it believes these changes would have a minimal effect on overall flows from its dams. U.S. Post-Trial Br. 11.



In the chart above, the red line shows basin inflow, calculated directly from Army Corps data, whereas the blue lines shows the flow on the Apalachicola River, as measured by the USGS at the Chattahoochee gage. *See* JX-128 (Apalachicola River, Chattahoochee gage data); JX-137 (Army Corps data). Although the Apalachicola saw the lowest flows for the longest periods in recorded history over the past decades, the chart and the underlying data demonstrate that the Corps consistently made discretionary releases greater than 5,000, 6,000, and on occasion 7,000 cfs *even during drought operations* when basin inflows were lower than 5,000 cfs. Note that 1998-2002, 2007-2008 and 2011-12 were all drought years, and certain other intervening years also had dry periods. Had Georgia consumption been lower, flows would have been much higher.

With that in mind, we return to each of the “indispensable” party factors.

A. No Other Remedy Is Available To Florida For Addressing Georgia Consumption

This Court has already recognized that Florida has “no other adequate remedy” than this original action to address Georgia’s consumption. MTD Order 21. Georgia rightly does not attempt to argue otherwise. *See id.* (noting that Georgia’s contrary argument at the pleading

stage “raises the spectre of judicial estoppel” because “Georgia has previously argued that Florida’s interest in adequate water flows should be settled through an equitable apportionment”). Instead, Georgia now takes the bolder and more implausible position that there is no judicial remedy available *in any forum* that could limit Georgia’s consumption, and that Florida should simply hope for the best. That argument should be rejected. As the Court previously recognized, an equitable apportionment is the only vehicle by which Florida can ensure any prejudice that Georgia’s consumption could not “continue to increase to the point that the Corps is unable to ensure any minimum flow into the Apalachicola River.” *Id.* Indeed, this case illustrates the very reason for the Supreme Court’s jurisdiction to equitably apportion shared resources where States themselves cannot agree on how to do so.

B. There Is No Prejudice To The United States Or Georgia

In denying Georgia’s motion to dismiss, this Court observed that “[a] decree establishing a cap on Georgia’s consumptive use of water would likely avoid any potential prejudice to the United States.” *Id.* at 16. And the United States’ post-trial amicus brief confirms that a consumption cap on Georgia would not prejudice the government’s interests, but would instead *benefit* both Florida and the Corps “by making more water available for various purposes during times of low flow.” U.S. Post-Trial Br. 19; *id.* at 3 n.1 (“We remain of the view that a cap on Georgia’s consumption would not be likely to adversely affect the Corps’ operations.”); *see also id.* at 2, 14 (“When the Corps has more water available to it to store in normal operations, ... [t]hat *has a benefit of delaying the onset of drought operations ... as well as shorten[ing] how long drought operations persist.*” (emphasis added)). Accordingly, what this Court said previously remains true: “any prejudice to the interests of the United States can be avoided ... by entering a decree establishing a cap on Georgia’s consumption,” MTD Order 19, which, of course, is precisely the relief Florida has requested. Nor has Georgia provided any “factual basis

to find that a consumption cap would be more prejudicial than a minimum flow requirement.” *Id.* at 20. Florida carefully presented evidence on a wide range of options Georgia could implement to save water under any kind of remedy. *See, e.g.*, JX-41 at 28, 32; JX-105 at 3-4; JX-154 at 2; FX-24 at 6-4 to 6-9; GX-1247 at 6-3 to 6-9; Sunding PFD ¶¶ 43, 59-66, 75, 80-87, 90. As the Court has already concluded that “[a] consumption cap need not dictate how Georgia must manage its water resources any more than a minimum flow decree.” MTD Order 20.

C. Judgment Rendered In The Absence Of The U.S. Would Be Adequate

In denying Georgia’s motion to dismiss, the Court recognized that it was reasonable to assume that “any decrease in Georgia’s consumption will increase inflows in to the ACF River, allowing the Corps to release more water downstream.” *Id.* at 14. The Court also recognized that although “the Corps’ operations may differ during drought periods,” it is nonetheless “reasonable to assume that a cap on Georgia’s consumption would render periods of reduced flow releases fewer and further between because of the increased reservoir levels that would result from Georgia’s reduced consumption,” which in turn would “ameliorate” Florida’s harms. *Id.* at 14 n.5. The United States’ post-trial brief confirms this Court’s understanding.

For most of this litigation, Georgia has taken the extreme and unfounded position that the Corps will prevent any and all increased flows caused by a consumption cap from reaching Florida by simply storing more water in Corps-operated dams. *See, e.g.*, Dkt. No. 48, Ga. Mot. to Dismiss at 12-13; Dkt. No. 96, Ga. Reply in Supp. of Mot. to Dismiss at 8; GX-860 at 18, 20-21 (Bedient Expert Report) (“[A]ny additional water entering the system will go to filling the reservoirs, even if basin inflow exceeds 5,000 cfs during that time. This is true even if basin inflow experiences short-term increases above 5,000 cfs, such as during a flash precipitation event.”). That was always flatly incorrect, as Georgia’s own expert admitted at trial. *See* Bedient Test., Trial Tr. vol. 15, at 3034:23-3935:1, 3942:15-3944:15 (agreeing that he had

previously stated in sweeping terms that no flow above the RIOP minimum would reach Florida during drought operations, and that this claim is belied by actual historic flows during the Corps' May 2012-February 2013 drought operations, when hundreds of cfs of water beyond the minimum flowed to Florida on most days).

The United States' brief confirms that Georgia's position lacks merit. Indeed, the United States has confirmed that, just as Florida has maintained all along, a decrease in Georgia consumption would result in more "basin inflow," which would result in additional flow to Florida. U.S. Post-Trial Br. 2, 14; *see id.* at 18 (during low-flow period when drought operations have not been triggered, flow on Apalachicola River will "increase by the same amount that the Flint River flow increases"); Shanahan Test., Trial Tr. vol. 10, at 2522:23-2523:16; Shanahan PFD ¶ 73 ("Georgia conservation during dry and drought summer months" would increase flow in short term); *id.* ¶¶ 39-40 (there is a "very strong positive correlation" between inflow from the Flint River Basin and discharges from Woodruff Dam).

Among other things, "an increase in streamflow in the Flint River will increase the total 'basin inflow' above Jim Woodruff Dam" and therefore "would result in either an increase of pass-through flow into the Apalachicola, no immediate increase of flow into the Apalachicola but additional storage of water in the federal projects, or both, depending on the month and the overall levels of the reservoirs." U.S. Post-Trial Br. 2. That is consistent with the testimony of Florida's experts at trial. As Dr. Shanahan explained, for example, "the water is going to Florida eventually. It's not a question of if; it's a question of when." Shanahan Test., Trial Tr. vol. 10, at 2523:14-15; *see* MTD Order 14 n.5. That fact—fatal to Georgia's position that Florida cannot secure relief without an order enjoining the Corps itself—cannot be seriously disputed.

The United States’ brief also considers the “full beneficial impact” of additional water (due to decreased consumption) at various points in time. *See* U.S. Post-Trial Br. 13-14, 16-18. In short, additional inflows provide a cushion that helps *delay* the onset of drought operations, bolsters the Corps’ ability to send water downstream *during* drought operations, and *quickens* the resumption of normal operations—a win-win-win situation. *Id.* at 2, 14. Those scenarios further support the conclusion that a cap on Georgia’s consumption would help redress the harms that Florida is suffering as a result of Georgia’s ever increasing consumption of waters. But at the same time, the United States stressed that “focusing too closely on any one snapshot risks missing the *full beneficial impact* that substantial increases in basin inflows could have on the ACF system during non-flood events.” *Id.* at 13-14 (emphasis added).

In short, the evidence confirms exactly what this Court recognized in denying Georgia’s motion to dismiss: more water in the system means more water downstream. MTD Order 14 & n.5.³

D. Georgia’s Various Counter-Arguments Are Incorrect

Georgia has repeatedly argued that the Corps would nevertheless seek to hold all water above 5,000 cfs in all drought years. *See* Ga. Post-Trial Br. 5-8. The evidence refutes that claim.

Indeed, even Georgia’s own expert has acknowledged that releases above 5,000 cfs would be made during periods of drought and drought operations. For example, at trial, Georgia’s expert, Dr. Bedient, admitted that actual historical flows were substantially larger than the flows his ResSim modeling had predicted—in fact, actual flows were larger than what he found when he modeled a 30% reduction in Georgia consumption. Bedient Test., Trial Tr.

³ In addition, because basin inflows are calculated net of Georgia’s consumptive use, any decrease in Georgia’s consumption will necessarily result in an increase in basin inflow, more water available for reservoirs, and an increase in flows to Florida.

vol. 15, at 3965:8-3966:11. In practice, Dr. Bedient agreed the state-line flows “were always higher than 5,000 cfs,” including some substantial increases of over 6,000 cfs. *Id.* Moreover, Dr. Bedient acknowledged that his ResSim model dramatically under-predicted the cumulative amount of water the Corps released during relevant time periods. For example, during the period from August 1 to December 27, 2011, the Corps’ cumulative releases were more than 63,000 cfs *higher* than Dr. Bedient would have predicted with the ResSim model, even when Dr. Bedient included extra basin inflow from a 30% reduction in consumption. *See id.* at 3965:3-7, 3966:7-23. In other words, even under a modeling scenario that vastly under-predicts flow benefits from a reduction in consumption, Georgia’s experts still concluded that Florida would receive an increase in flows during drought. Likewise, in table 4 of his written direct testimony, Dr. Shanahan showed that even during the drought operations period from May 1, 2012 through February 28, 2013, the Corps cumulatively discharged more than 1,100,000 cfs-days of water in excess of the 5,000 cfs minimum. Shanahan PFD ¶ 60 & Table 4.

Nor could it be argued that the Corps will simply target 5,000 cfs releases and never allow more than 5,000 cfs (or a small additional increment beyond 5,000) to pass to the Apalachicola. Ga. Post-Trial Br. 5-8. Indeed, the United States itself has explained that, even in an “extreme low flow” scenario, additional “discretionary” releases would be made for project purposes, which, of course, include the health of the downstream ecosystems. U.S. Post-Trial Br. 17; *supra* at 6-7 (discussing project purposes). In fact, history shows that, even in the midst of drought operations in 2008 and 2012, ***significant additional discretionary releases were made.*** FX-811 at 20 (Figs. 1-2). Likewise, as the United States has recognized, judging the beneficial impact of additional inflows cannot be made by looking at any one point in time. See U.S. Post-Trial Br. 13-14. As this Court itself has recognized, additional water means that

periods of reduced flow releases would be fewer and farther between,” which is critical in itself. MTD Order 14 n.5.⁴

Other elements of Georgia’s testimony corroborate that the Corps can, and will, release far more than 5,000 cfs when necessary to meet project purposes, even during droughts. For example, former Georgia Environmental Protection Division (“EPD”) Director Judson Turner testified that Georgia was willing, in 2012 settlement discussions, to ask the Corps to provide at least 6,000 cfs to Florida as a minimum state line flow at all times, including in droughts like 2011-12. Turner PFD ¶ 39; Turner Test., Trial Tr. vol. 12, at 3019:9-3020:7 (acknowledging that Georgia offered a “state line minimum which would have increased flows to Florida”); *id.* at 3074:18-3076:21 (discussing proposed minimum of 6,000 cfs). Of course, it would make no sense to take that position unless Georgia also understood that there was sufficient water available in the Corps dams for additional flows during drought.

Georgia also rehashes the argument it made in its Motion *in Limine* regarding Florida’s “Lake Seminole” model. *See* Ga. Post-Trial Br. 9-10. This argument is incorrect: Florida demonstrated how the Lake Seminole model is superior to ResSim by more faithfully capturing the Corps’ actual operations. *See* Hornberger Test., Trial Tr. vol. 8, at 2093:14-2095:9 (“[T]he ResSim model simply calculates wildly incorrect values for the volumes of water in the upstream

⁴ The United States specifically cautioned against assuming that the hypothetical operational circumstances identified in the scenarios described in its brief would apply in actual operations:

[T]hey are hypotheticals to demonstrate and explain how the Corps’ operational procedures work, not attempts to precisely quantify any particular effect on flows in the Apalachicola River from any particular amount of additional water in the Flint River. The Court has received significant expert testimony from both States attempting to model and quantify the effects on the Apalachicola River of additional basin inflow in particular climatic conditions, and we take no position on the resolution of that factual dispute. Finally, focusing too closely on any one snapshot risks missing the full beneficial impact that substantial increases in basin inflows could have on the ACF system during non-flood events.

U.S. Post-Trial Br. 13-14.

reservoir.”); *see also* Fla. Post-Trial Br. 21-23 (discussing GWRI’s criticisms of dataset underlying ResSim). For this reason, Dr. Hornberger used actual data on storage as input to the Lake Seminole model. Hornberger PFD ¶ 121 (“The Lake Seminole model is run with observed reservoir storage information from all relevant Corps dams as well as historical inflow/outflow data from the Corps so that it replicates the Army Corps’ actual operations as closely as possible.”). As a result, the Lake Seminole model is much better than ResSim at predicting flows during dry summer months. *Id.* ¶¶ 122-23 (“[I]t was necessary to find ... a model that accurately reflected Corps operations during these dry summer months. That is all the Lake Seminole model is.”). Of course, even the ResSim models that Georgia wishes the Court to rely upon show substantial flows to the Apalachicola River during certain drought periods. *See* Dkt. No. 490, Fla. Opp’n to Ga. Mot. to Exclude Ops. & Test. Based on the “Lake Seminole” Model at 18 (even using the flawed ResSim model, a consumption cap would yield more than 1,000 cfs of additional flows in many key months).

Georgia also points to the deposition of a non-testifying Florida expert, James Barton, as well as the deposition and a 2016 article by a former Florida employee, Steve Leitman, arguing that these materials “admit” that flows above 5,000 cfs will not reach Florida without a change in the Corps’ operations. Ga. Post-Trial Br. 12-13. Georgia mischaracterizes and exaggerates the import of this deposition testimony.

Mr. Barton’s expert report reached the following conclusion: “I have no reason to conclude that the Corps would offset all of the increased flows from the Flint River by withholding water in the Chattahoochee reservoirs. Since downstream fish and wildlife resources must receive equal consideration with other project purposes ... the Corps could not prioritize upstream purposes above fish and wildlife resources.” FX-942 at 10 (citation omitted).

The testimony cited by Georgia does not undermine this conclusion; Mr. Barton, who is not a hydrologist, was merely discussing whether a *precise* flow level at the state line (such as exactly 7,000 cfs) can be achieved without the Corps' assistance (a position Florida does not argue). *See* Barton Dep. 204:6-205:20. Mr. Barton never suggested that a consumption cap would not provide substantial benefits to Florida. *See* FX-942 at 10 (citing government amicus statement that cap on consumption could increase state line flows).⁵

Georgia's reliance on Mr. Leitman's statements is similarly misplaced. As an initial matter, those statements are not admissions by Florida under Federal Rule of Evidence 801(d)(2)(D) because he has not been employed by Florida since 2002. GX-1354, Leitman Dep. 47:1-8, 48:18-24; *see* Fed. R. Evid. 801(d)(2)(D) (statement by a party's employee is admissible if, among other things, that statement was made during the course of the agency relationship); *Marcic v. Reinauer Transp. Cos.*, 397 F.3d 120, 128–29 (2d Cir. 2005). In any case, Mr. Leitman also is not a hydrologist. *See* GX-1354, Leitman Dep. 18:7-12. He is seeking a degree in hydrology through a correspondence course with a South African university. *Id.* And Mr. Leitman relied only on consumption data received from Georgia itself—which has been established to be a radically lower consumption number than even Georgia now acknowledges in this case. *See id.* at 269:16-270:2 (stating that he “probably got” data “from Wei Zeng in Georgia DNR”); Zeng Test., Trial Tr. vol. 13, at 3215:3-11; Zeng PFD ¶¶ 4 n.1, 61 (Dr. Zeng did

⁵ Mr. Barton's statements also are inadmissible hearsay because he is a non-testifying expert. *See, e.g., Soitec, SA v. Silicon Genesis Corp.*, No. 99-10826, 2002 WL 34453284 (D. Mass. Feb. 25, 2002) (refusing to permit one party to rely upon deposition testimony of the opposing party's non-testifying expert, either as an adoptive admission or as testimony by a party's agent); *see also Kirk v. Raymark Indus., Inc.*, 61 F.3d 147, 164 (3d Cir. 1995) (concluding that expert's prior trial testimony was hearsay and not admissible under Federal Rule of Evidence 801(d)(2)(C), and that “[b]ecause an expert witness is charged with the duty of giving *his* or *her* expert *opinion* regarding the matter before the court, we fail to comprehend how an expert witness, who is not an agent of the party who called him, can be authorized to make an admission for that party”).

not include non-Upper Floridan aquifer pumping in his streamflow depletion estimates); Zeng Test., Trial Tr. vol. 13, at 3208:7-10, 3214:10-15 (Dr. Zeng did not include farm pond evaporation in his consumptive use estimates); Fla. Post-Trial Br. 21-23 (citing the Georgia Institute of Technology's Water Resources Institute ("GWRI") Unimpaired Flow Assessment for the ACF Basin in the Fall of 2012 ("GWRI UIF Report"), FX-534 at 10, 191, 193, describing flaws in Georgia's consumptive use estimates).

Georgia argues that the ACF Stakeholders focused on a Corps remedy rather than a consumption cap. Ga. Post-Trial Br. 14-15. But this does not advance Georgia's position either. The ACF Stakeholders is a consensus organization; it could not propose any consumption cap remedy or rely upon any technical findings over the objection of its members from Atlanta. Masters Test., Trial Tr. vol. 14, at 3606:12-21; Turner Test., Trial Tr. vol. 12, at 3091:3-3092:20 (acknowledging that the ACF Stakeholders would have to compromise with each other, and "they wouldn't make a formal recommendation without everybody's vote"). Indeed, for "political[]" reasons, the Atlanta Regional Commission objected to any consumption cap, and to the release of GWRI's UIF Report that contained critiques of GA's consumptive use estimates. FX-531; Masters Test., Trial Tr. vol. 14, at 3604:8-3607:4, 3609:7-11; *see* Masters Test., Trial Tr. vol. 14, at 3612:8-3613:16; Turner Test., Trial Tr. vol. 12, at 3034:4-16; *cf.* Kirkpatrick PFD ¶ 72; Kirkpatrick Test., Trial Tr. vol. 13, at 3423:16-3424:8 (testifying that Atlanta would never accept any mandatory or "artificial" limits on its water use). Notably, the ACF Stakeholders' consensus solution recognized that more water should be supplied to Florida for the Apalachicola Bay and River.

Georgia once again relies on *Arizona v. California*, 298 U.S. 558 (1936), to argue that the United States is an indispensable party. Ga. Post-Trial Br. 5, 15. As both this Court and the

United States have recognized, however, the facts of *Arizona* are fundamentally different. *See* MTD Order at 17-18; Dkt. No. 66, U.S. Amicus Curiae Br. in Opp’n to Ga. Mot. to Dismiss 14 (“U.S. MTD Opp’n”).

The same goes for *Texas v. New Mexico*, 352 U.S. 991 (1957) (per curiam), on which Georgia also relies again. *See* Ga. Post-Trial Br. 5, 15. As the Special Master in *Texas* recognized, if the relief requested in a particular case “would be beneficial [to the United States’ interests], then the United States is not an indispensable party” because “it can take what is given to it, without effort on its part and without obligation, and if it considers itself entitled to more, it is still perfectly free to pursue its remedy.” Report of Special Master at 12, *Texas v. New Mexico*, 352 U.S. 991 (No. 9, Orig.) (filed Mar. 15, 1954). Here, as this Court has recognized (and the United States has confirmed), “Florida does not quarrel with the Corps’ operation of its dams in the ACF River Basin,” and “any decrease in Georgia’s consumption will increase inflows into the ACF River, allowing the Corps to release more water downstream.” MTD Order 14, 15; *see* U.S. Post-Trial Br. 2, 14. Moreover, the reason that the Court found the United States was an indispensable party in *Texas v. New Mexico*—that the particular request for relief in *Texas* impacted the United States’ “role as trustee for various Indians,” *Idaho ex rel. Evans v. Oregon*, 444 U.S. 380, 390-91 (1980) (discussing *Texas v. New Mexico*)—is indisputably not implicated by the litigation here.

As this Court has recognized, the most analogous Supreme Court decision is *Idaho ex rel. Evans v. Oregon*, *see* MTD Order 15-16, which Georgia simply neglects to address in arguing that the United States is an indispensable party. In *Idaho ex rel. Evans v. Oregon*, as here, the plaintiff did not challenge the operation of the Corps dams. 444 U.S. at 388-89. But there, as here, the plaintiff showed that granting the requested relief would result in more of the natural

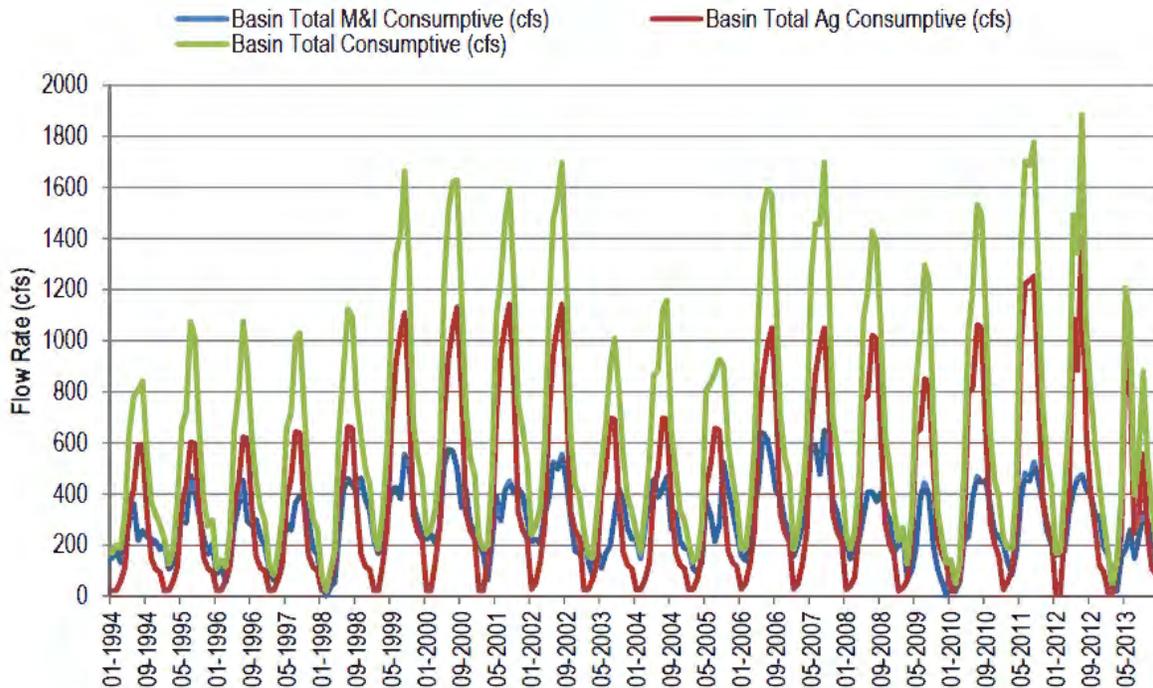
resource at issue (fish in *Idaho ex rel. Evans v. Oregon*; water here) reaching the dams and, thus, result in more of the natural resource at issue crossing the dams. *Id.* at 389-90. In both scenarios, as this Court recognized, the United States is not an indispensable party because adequate relief can be awarded in its absence.

In sum, Georgia has once again failed to demonstrate that the Corps is an “indispensable” party. But the fact that Georgia feels the need to *lead* by rehashing this argument in its post-trial brief speaks volumes about the strength of Georgia’s position when it comes to actually addressing the evidence showing that Florida is entitled to an equitable apportionment.

II. GEORGIA’S CONSUMPTION HAS CLEARLY CAUSED DECREASED FLOWS

A. Georgia Is Exacerbating The Impacts Of Drought

Georgia’s attempted deflections notwithstanding, it is plain as day from Georgia’s own testimony that its consumptive use of water is exacerbating low river flows. *See* Zeng Test., Trial Tr. vol. 13, at 3276:21-3277:6 (acknowledging that Georgia’s water consumption exacerbates the streamflow declines associated with drought). Georgia’s own witnesses admitted at trial that Georgia’s consumption equals approximately one third of state-line flows that make it to Florida during recent drought periods. Fla. Post-Trial Br. 21 (citing Zeng Test., Trial Tr. vol. 13, at 3370:14-3371:4; Bedient Test., Trial Tr. vol. 15, at 3992:2-12, 3994:20-3995:4). Although Georgia seriously underestimates its consumptive water use, even Georgia’s underestimates illustrate a clear increase in consumption during drought periods. *See, e.g.*, Zeng PFD ¶ 22 (Zeng Demo. 3), reproduced below.



Zeng Demo. 3. Total Monthly Average Consumptive Use in Georgia’s ACF Basin (1994–2013) (Source: GX-940, JX-165, GX-937)

Moreover, as Florida demonstrated in its post-trial brief, Georgia has drastically and intentionally understated its consumption. Fla. Post-Trial Br. 21-23, 27-30.

Georgia has known about the link between agricultural irrigation and streamflow in the ACF Basin since the 1990s, when models predicted that irrigation could cause the Flint River to run dry. *See, e.g.*, FX-2 at GA02257044-45 (1999) (admitting agricultural permitting laws are the “weakest of all Georgia’s environmental laws” and that irrigation is causing a “significant reduction in Flint River flows” during dry weather); FX-3 at GA00257041 (1999) (modeling for the Comprehensive Study showed that agricultural water use in southwest Georgia affected Flint River flows); FX-4 at GA01419036 (1999) (concluding Georgia has “exceeded the ‘safe’ upper limit of permissible acreage in the lower Flint”); FX-5 at GA01186514 (1999) (admitting need for a consumption cap); FX-6 at FL-ACF-02544447 (1999) (expressing “great concern” about the IHA projected low flows on the Flint River); FX-10 at 31 (2000) (EPD modeling showed that

irrigation during drought could “dramatically” reduce Flint River flows); FX-16 at GA00477298 (2003) (discussing USGS results); JX-21 at 22 (2006) (concluding that “agricultural irrigation compounds the effect of climatic drought”); FX-23 (2006) (concluding additional irrigation would irreparably harm Spring Creek ecology); FX-46 at GA00537489-91 (2006) (USFWS expressing concern that Flint River flows were “current[ly]” over-allocated, impacted mussel habitats, and were insufficient to meet Clean Water Act water quality requirements, and recommending regulatory reform); FX-47 at GA00537489-91 (2008) (water use, not climatological conditions, causing record low flows and “drastically” impacting mussels in Spring Creek); FX-48 at GA00186367 (2011) (warning of over-allocation of groundwater aquifer in lower Flint); FX-49d1 at 27 (2009); FX-56 at GA0163082, GA01643092 (2012); FX-49g (2013) (concluding that “[c]urrent rates of water use are likely unsustainable and pose a significant threat to stream health and the unique biological diversity characteristic of the Flint River”); FX-49b at GA00278839-40 (2014); FX-50 at 1, 3 (2015) (concluding that “[i]ncreased agricultural water demand over the past several decades is associated with ... a more than 20-fold reduction in the minimum flow compared to the pre-irrigation era”); FX-51 at 2 (2015); (discussing associated declines in Georgia mussel population).

Georgia was also aware that it was not meeting its own sustainability criteria for the Upper Floridan Aquifer and the Flint River. Georgia’s own regional water planning documents are emphatic on this point. *See* FX-24 at 3-6, 3-9 (horizontal row for Bainbridge gage identifying 1,376 cfs shortfall); GX-1247 at ES-4 (“The [resource assessment] model identified a substantial shortfall in meeting EPD criteria for surface water flows in the Flint River Basin at Bainbridge under both current and forecast demands.”); *id.* at 3-4, 3-6; FX-961a, Caldwell Dep. 37:15-25 (“I can only conclude that the estimated current use of groundwater from the Upper

Floridan aquifer in the Dougherty plain is incongruent with the sustainable yield as determined by the sustainable yield criteria used in the groundwater assessment.”); *id.* at 35:2-8 (“For 2011, do you see six months below the sustainability criterion for the Bainbridge gauge? A I do, yes. Q And for 2012, do you see, I think, eight months below the sustainability criterion for the Bainbridge gauge? A Yes, I do.”).

Against this backdrop, Georgia cannot reasonably dispute that its irrigation practices are fundamentally worsening drought year flows. Indeed, Georgia scientists found only a “small” decrease in the flow of the Suwannee River by Ellaville, Florida, which is subject to the same (if not worse) climatic trends as Spring and Ichawaynochaway Creeks, but is only minimally impacted from irrigated agriculture. FX-319 at 33, 90; *see also* FX-320 at GA00123108. Those same scientists, however, found that “low flows were much lower” after widespread adoption of irrigation in Spring and Ichawaynochaway Creeks. FX-319 at 33-34, 91, 93.

Georgia’s brief nevertheless describes and relies upon a simple plot of flows prepared by Georgia’s expert biologist, Dr. Menzie. Ga. Post-Trial Br. 76 (citing to Menzie Demo 5). The plot upon which this argument is based does not contain any mathematical, modeling, or statistical analysis, because all Dr. Menzie—who has no degree in climate science or hydrology, *see* GX-872 at app. A—can do is compare visual trends. Certainly, all rivers subject to droughts will feel the impact of those droughts. But streamflows in rivers with irrigation withdrawals during drought years are impacted both by drought and those additional withdrawals. The plot shows nothing more than the unremarkable fact that flows tend to be higher during wet years and lower during dry years, and that since these rivers are geographically close together, their high- and low-flow periods are similar. Dr. Menzie concedes as much, explaining, “The figure shows that temporal variations in flow are similar across rivers indicating that they are all subject to a

common regional climactic influence.” See Menzie PFD at 15 (Menzie Demo. 5). That says nothing about how Georgia’s consumption exacerbates any climactic influence.

Georgia makes the same mistake when asserting that purported declines in streamflow in other rivers in the region demonstrate that drought is the cause of low flows on the Apalachicola. Ga. Post-Trial Br. 76. Again, this ignores that when consumptive use is piled on top of droughts, flows fall far more dramatically. As Florida explained in its post-trial brief, this concept was illustrated by the USGS, which compared the historic low flows in the lower Flint River Basin to flows in the Chipola River in Florida. See Fla. Post-Trial Br. 20. Unsurprisingly, flows in the lower Flint—with its extensive irrigation—were impacted more significantly than the Chipola, which has limited irrigation. See *id.* (comparing a 74% decline between two periods for the Ichawaynochaway Creek at Milford, Georgia with a modest 7% decline in those same periods for the Chipola River in Florida). Moreover, Georgia’s “other rivers” analysis suffers from a fundamental methodological flaw: it looked at *annual flows*, not *summer flows*, rendering it meaningless for comparing low flows in drought summers when agricultural irrigation is most acute. See Hornberger Expert Report at 34 (“Mean annual flows are not a good measure for critical summer low-flow periods.”). Compounding this flaw, Dr. Zeng admitted that he failed to control for, or even look at, the impact of consumptive use in the other rivers on his assessment. Zeng Test., Trial Tr. vol. 13, at 3292:14-3293:3.

In addition to these serious defects, only one of the rivers that Georgia analyzed, the Suwannee River at White Springs, was based on an appropriate reference gage—*i.e.*, a gage in an area minimally impacted by human activity. FX-785 at 32-34; Zeng PFD at 54 (Zeng Demo. 21) (showing that only the Suwannee River at White Springs was a reference gage); FX-319 at 33 (finding that this river “has been subject to the same climatic trends as the study streams, but

has had very little implementation of irrigated agriculture”). Using a time scale that is appropriate for the injuries in this case—the 7-day low flow—Dr. Hornberger found that there has been no meaningful trend on the Suwannee River. FX-785 at 32-34. In contrast, on the Apalachicola River, which is impacted by Georgia’s consumptive use, very low flows are increasingly common and severe. *Id.* at 18, 20, 34. Thus, when a fair comparison is made, the comparative river data support Florida’s claim that Georgia consumption is negatively impacting flows.

Georgia also relies on Dr. Zeng’s testimony, Ga. Post-Trial Br. 76—but Dr. Hornberger analyzed Dr. Zeng’s approach and found numerous flaws. FX-785 at 32-36. Dr. Hornberger concluded that a proper comparison demonstrates that “Georgia’s consumptive water use, not a shift in climate, ... is driving the decreased flows on the Apalachicola River.” *Id.* at 35. Dr. Zeng admitted that he is not an expert on climate or rainfall issues, and that he did not employ the analytical methodology used by experts in that field. Zeng Test., Trial Tr. vol. 13, at 3289:6-3292:13. For example, he presented his analysis in average annual flows that obscure severe effects during dry periods, rather than the seasonal flows experts in the field would typically use. *Id.* at 3292:24-3293:3.

Finally, Georgia is wrong to suggest that the droughts of 1954-1955 are not comparable to the 2011-2012 droughts. *See* Ga. Post-Trial Br. 76-77. Even scientists in Georgia who evaluated the two drought periods found them comparable. *See* FX-50 (Research Paper by Jones Ecological Research Center, Newton, Georgia) (finding “historical (1954) and recent (2012) droughts of record ... similar in their duration and intensity”). Georgia’s own EPD arrived at the same conclusion. *See* FX-56 at GA01643082 (graph prepared by Georgia Assistant Branch Director Dr. Gail Cowie comparing flows at various gages among 1954, 2011, and 2012). Dr.

Hornberger demonstrated the comparability. He examined “all the discharge records, looked at the precipitation records” to make sure that he was making a fair comparison of years. Hornberger Test., Trial Tr. vol. 8, at 2062:2-10; *see also id.* at 1995:9-20 (Dr. Hornberger determined reservoirs make only a small difference). Though 1954 was the driest year on record, June-to-September streamflows in 1955 were approximately 4,000 cfs more than in either of the recent drought years of 2011 and 2012. *See* Hornberger PFD at 20, Table 1 (reproduced below).⁶ Specifically, before including Table 1 (below) in his testimony, Dr. Hornberger compared 1953 and 2010 and found that they were not materially different. *See id.* Thus, Dr. Bedient’s point regarding 1953 is misplaced.

Table 1. Comparison of the 1954-1955 Drought to the 2011-2012 Drought for the Apalachicola River Just Below the Georgia/Florida State Line (Chattahoochee Gage)

	<u>First Year of Drought</u>		<u>Second Year of Drought</u>	
	1954	2011	1955	2012
June-Sept. Precipitation (inches)	10.4	14.5	15.8	16.7
June-Sept. Air Temperature (°F)	81.0	79.5	78.2	77.3
June-Sept. Streamflow (cfs)	8,968	5,566	9,563	5,419
Annual Precipitation. (inches) ¹	30.8	42.2	40.5	42.3
Annual Air Temperature (°F)	65.6	64.1	65.0	65.0
Annual Streamflow (cfs)	14,381	9,796	11,223	7,599

Unlike Georgia, Florida’s experts, Drs. Hornberger and Lettenmaier, used rainfall-runoff modeling specifically designed to diagnose the relationship between climate conditions and river flow. *See* Fla. Post-Trial Br. 23-26. Those models evaluate all the data on precipitation and other climate variables and explain how much flow should be expected with certain climate conditions, including the climate conditions present over the past 15 years. These rainfall-runoff

⁶ Similarly, Dr. Hornberger compared the drought year of 1931 (which Georgia does not address in its trial brief) to both 2011 and 2012. Hornberger PFD ¶ 53. He found that flows on the Apalachicola River were thousands of cfs lower in summer months in the modern droughts, even though the modern droughts had more rainfall and slightly lower temperature. *Id.*

models establish that flows would have been 3,800-4,000 cfs higher but for Georgia's consumption. *Id.* at 24-25. Rainfall runoff models are exactly the methodology that GWRI suggested for analysis of Georgia's consumption. *Id.* at 21-24. Yet none of Georgia's experts even attempted to do these types of analyses, and instead relied on what virtually all knowledgeable actors know to be flawed consumption estimates. *See id.* at 22-23.

In short, the evidence clearly shows that consumptive uses have reduced flows in ACF Georgia streams and rivers on an annual and seasonal basis. Because the impacts of consumption are felt most severely in droughts, drought is correspondingly the most important time to limit consumption, as Georgia itself has previously recognized. Fla. Post-Trial Br. 66-68 (discussing Georgia's enactment—and abandonment—of the Flint River Drought Protection Act (“FRDPA”)).

B. Georgia's Claim That Florida Is Losing Large Amounts Of ACF Water Is Untenable

Georgia also continues to surmise, implausibly, that differences between flow measurements at the Sumatra gage in Florida show that Florida is somehow losing a massive amount of water within its borders. Ga. Post-Trial Br. 78-80. Georgia bases its theory entirely upon the fact that flow data recorded by the USGS Chattahoochee and Sumatra gages within Florida purportedly show an inexplicable decline in a relatively short and undeveloped stretch of river. These purported declines of up to 4,000 cfs are an artifact of faulty data generated by the Sumatra gage (which does not adequately account for high flows through the floodplain, among other things). *See, e.g.*, Hornberger PFD ¶¶ 147-54 & Fig. 12 (noting the absurdity of Georgia's theory and offering the faulty gage as an explanation); FX-515 at 1 (noting that the USGS found “measurements that under-reported the flows” had led to “inaccurate rating changes” at the Sumatra gage). Indeed, Georgia's own hydrologist, Dr. Menghong Wen, came to the same

conclusion and described these purported flow declines as “nonsense” and “not meaningful.” FX-517 at GA00311691-92. As a result, USGS stated that the gage data that constitute the theory’s sole basis are flawed and removed those data from its website, pending revision. FX-515 at 1 (“[T]he team did find ... erroneous discharge measurements were made during out-of-bank flood flows.”).

At trial, Georgia’s witnesses attempted in written submissions to argue that USGS’s comments had not invalidated their findings, because the USGS letter only identified the period from 1990-2002 as having flawed data, allowing them to compare data from before 1990 and after 2002. Panday Test., Trial Tr. vol. 15, at 3846:20-3847:17, 3849:16-22; Zeng Test., Trial Tr. vol. 13, at 3285:7-16. But that creative reasoning is unsupported: the USGS’s letter states that *all* years from 1990 through the present required revision. FX-515 at 1 (“USGS will ... re-compute (revise) discharge for all overbank events from 1990-present.”). And even though Georgia’s witnesses were aware of the issues with the Sumatra gage data, they made no mention of it in live testimony. Zeng Test., Trial Tr. vol. 13, at 3285:25-3285:17; Panday Test., Trial Tr. vol. 13, at 3848:17-3849:15. In the face of objective USGS evidence that disproves Georgia’s “missing 4000 cfs of water” theory entirely, Georgia’s decision to press this argument underscores how little evidentiary support it has for its overall position.

III. FLORIDA SHOWED CLEAR AND CONVINCING EVIDENCE OF INJURY AND CAUSATION

A. Florida Has Shown That Apalachicola Bay Was Harmed By Low Flows

Georgia insists that Florida failed to show that harms to Apalachicola Bay in 2012 (and thereafter) were attributable to low flows. *See* Ga. Post-Trial Br. 22. In so doing, Georgia misrepresents the record and ignores the evidence, from numerous sources including the federal government, showing that low river flows and resulting high salinity harmed the Bay.

1. NOAA Concluded That Low River Flows And High Salinity Were The Central Cause Of The Oyster Collapse

The Supreme Court recognized nearly a century ago that reduced river flows result in higher salinity, which in turn harms oysters living downstream. *New Jersey v. New York*, 283 U.S. 336, 345 (1931). That basic scientific relationship has not changed, and if anything, the evidence of harm to oysters in this case is far more extensive and scientific than the evidence of harm found to be sufficient to warrant relief in *New Jersey*.

Georgia does not dispute that the National Oceanographic and Atmosphere Administration (“NOAA”) declared a fisheries disaster for the Apalachicola Bay oyster fishery. Nor does Georgia dispute that in declaring a fisheries disaster, NOAA stated that the cause of the 2012 oyster collapse was a decrease in the Apalachicola River flow and a corresponding increase in Bay salinity levels. FX-413 at NOAA-0022898. Instead, Georgia contends that the Court should ignore NOAA’s own written findings in issuing the disaster declaration (after months of consideration and on top of a Congressional hearing, *see generally* FX-23; JX-89), and instead adopt Georgia’s unsupported theory that NOAA simply “felt bad” for the oystermen affected by the collapse. Ga. Post-Trial Br. 35. That speculation ignores NOAA’s statutory obligations, *see* Magnuson-Stevens Act 312(a)⁷, and suggests not only that NOAA acted outside its authority but also misrepresented its own findings. Georgia has built absolutely no record that would allow the Court to reach such a remarkable conclusion. *See Magneson v. Mabus*, 174 F. Supp. 3d 114, 119 (D.D.C. 2016) (a “court’s review is ‘highly deferential’ and begins with a presumption that the agency’s actions are valid” (quoting *Environmental Def. Fund, Inc. v. Costle*, 657 F.2d 275,

⁷ Magnuson-Stevens Fishery Conservation and Management Reauthorization Act of 2006, Pub. L. No. 109-479, 120 Stat. 3575 (2007).

283 (D.C. Cir. 1981)); accord *Frisby v. U.S. Dep't of Hous. & Urban Dev.*, 755 F.2d 1052, 1055 (3d Cir. 1985) (“Agency action is entitled to a presumption of regularity.”).

Perhaps appreciating that steep uphill climb, Georgia also suggests that Florida actually misled NOAA. But that charge, like Georgia’s attack on NOAA, is baseless. Florida was transparent with NOAA from the outset. In its *very first correspondence* with NOAA, Governor Rick Scott’s request for disaster relief, Florida made it clear that reports of overharvesting were something NOAA would need to consider. JX-77 at FL-ACF-03386187. That letter attached the same 2012 Florida Department of Agriculture and Consumer Services (“DACS”) Oyster Resource Assessment Report that details incidences of harvesting pressure at Cat Point and East Hole and that the parties discussed at length during trial. JX-77 at FL-ACF-03386196-97. When it provided its full report, Florida’s Fish & Wildlife Conservation Commission (“FWC”) included that Oyster Assessment Report again and gave NOAA the University of Florida’s Oyster Situation Report (authored by, among others, Bill Pine and Karl Havens), which likewise discussed incidences of intense harvesting at popular oyster bars. JX-96 at FL-ACF-03475266; see Sutton Test., Trial Tr. vol. 6, at 1455:18-24. Eric Sutton, the Assistant Executive Director of FWC, also testified at length about detailed information FWC provided to NOAA, including landings data, oyster licenses issued, Florida’s shell planting, and various reports—*i.e.*, virtually everything upon which Georgia now relies to support its contention that overharvesting caused the collapse. Sutton Test., Trial Tr. vol. 6, at 1391:2-16, 1445:19-1447:21. Likewise, email correspondence between NOAA and FWC reflects a months-long dialogue with NOAA officials that focused on several of the NOAA scientists’ questions, including how to understand harvesting pressure observed in Apalachicola Bay. Sutton PFD ¶ 43; see generally JX-89 (compilation of email correspondence with NOAA from October 2012 through April 2013).

NOAA's decision-making process included a Congressional hearing, in which the topic of overharvesting also was discussed. *See* FX-423 at NOAA-0003897. NOAA's final declaration contains the conclusion of its in-depth and contemplative analysis, rejecting overharvesting as a central cause in the collapse. FX-413 at NOAA-0022897.

There is no basis for this Court to override NOAA's determination.

2. Contemporaneous Documents And Witness Testimony Are Consistent With NOAA's Conclusion

Tellingly, Georgia's brief ignores nearly all of the relevant trial testimony on the cause of the 2012 oyster collapse. For example, Georgia completely disregards Mr. Berrigan's explanation of his *own reports* documenting the progression of high salinity and predation moving across the Bay, causing the eventual collapse in 2012. *See* Fla. Post-Trial Br. 37-38. Instead, Georgia substitutes its own interpretation of those reports. *See* Ga. Post-Trial Br. 28-30. But as Mr. Berrigan testified at trial, what those documents describe is an increase in harvesting pressure in specific parts of the Bay *due to deteriorating conditions in the Bay as a whole due to low flows*. JX-50 at FL-ACF-02047321 (western reefs typically provide a "substantial portion of the Bay's landings during normal years," but supported sporadic fishing in 2011 due to "reduced standing stocks" and "poor recruitment and survival resulting from high salinity regimes over the past year"). The August 2012 Oyster Resource Assessment Report confirmed that these western bars were "depleted of marketable oysters" as a result of "stress associated with high salinity, disease, and predation." JX-77 at FL-ACF-03386192-93. As Mr. Berrigan explained at trial: it is clear from these reports that "high salinities was the primary factor that was adversely affecting the oyster populations in the bay." Berrigan Test., Trial Tr. vol. 3, at 765:22:25. And of course this is what he said at the time, too. *See* FX-608 (video); FX-875 at 3 (transcript)

("[H]aving looked at this thing for a long time and having seen what happens in a drought situation, the primary problem is lack of fresh water.")⁸

Likewise, Georgia tried to avoid having Mr. Tommy Ward testify at trial and now ignores his testimony altogether in its post-trial brief. For good reason: Mr. Ward's testimony completely undermines Georgia's theory with respect to Apalachicola Bay. He testified conclusively that he witnessed increased predation and the infestation on his *private leases* by oyster predators like conchs. Ward PFD ¶¶ 33-35. Because his leases are not public (and therefore were not potentially overharvested), Mr. Ward's experience confirms that high salinity and the resulting influx of conchs, not overharvesting, caused the oyster collapse in 2012. Indeed, Mr. Ward's leased areas have effectively been closed to harvesting since the start of the collapse, yet he has not seen the oyster population return there because the high salinity conditions and associated oyster predators remain. *Id.* ¶¶ 40-41.

Georgia also ignores the expert conclusions of Dr. Kimbro—the only expert in this case who actually conducted the experiments necessary to draw any scientific conclusions regarding the relationship between low flows and oysters—which found that the 2012 collapse was caused by low salinity conditions as a result of decreased flows. Fla. Post-Trial Br. 42-43. Instead, Georgia relies *exclusively* on the purported "extensive analysis" of its oyster expert, Dr. Lipcius. But Dr. Lipcius did not collect field data, conduct experiments in Apalachicola Bay, or model the Apalachicola Bay oyster population responses to salinity. Lipcius Test., Trial Tr. vol. 17, at 4316:8-4317:2. He briefly visited Apalachicola for a boat tour, but never dove in the Bay to observe the oyster reefs first hand or take samples. *Id.* at 4317:24-4318:6, 4320:5-10, 4321:15-

⁸ Georgia does not even bother to address harms to submerged aquatic vegetation and other harms to Apalachicola Bay beyond the oyster collapse, perhaps because even their own expert agrees freshwater species of submerged aquatic vegetation suffer harm from low river flow. Fla. Post-Trial Br. 49 (describing Menzie testimony).

18. His “analysis” consisted of little more than a review of materials that *Florida’s* witnesses created (and that those witnesses can better explain). Lipcius PFD ¶¶ 5-6; Lipcius Test., Trial Tr. vol. 17, at 4321:19-4322:25. What is more, Dr. Lipcius admitted that he ignored contemporaneous documents that were inconsistent with Georgia’s theory.⁹

Dr. Lipcius also failed to properly account for salinity levels in Apalachicola Bay, undermining the conclusions he reached. His results suggested average salinities for the summer season from 2010-2012 were *lower* than the average salinities during winter/spring and fall seasons—a highly improbable result given that there are almost always lower freshwater flows coming into the Bay in the summer. Lipcius Test., Trial Tr. vol. 17, at 4421:24-4422:4; Lipcius PFD at 15 (Lipcius Demo. 5). Though Dr. Lipcius knew his conclusions could not reflect reality, Lipcius Test., Trial Tr. vol. 17, at 4422:5-9, he nonetheless offered them. That testimony in no way overcomes the considered findings of the federal agency with expertise in these matters.¹⁰

3. Georgia’s Theory That Bay Mismanagement Caused The Oyster Collapse Is Unsupported

Despite NOAA’s declaration and the contemporaneous evidence, Georgia clings to its theory that better fisheries management could have prevented the oyster collapse. Once again, Georgia disregards the evidence showing that its theory is completely unsupportable.

FWC and DACS have managed the Apalachicola Bay oyster fishery for more than 50 years, and their work has been recognized as the highest rated and most effective oyster

⁹ See Lipcius Test., Trial Tr. vol. 17, at 4336:21-4337:25 (aware of Berrigan’s deposition testimony that he observed increased natural mortality and predator abundance); *id.* at 4359:6-4360:11 (knew that the 2011 and 2012 oyster resource assessment reports contained statements about increased predation and natural mortality); *id.* at 4362:5-10 (knew of Dr. Kimbro’s observations in October 2012 that reefs in Apalachicola Bay were infested with snails); *id.* at 4341:3-7 (did not review Tommy Ward’s deposition transcript).

¹⁰ Dr. Lipcius was also aware his conclusions contradicted prior literature on the relationships between river flow and oyster abundance in Apalachicola Bay. See Lipcius Test., Trial Tr. vol. 17, at 4354:1-12; see also FX-953 (Wilber article).

management program in the Gulf Coast region, in part because of Florida's conservative hand-tonging restrictions. FX-957 at 2; Lipcius Test., Trial Tr. vol. 17 at 4417:4-4419:14 (agreeing FX-957 recognizes Florida as the highest rated state and the only Gulf state with "[h]ighly effective" oyster "management strategy," in part, because of its tonging restrictions); Kimbro PFD ¶ 13 (noting stability of Apalachicola Bay fishery and management in part because of harvesting by hand tongs); Berrigan Test., Trial Tr. vol. 4, at 1012:5-23. With hand-tonging rather than mechanical harvesting, and in light of the high rates at which oysters reproduce, the oyster population is so resilient that—in the proper environmental conditions—it would be unreasonable to suggest that overharvesting could cause the oyster collapse. *See* Berrigan Test., Trial Tr. vol. 4, at 1011:12-1013:9; Sutton Test., Trial Tr. vol. 5, at 1289:19-1290:17; Sutton Test., Trial Tr. vol. 6, at 1452:18-1453:24.

In arguing that Florida could have saved the oyster resources on Cat Point and East Hole by limiting harvesting and allowing "the remaining stock to reproduce and recover," Ga. Post-Trial Br. 32, Georgia betrays its lack of understanding about oyster fishery management. As Mr. Berrigan described, oysters are like other harvestable crops, in that you cannot assume the crop will remain for the following season—if they are not harvested, they are generally lost. Berrigan Test., Trial Tr. vol. 4, at 961:12-962:2 ("There's no point in trying to salvage it, save it, or do anything like that because natural mortality is going to wipe it out.... Leaving it there does not mean that it's going to be available to the fishery at another time. It will be lost to the fishery."). Notably, removing oysters from the standing stocks does not have a detrimental effect on the future harvests of oysters—it only impacts the harvest for the current season and not the Bay's reproductive potential for future seasons. Berrigan Test., Trial Tr. vol. 4, at 985:14-986:1 ("There is no evidence that removing sub-legal oysters has ever had an adverse impact on

reproductive potential in Apalachicola Bay. ... [I]n Florida, and especially in Apalachicola Bay, reproductive potential is extremely high and is not affected by taking that end of the crop.”).

When specifically asked whether Florida should have closed the Bay so the oyster stocks could recover, as Georgia suggests in its post-trial brief, Mr. Berrigan starkly explained that this would serve only “to protect dead oysters.”

And there wouldn’t be a reason for closing that fishery because those oysters were not going to make it to the next harvesting season. We—those oysters in this bay typically live for two summers. And the—the primary time that we lose oysters to natural mortality in that system is usually July, August, and September. So if you closed an area—let’s say you close an area that has an oyster population on it. And then you come back the next year, you know that that oyster population that was there is not going to be alive; and you also know that without recruitment, it’s not going to be renewed or regenerated or sustained. So a management by closing an area to protect dead oysters is not a sound management decision.

Berrigan Test., Trial Tr. vol. 5, at 1016:1-1017:4.¹¹

Georgia makes the puzzling claim that Florida presented for the first time at trial the theory that intense harvesting on Cat Point and East Hole Bars was a consequence of the collapse, not the cause. Ga. Post-Trial Br. 32. But, as reflected in the Oyster Resource Assessment Reports, Mr. Berrigan and others long believed that intense harvesting occurred at Cat Point and East Hole oyster bars *because* they were the only two viable oyster bars remaining. *See* JX-50 at FL-ACF-02047322; JX-77 at FL-ACF-03386192-93; Berrigan Dep. 161:6-12. (“As this whole thing progressed from 2010 until 2013, we saw a steady progression of reef depletion increased natural mortality from the outside coming in so that by the time that [the August 2012 oyster resource assessment report] was written in 2012, about the only oysters that were

¹¹ Georgia argues that Florida allowed overharvesting as early as 2010, Ga. Post-Trial Br. 28, but harvesting levels in 2010 were lower than in the prior three years, JX-96 at FL-ACF-03475248. And “[t]here is NO science” to support speculation “that the population collapse was somehow related to [Florida] allowing high rates of harvest after the BP oil spill.” *See* GX-1340 at 1 (email from K. Havens to multiple recipients, Sept. 15, 2014).

available for harvesting were on Cat Point and East Hole.”). Dr. Havens and Dr. Pine held the same belief. *See* Havens Test., Trial Tr. vol. 17, at 4304:20-4305:1 (discussing GX-1339); GX-1339 at UFL-00061483 (“Harvesting of sub-legal oysters did occur late in 2012, however, we believe it happened BECAUSE OF the collapse, as the bay no longer had an adequate level of legal oysters to support harvesting, but it was not the cause.”).

Georgia also argues that Florida did not plant enough shells on key oyster bars, exacerbating the effects of overharvesting and contributing to the oyster collapse. Ga. Post-Trial Br. 30. Again, Georgia ignores NOAA’s findings and the testimony of the relevant witnesses in this case. FWC’s report to NOAA described its shelling practices and history for Apalachicola Bay, JX-96 at FL-ACF-03475215-16, yet NOAA did not identify lack of shelling as a cause of the oyster collapse, *see generally* FX-413 (NOAA Final Decision Memorandum). Likewise, Mr. Sutton testified that the lack of reshelling in 2005-2007 played no part in the oyster collapse in 2012. Sutton Test., Trial Tr. vol. 6, at 1502:4-8. Georgia also ignores Mr. Ward’s unrebutted testimony that he consistently planted shell on his leases in all of the years leading up to the collapse, yet it did nothing to save the oyster population on his leases. Ward PFD ¶ 41. Nor has replanting shell on key oyster reefs been an effective recovery tool. Mr. Ward has continued shelling in years since the collapse, to no avail. Ward Test., Trial Tr. vol. 7, at 1820:5-20 (“I planted – replanted shells on my beds.... And I have not been able to grown no oysters. They do not survive.”). Regardless of what levels of shell-planting Dr. Pine recommends to support a recovery, recent restoration efforts have shown reshelling is inconsequential in the presence of high salinity because oysters simply cannot survive if the right environmental conditions do not exist. *See* Sutton Test., Trial Tr. vol. 6, at 1488:13-19; Berrigan Test., Trial Tr. vol. 4, at 1009:17-1010:4; Ward Test., Trial Tr. vol. 7, at 1820:14-20.

Underscoring the weakness of Georgia’s mismanagement theory, Georgia relies on exaggeration to press its point. *See* Ga. Post-Trial Br. 33. For example, when Mr. Berrigan used the phrase “tragedy of the commons” during trial, he was discussing the interplay between oyster dealers (who prefer that oyster resources stretch out over an entire season) and oystermen (who prefer to harvest as much as they can as soon as they can). Berrigan Test., Trial Tr. vol. 4, at 845:19-846:10. This was an “allocation issue” Mr. Berrigan raised “almost every year”—not an acknowledgement that harvesting was uncontrolled. *Id.* In fact, FWC uses bag limits for this very reason. *See* Sutton Test., Trial Tr. vol. 6, at 1481:14-1482:8. Georgia also claimed that Mr. Berrigan’s statement that the Bay had “bent until we broke” suggested Florida’s management had been negligent. Ga Post-Trial Br. 29. But Mr. Berrigan was discussing *recovery* efforts in the Bay in light of the low flows—not what he believed caused the collapse. FX-608; FX-875 at 5. Likewise, no document from Mr. Berrigan actually refers to the “gravel parking lots” Georgia references in its brief. Ga. Post-Trial Br. 30-31 (purportedly quoting GX-1297). Presumably, Georgia is referring to what divers saw when they surveyed East Hole: “a parking lot, with oysters concentrated around stone crab burrows” because stone crabs forage, dragging oysters back to their burrows to be eaten and piling their shells there. *See* GX-1297; Berrigan Test., Trial Tr. vol. 4, at 894:3-11. In other words, predation—not overharvesting—was wreaking havoc on East Hole. And, as Florida proved at trial, that increased predation stemmed from higher salinity levels, which in turn stemmed from less fresh water entering the Bay.

4. The University Of Florida Research Supports The Findings Of Florida’s Experts

Georgia also relies heavily on University of Florida research, but even a cursory review of the published articles shows findings consistent with *Florida’s* theory. First, the fact that the University of Florida’s Sea Grant report did not present firm conclusions regarding the cause of

the oyster collapse is no surprise. *See* Ga. Post-Trial Br. 23. The Oyster Situation Report itself acknowledges that it is preliminary in nature. *See* GX-568 at FL_SEA-GRANT_41117 (identifying that future research was necessary to determine how oyster populations are affected by river flow, among other factors). Dr. Kimbro, the only member of the team that authored the report to testify in court in this case, explained that “because [Dr. Pine and his colleagues] lacked the necessary data, i.e. the kind of data that my research program has developed, they could not explain exactly why mortality was increasing.” Kimbro Test., Trial Tr. vol. 6, at 1592:19-22.

Georgia also misrepresents one of Dr. Bill Pine’s subsequent articles as the “definitive analysis” of Apalachicola Bay that “found no connection between low river flows and the oyster collapse.” Ga. Post-Trial Br. 35. But the article Georgia relies upon as “definitive” disclaims any position regarding the effect of upstream withdrawals and states that the relationship between freshwater flows, droughts, salinity, and recruitment “is an area of ongoing work.” GX-789 at 2, 6. As Dr. Glibert explained, Drs. Pine and Havens could not offer a definitive view, in part because they had not looked at the nutrient data necessary to understand decreased oyster recruitments. Glibert Test., Trial Tr. vol. 7, at 1881:23-1883:7 (“What surprised me very much in reading both of these papers is that they seemed to be completely unaware of the vast literature and/or data that relates to recruitment and nutrition and the lower food web.”). That data was readily available. Yet neither Dr. Pine nor Dr. Havens utilized the data to assess decreased oyster recruitment in their purportedly “definitive” analysis.

While Drs. Pine and Havens did not express a definitive view of causation, their research suggested there was a connection between river flows and the oyster collapse. *See* GX-568 at FL_SEA-GRANT_41126 (suggesting the decline was due to “very high natural mortality rate of small oysters from predators” or disease and recommending future work to test “whether natural

mortality on juvenile oysters increases during periods of higher salinity from either predators or disease”); *see also* GX-1339 (“The collapse seems to be the result of some environmental factor – a disease that was facilitated by the high salinity, predators that got out of control because of the high salinity or just the oysters reaching some kind of ecological tipping point after three years of successive drought.”). And in cherry-picking an early article as Dr. Pine’s “definitive analysis,” Georgia ignores later articles Drs. Pine and Havens wrote that concluded low flows likely led to the oyster collapse as well as Dr. Havens’ sworn Congressional testimony concluding the same. *See* JX-167 at 6 (“[A] sequence of events occurred whereby: (1) low river flow led to ... population collapse of adult oysters.”); FX-485 at FL_SEA-GRANT_00797 (reasonable to link the oyster collapse to the “long period of low river inflow and high salinity”).

Finally, Georgia’s counsel argued that, in 2014, a member of Florida’s legal team (Tallahassee lawyer Christopher Kise) tried to pressure the University of Florida professors not to publish their findings. Trial Tr. vol. 17, at 4291:4-21 (“There is no sworn testimony denying that this ever happened, certainly not from Mr. Kise or anybody else.”). Of course, the University of Florida Professors did publish, repeatedly, many months after the alleged communications occurred. *See supra* at 37. The evidence at trial, moreover, did not support Georgia’s accusations of misconduct: at his deposition, Dr. Pine testified that he had never met or spoken to Chris Kise or any other lawyers who were members of the Florida legal team at the time of the alleged communications in 2014. FX-964a, Pine Dep. 373:15-25. Nor did Dr. Pine allege any communications with any members of the legal team since 2014. *Id.* at 375:3-10. For his part, Dr. Havens “thought [Dr. Pine] was overreacting” because “[Dr. Pine] reacts a little bit more to things than I do.” FX-965a, Havens Dep. 203:17-204:14. Dr. Havens was not even sure whether what Dr. Pine described “really happened or not,” *id.*, and Dr. Havens certainly never

heard anything like that from the Florida legal team, *id.* at 205:20-206:1. And Jim Estes—the person who allegedly told Dr. Pine that Florida lawyers had concerns—did not recall Dr. Pine’s version of events. FX-966a, Estes Dep. 324:19-325:11 (“Q. Could you identify any of the attorneys that made statements about the possibility of, quote, ‘making things difficult for Dr. Pine’? ... A. I don’t recollect any attorneys saying that.”).

In short, the evidence presented at trial did not support Georgia’s inflammatory allegations. And particularly since there is no basis to conclude that any findings were ever *withheld* by anyone, Georgia’s accusations can take nothing away from the evidence at trial showing that higher salinity, not overharvesting, caused the oyster collapse.

B. The Apalachicola River Ecosystem Suffers Harm Because Of Low Flows

The evidence presented at trial also clearly showed that the Apalachicola River has been harmed as well by Georgia’s increased consumption of water. Conspicuously absent from Georgia’s post-trial brief is any mention of the 1999 USFWS and EPA guidelines identifying minimum flows necessary to protect and maintain the Apalachicola River. *See* FX-599. The expert federal agencies concluded almost twenty years ago that flows that fall below the guidelines inflict ecological harm to the riverine ecosystem, *see id.* at FL-ACF-02545883-84, FL-ACF-02545894, and Georgia did not dispute the trial evidence that the one-day minimum and three-out-of-four year flow guidelines were violated in every dry year since 2000, *see* Fla. Post-Trial Br. 7-8, 50-51 (citing FX-D-23); Hornberger PFD ¶¶ 57-61; Hornberger Test., Trial Tr. vol. 8, at 2082:21-2089:24. This alone proves harm by clear and convincing evidence. *See Marsh v. Oregon Nat. Res. Council*, 490 U.S. 360, 377 (1989) (holding that Court “must defer to the informed discretion of the responsible federal agencies” on questions that “require[] a high level of technical expertise” (citation and internal quotation marks omitted); *Federal Power Comm’n v. Florida Power & Light Co.*, 404 U.S. 453, 463 (1972) (“Particularly when we

consider a purely factual question within the area of competence of an administrative agency created by Congress, and when resolution of that question depends on ‘engineering and scientific’ considerations, we recognize the relevant agency's technical expertise and experience, and defer to its analysis unless it is without substantial basis in fact.”).

Georgia simply ignores this evidence and, instead, relies on two misguided arguments. First, Georgia claims that Florida cannot demonstrate harm because the very existence of species in the critical habitat of the Apalachicola River has not been jeopardized. Second, Georgia contends that, even if any harm occurred, the Corps—and not the massive increase in Georgia’s own consumptive use—is to blame. Those arguments should be rejected.

1. Ecological Harm Does Not Require Extinction Of Species Or Destruction Of Critical Habitat

Georgia advances the extreme contention that Florida cannot establish harm unless its water consumption threatens the continued existence of threatened and endangered species. *See* Ga. Post-Trial Br. 43-45. Through selective quotations and distortions of plain language in the 2016 USFWS Biological Opinion, Georgia contends “abundant” numbers of particular species undercut the existence of harm. *See id.* But harm does not require complete extinction of certain species in all portions of the Basin. The 2016 Biological Opinion and the 1999 Guidelines confirm the basic ecological principle that Florida’s expert Dr. Allan described at trial: the frequency, magnitude, and duration of low flows in the Apalachicola River have caused demonstrable harm to the ecosystem. *Compare* JX-168 at 190 (“significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering”), *with* Allan Test., Trial Tr. vol. 3, at 573:6-9 (Harm is “everything from physiological stress through direct mortality to loss of reproduction or reduction in reproduction. And, most definitely, it’s loss of habitat.”).

As USFWS repeatedly and consistently observed, “[e]xtreme low flows are likely among the most stressful natural events faced by riverine biota.” JX-168 at 50 (2016 USFWS Biological Op.); FX-599 at FL-ACF-02545883 (1999 Guidelines) (stating same). The harm to flow-dependent species includes constricting available habitat, increasing vulnerability to predators, and imposing physiological stress associated with higher temperatures and lower dissolved oxygen. *Id.* This is precisely the type of harm that Dr. Allan’s evidence-based metrics are designed to measure. Dr. Allan studied extensive literature on ecological indicators—or the point at which this type of harm is caused for each group of species—and he identified the flow threshold, time of year, and duration at which such harm manifests in the Apalachicola River ecosystem. *See* Allan PFD ¶¶ 34, 36.

Georgia’s ignorance of ecological harm is evident in its criticism of Dr. Allan for not “visually see[ing] harm.” Ga. Post-Trial Br. 49. As Dr. Allan testified at trial, of course one cannot “see” impairment in breeding or feeding patterns or physiological stress from low dissolved oxygen or high temperature. Allan Test., Trial Tr. vol. 3, at 574:10-18. But that does not make the harm identified by USFWS and measured by Dr. Allan any less tangible or real. Georgia’s expert, Dr. Charles Menzie, misses this point. *Compare* Menzie PFD ¶ 6(b) (arguing that flows from Woodruff Dam minimize potential for adverse effects to species and habitat), *with* JX-168 at 2-3 (2016 USFWS Biological Op.) (concluding that these flows “will negatively affect” Gulf sturgeon and all three protected mussel species). Dr. Menzie’s mischaracterization of USFWS documents to support Georgia’s position is stunning. He ignores the conclusions in these USFWS documents that low flows, and even consumptive uses, are harming species. As the 2016 Biological Opinion explains, “*increased consumption on the Flint River* and other demands on the ACF Basin described above likely resulted in ... loss of riverine habitat and

associated species; ... loss of seasonal floodplain habitat and associated species; ... seasonal drying of habitat which reduces abundance and diversity of species; ... [and] stress or mortality of organisms or sensitive life stages.” JX-168 at 44 (emphasis added). And neither Georgia’s post-trial brief nor Dr. Menzie’s report or testimony provide any evidence to refute Florida’s findings of harm to the many flow-dependent fish and mussel species that are not listed under the Endangered Species Act.¹²

2. The Harms To The Apalachicola River Ecosystem Are Attributable To Georgia—Not the Corps

Looking to shift the blame again, Georgia argues that historic dredging by the Army Corps has caused all of the harm Florida alleges here. But once again, the evidence intervenes. Dr. Allan was able to isolate the impacts of dredging from Georgia’s consumption, and it is those impacts that Florida is suing about here. Allan PFD ¶¶ 64, 84; Allan Test., Trial Tr. vol. 2, at 429:5-15. Indeed, the evidence Florida presented demonstrated that the cessation of dredging fifteen years ago has led to recovery of the river, and the remaining impact from dredging is much smaller than Georgia portrays. Kondolf PFD ¶¶ 40-42. As Florida noted in its post-trial brief, most of the impacts of continuous dredging were felt in only limited parts of the River. There were no impacts in the tidal reach. Kondolf PFD ¶ 34; Kondolf Test., Trial Tr. vol. 11, at 2715:8-11. Since dredging ceased, the channel has filled and habitats have recovered from dredge spoil disposal. Kondolf PFD ¶ 40; Kondolf Test., Trial Tr. vol. 11, at 2695:3-21; Hoehn Test., Trial Tr. vol. 1, at 140:11-141:7, 142:16-143:15 (explaining that the presentation cited by

¹² Georgia makes much of its purported “impeachment” of Dr. Allan. That argument is a vast overstatement. Several instances of “impeachment” included Dr. Allan merely asking to clarify a question or statement. *See, e.g.*, Allan Test., Trial Tr. vol. 2, at 462:4-10, 468:18-24. Moreover, Georgia chose to impeach Dr. Allan by selectively challenging him with portions of his deposition transcript that did not include his prior consistent testimony. *Compare* Allan Test., Trial Tr. vol. 2, at 391:4-11, *with* Allan Dep. 444:19-445:4. Georgia’s gamesmanship does not suggest anything regarding Dr. Allan’s candor at trial.

Georgia contains old information, and the River has started to recover in the decade since). As Dr. Mathias Kondolf, Florida’s river channel expert, testified, the lack of flow, and not water level decline associated with channel change, remains the primary problem. *See, e.g.*, Kondolf Test., Trial Tr. vol. 11, at 2708:9-13.

Georgia focuses on Swift Slough to suggest that harms from the Corps dredging remain. But as Dr. Allan testified, the current connection elevation of Swift Slough is a *representative example* of small sloughs in the 5,000 to 6,000 cfs connection range, of which there are many. *See, e.g.*, Allan Test., Trial Tr. vol. 3, at 580:18-581:9. The connection levels for sloughs fluctuate over time since the Apalachicola River is a dynamic system. Kondolf Test., Trial Tr. vol. 11, at 2711:15-2712:18. Therefore, as Dr. Allan testified, the exact level of flow to disconnect only Swift Slough is not relevant to understanding harm throughout the many sloughs along the River. Allan Test., Trial Tr. vol. 2, at 455:9-456:1.

Georgia also attributes harm to the floodplain forest to dredging, ignoring that a substantial portion of the tupelo cypress swamp forest is below river mile 23, the location below which there are no effects of dredging. Kondolf Test., Trial Tr. vol. 11, at 2715:8-11; Allan PFD ¶ 83 (areas below river mile 23 “contain large amounts of swamp trees” and “are included in the harm metrics ... for tupelo”). Georgia relies on a 2006 publication by USGS (Ga. Post-Trial Br. 46), but its selective quoting omitted the important finding that “[d]uring drought conditions ..., total water-level declines in April, May, July, and August ... *are approximately double the decline caused by channel change alone.*” GX-88 at 44 (emphasis added). And that finding—which alone defeats Georgia’s attempt to pin the blame for the worsening low flows on

dredging—was based on 25-year old data on Georgia’s water consumption. The relative contribution of Georgia’s water consumption is much higher today. *Id.* at 47.¹³

Contrary to Georgia’s assertion, Ga. Post-Trial Br. 46, Dr. Menzie did not assess the relative influence on floodplain forest inundation of channel change compared to Georgia’s consumption because Dr. Menzie ignored the portion of the floodplain forest below river mile 20.6—the very portion of the river that is unaffected by channel change.¹⁴ Menzie PFD ¶ 158.

Finally, Georgia’s argument that channel incision caused by Woodruff Dam itself has caused harm in the upper reach is irrelevant. *See* Ga. Post-Trial Br. 39-40. Dr. Allan did not quantify harm to the Apalachicola River from Georgia consumption in the upstream portion of the river below Woodruff Dam—instead limiting his metrics of harm to below that upstream reach. *See id.* at 40 (citing Allan Test., Trial Tr. vol. 2, at 554, 555). Florida is not alleging harms to those portions of Apalachicola River and ecosystem precisely because its experts have not isolated the harm from low flows at that portion of the River just below the Dam from the deepened channel.¹⁵ But for other portions of the River, where Florida’s experts have isolated the impacts of upstream consumption, the harms experienced are all attributable to Georgia.

¹³ As Dr. Kondolf testified, since the 2006 USGS publication, further research has been undertaken to establish the boundary of tidal influence in the Floodplain forest at river mile 12. Kondolf Test., Trial Tr. vol. 10, at 2627:8-2628:3.

¹⁴ Dr. Menzie also conceded he did not evaluate the impact of any of Georgia’s consumptive water uses prior to 1992, even in the face of government reports documenting a 12-fold increase in Georgia’s consumption between 1970 and 1980. Menzie Test., Trial Tr. vol. 16, at 4145:21-4146:3, 4150:24-4153:5.

¹⁵ Georgia’s attempt to blame Woodruff Dam and related navigational dredging for all harm to the Apalachicola River also omits the fact that the Army Corps’ dams were built to benefit Georgia and Army Corps dredging was primarily to facilitate commerce to Georgia ports. Kondolf Test., Trial Tr. vol. 11, at 2681:2-13 (the “purpose of construction of these dams is to maintain usable navigation depths in the Chattahoochee River to provide those depths up to Columbus, Georgia” (citing JX-1 at 6)); Kondolf PFD ¶ 39 (citing JX-1 at 39).

3. Florida's Involvement In Litigation Against The Army Corps Does Not Contradict Its Position Here

Georgia spends five pages of its brief discussing statements made by Florida or its representatives in prior litigation against the Corps. *See* Ga. Post-Trial Br. 50-55. But none of these statements suggest that anything other than Georgia's consumption has inflicted harm to the Apalachicola River and its ecosystem. Indeed, the history of prior litigation by Florida demonstrates its long-standing commitment to protect and preserve its portion of the ACF basin.

To begin with, when Georgia's consumptive use inevitably arose in the prior litigation, Georgia (and the United States) took the position that Florida should file an equitable apportionment to address Georgia's consumption. *E.g.*, Br. of Appellee the State of Georgia at 9, *Georgia v. U.S. Army Corps of Eng'rs*, 302 F.3d 1242 (11th Cir. 2002) (No. 02-10135D), 2002 WL 32641401 ("Whether or not Georgia obtains additional water supply [storage space] from Lake Lanier ... Florida will still be entitled to its equitable apportionment of waters flowing from Georgia and could still file an equitable apportionment case in the United States Supreme Court."); *see also* Brief for the Federal Respondents in Opposition at 31, *Florida v. Georgia*, 133 S. Ct. 25 (2012) (No. 11-999), 2012 WL 1611826 (same). And now that Florida has done precisely that, Georgia contends that no relief is available in this litigation. Georgia, not Florida, is the party taking a position inconsistent with its statements in earlier litigation.

In any event, Georgia is mistaken about Florida's prior representations. In its longstanding litigation efforts to protect the Apalachicola River and Bay, Florida has attempted to curb consumptive use that affects streamflow into Florida by pursuing two complementary paths: (1) by arguing that the Corps is not permitted to authorize withdrawals by Georgia from federal reservoirs (the issue in prior litigation); and (2) alleging that Georgia's consumption is inequitable and should be limited (the issue in this original action). These two options are

completely consistent and are simply two different ways to address harmful low flows to the Apalachicola.

Florida has consistently challenged Georgia's consumptive use. *See, e.g.*, GX-1270, 2005 Third Am. Compl. ¶¶ 102-14 (Paragraph 114: "The Corps' decisions to allow and facilitate these unauthorized withdrawals and releases [by Georgia], result in the loss of hundreds of millions of gallons of water from the ACF System every day."). When Florida sued the Corps or USFWS, its arguments in those filings were tailored to address actions by those entities—but they all identified the underlying issue as Georgia's consumption. For example, Georgia's consumption heavily influences basin inflow (and thus Corps releases), as Florida explained in these prior actions. *E.g.*, GX-1283, 2007 Compl. ¶ 47 ("Basin Inflow is calculated based on the volume of water entering the Corps' reservoirs from the Chattahoochee and Flint Rivers (i.e., after upstream water withdrawals have occurred)."). Likewise, Georgia's consumptive water use has caused harms to the River and Bay at the core of this case as well. Dkt. No. 1, Compl. ¶ 23. Thus, Georgia's water withdrawals have remained a fundamental concern at the heart of Florida's protection and preservation efforts because these withdrawals reduce the amount of water available in the system. *E.g.*, GX-1271, 2005 Hoehn Decl. ¶ 31 ("The Corps currently allows a number of municipal water suppliers in the vicinity of Atlanta, Georgia to withdraw significant amounts of water from the Chattahoochee River.... In my opinion, the loss of that water from the Chattahoochee River has the potential to adversely affect the ACF Species.").

Contrary to Georgia's suggestion, Florida has never alleged in its prior complaints, motions, and declarations that the Corps was the only or primary cause of low flows. *See* Hoehn Test., Trial Tr. vol. 2, at 282:3-7, 287:23-288:14; *see also* GX-1271, 2005 Hoehn Decl. ¶ 31; GX-1283, 2007 Compl. ¶¶ 47, 98; GX-1276, 2009 Barr Decl. ¶¶ 18, 24, 26, 32-35; GX-91 at 2-

3; GX-402 at 29; GX-1270, 2005 Third Am. Compl. ¶ 114. Nor do prior Florida witness declarations suggest any of the identified harms to the River and River species are solely attributable to the Corps. Instead, these prior declarations focus on the harm that *low flows* cause to the system. Hoehn Test., Trial Tr. vol. 2, at 277:16-20, 287:23-288:14; *see* GX-1271, 2005 Hoehn Decl. ¶ 2 (“The purpose of this declaration is to explain how certain flows in the Apalachicola River impact species reliant for various life functions on the Apalachicola River and Bay ecosystem.”). Moreover, the fact that Florida has previously challenged the Corps’ actions hardly means that it did not think that Georgia was a source of its injuries. Likewise, the fact that Florida has previously litigated against the Corps hardly means that it was not permitted to seek relief from Georgia in an equitable apportionment action, particularly since *Georgia* previously argued that the proper way for Florida to seek redress was through an equitable apportionment action like this. To take Georgia at its word today, that argument was simply a “bait and switch,” in an effort to end a prior case by holding out the—false, according to Georgia today—prospect of relief in a subsequent original action (this case).

Georgia also argues that Florida previously acknowledged that a change in Corps operations is necessary to remedy its harms. Ga. Post-Trial Br. 55. Not true. The prior statements that Georgia relies upon identified the underlying issue as Georgia consumption, and Florida argued that such consumption caused its harms. Joint Mot. at 1-2, *In re Tri-State Water Rights Litig. (Phase I)*, No. 3:07-md-00001-PAM-JR (M.D. Fla. Jan. 23, 2009), ECF No. 191 (summarizing claims, which primarily focused on water supply). Here, Florida has sought a Supreme Court equitable allocation to cap Georgia consumption. In both cases, Florida asserted harms because of Georgia’s consumptive withdrawals and sought the appropriate relief available in the designated forum.

C. Georgia’s “Proximate Cause” Argument Is Without Merit

As Florida’s post-trial brief and the foregoing evidence establishes, clearly and convincingly, Georgia’s consumption has severely harmed the ecology of the Apalachicola Bay and River. In response, Georgia does not seriously try to deny that its consumption is a *factual* cause of Florida’s injuries. Instead, Georgia pins its response on the purported absence of *proximate* cause. Without pointing to a single equitable apportionment case that has employed proximate cause analysis—let alone done so to deny relief from a clearly established but-for cause of harm—Georgia claims that the causal chain by which its consumption has harmed Florida’s interests is too attenuated here. Once again, Georgia is grasping at straws.

“Proximate cause is often explicated in terms of foreseeability or the scope of the risk created by the predicate conduct.” *Paroline v. United States*, 134 S. Ct. 1710, 1719 (2014). It serves “to preclude liability in situations where the causal link between conduct and result is so attenuated that the consequence is more aptly described as mere fortuity.” *Id.* (citing *Exxon Co., U.S.A. v. Sofec, Inc.*, 517 U.S. 830, 838-39 (1996)). Although “not a concept susceptible of precise definition,” *Babbitt v. Sweet Home Chapter of Communities for a Great Or.*, 515 U.S. 687, 713 (1995) (O’Connor, J., concurring), proximate cause “normally eliminates the bizarre.” *Id.* (quoting *Jerome B. Grubart, Inc. v. Great Lakes Dredge & Dock Co.*, 513 U.S. 527, 536 (1995)). There is nothing “bizarre,” or “unforeseeable,” about the systematic destruction of the ACF ecosystem that has resulted from Georgia’s increasing consumption. Indeed, Georgia itself foresaw precisely these harms. *See Fla. Post-Trial Br.* 3, 5-6, 67-68.

Georgia’s proximate cause argument relies almost entirely on the Fifth Circuit’s *per curiam* opinion in *Aransas Project v. Shaw*, 775 F.3d 641 (5th Cir. 2014) (*per curiam*). That reliance is fundamentally misplaced. There, environmental groups brought suit under the Endangered Species Act, claiming that the Texas Commission on Environmental Quality

(“TCEQ”) had impermissibly “wound[ed], [or] kill[ed]” twenty-three endangered whooping cranes by issuing water permits to private water users. *See id.* at 661. The claim was based on a one-time occurrence (during the winter of 2008-09), of the death or absence of twenty-three whooping cranes, “during a year of extraordinary drought.” *Id.* at 653, 656, 658-59.¹⁶ Accordingly, as the Fifth Circuit described it, the issue was whether the TCEQ’s water licensing decisions “foreseeably and proximately caused the deaths of [these] whooping cranes in the winter of 2008-2009.” *Id.* at 656.

This case is worlds apart from *Aransas Project*. There, the injury was the one-time, aberrational deaths of about twenty endangered whooping cranes during a year of extraordinary drought (2008-09). *Id.* at 658-59, 660; *see id.* at 660 (crane population increased both before and after 2008-09). Here, the evidence clearly shows the systemic, *years-long* destruction of an ecosystem as the result of decades of increased water consumption. There, the plaintiffs failed to show any material decrease in freshwater inflows in the year at issue. *Id.* at 661. Here, the evidence overwhelming shows a massive decrease in inflows over decades. There, the alleged harm stemmed from an agency’s *licensing* decisions, which might or might not have led to increased water consumption. *See id.* at 658-59. Here, the alleged harm stems from Georgia’s actual water consumption. And there, the record suggested no particular reason for the agency to foresee that its licensing decisions could have caused what was, apparently, a freak, one-year event for a (relatively) few whooping cranes. Here, of course, Georgia had every reason to

¹⁶ According to the plaintiffs, (1) the TCEQ’s “licensed withdrawals of water from the rivers resulted in a decline in freshwater inflows to the San Antonio Bay,” (2) “with less freshwater inflows, the bay’s salinity increased,” (3) “the increased salinity of the estuary and marsh water affected the conditions in which blue crabs and wolfberry plants grow,” (4) “[t]here were then fewer blue crabs and wolfberries for the cranes to eat” after “their thousands-mile migration across North America to their winter habitat,” (5) the cranes then succumbed to “food stress,” (6) the stress “caus[ed] them to search for ‘upland’ sources of food and water,” and (7) an “estimated 23 cranes” died during that search. *Aransas Project*, 775 F.3d at 660.

foresee that its ever increasing consumption would wreak ecological havoc down river—and, as explained, the evidence shows that Georgia officials actually foresaw this harm. *See supra* at 20-22. Georgia just decided to do nothing to stem its consumption. *See infra* at 56-62.

If Georgia was really seeking a “strikingly similar” case from which to draw causation principles, Ga. Post-Trial Br. 20, the place to look was *New Jersey v. New York*, 283 U.S. 336 (1931). Rather than a *per curiam* Fifth Circuit opinion about the Endangered Species Act’s application to an isolated event causing the death of a few whooping cranes, *New Jersey v. New York* is a Supreme Court equitable apportionment case about harm to natural and planted oyster beds caused by the increased salinity that results from upstream diversions. Georgia does not cite it—even once—in its 88-page brief. Little wonder. The Court there awarded New Jersey relief, despite the Special Master’s ready acknowledgement that numerous factors affect the salinity and oyster population. *Id.* at 343-46; Report of the Special Master at 159-76, *New Jersey v. New York*, 283 U.S. 336 (No. 16, Orig.) (filed Feb. 2, 2981). There is no basis for a different result here.

To accept Georgia’s application of proximate cause in this case would effectively end the assertion of environmental injuries in equitable apportionment cases. *All* ecosystems are driven by a number of complex factors, with some exacerbating and others mitigating the effect of water reductions. But when, as here, the clear evidence shows a systemic destruction of an ecosystem over a prolonged period as the result of decades of increased diversions, the Court must be empowered to provide relief. The contrary result Georgia urges would have prevented New Jersey from obtaining relief in 1931, and would render meaningless the Supreme Court’s repeated recognition of the validity of environmental harms in establishing injury for an equitable apportionment—coming most recently in *Nebraska v. Wyoming*, 515 U.S. 1, 12 (1995).

IV. GEORGIA FAILED TO SHOW ITS CONSUMPTION IS REASONABLE AND EQUITABLE

As detailed at trial and summarized in its post-trial briefing, Fla. Post-Trial Br. 19-59, Florida satisfied its burden of demonstrating that Georgia’s consumption causes substantial injury. After Florida established injury, Georgia was required to show that its consumptive uses of interstate water were reasonable given Florida’s competing need for that water—particularly in dry years—to preserve its downstream ecosystems.¹⁷ Georgia failed to carry its burden.

A. Georgia Misstates The Law Of Equitable Apportionment: Georgia Was Required To Show Its Consumption Is Reasonable And Equitable

Georgia attempts to excuse its failure, first, by simply shifting the burden to Florida—arguing that Florida bears the burden of proving “that Georgia’s upstream water uses are inequitable.” Ga. Post-Trial Br. 16. But Georgia ignores the Supreme Court’s admonition that, after the downstream State demonstrates injury, the upstream State must prove that its use is “permitted under the principle of equitable apportionment.” *Colorado v. New Mexico I*, 459 U.S. 176, 187 n.13 (1982); *see also* Fla. Post-Trial Br. 10-17. Shifting the burden to the upstream State after injury is established makes sense because the State that caused the injury has the best

¹⁷ The Supreme Court has long recognized that a State can bring an original action to defend its sovereign interests in its environment and wildlife. *See, e.g., Georgia v. Tennessee Copper Co.*, 206 U.S. 230, 239 (1907) (recognizing that Georgia itself had a sovereign interest in protecting its “forests and vegetable life” from threatened damage caused by the discharge of noxious cases from copper smelters in Tennessee); *Nebraska v. Wyoming*, 515 U.S. at 12 (emphasizing importance of “evidence of environmental injury”). Numerous federal statutes codify the sovereign interests in ecological concerns. *See, e.g.,* Magnuson-Stevens Fishery Conservation and Management Reauthorization Act of 2006, Pub. L. No. 109-479, 120 Stat. 3575 (2007); National Environmental Policy Act of 1969, Pub. L. No. 91-190, 83 Stat. 852 (1970); Wild and Scenic Rivers Act, Pub. L. No. 90-542, 82 Stat. 906 (1968); Fish and Wildlife Coordination Act, Pub. L. No. 73-121, 48 Stat. 401 (1934); Endangered Species Act of 1973, Pub. L. No. 93-205, 87 Stat. 884 (1973); Clean Water Act of 1977, Pub. L. No. 95-217, 91 Stat. 1566 (1977). This Court can and should consider these pro-environmental developments in the law in fashioning an equitable remedy here. *Cf. Textile Workers Union v. Lincoln Mills*, 353 U.S. 448, 456 (1957) (noting that federal common law applicable to a labor dispute “must [be] fashion[ed] from the policy of our national labor laws”).

access to proof of any benefits obtained by its use and therefore, it must show that equity favors its claim because of those offsetting benefits. *See International Bhd. of Teamsters v. United States*, 431 U.S. 324, 359 n.45 (1977) (“Presumptions shifting the burden of proof are often created to reflect judicial evaluations of probabilities and to conform with a party’s superior access to the proof.”); *National Commc’ns Ass’n v. AT&T Corp.*, 238 F.3d 124, 130 (2d Cir. 2001). If Georgia believed that benefits from allowing illegal irrigation on unpermitted farm land, for example, outweigh injuries to the Apalachicola ecosystem that Florida proved, then Georgia was required to come forward with clear and convincing *proof* of those supposed benefits. But it did not; instead, Georgia instead, Georgia simply insists it bears no burden to justify its conduct.

As further excuse for its failure to carry its burden, Georgia argues that the Court “puts substantial burdens on a State that seeks to upset the status quo through an equitable apportionment action.” *See* Ga. Post-Trial Br. 16. Georgia ignores that the Court has accorded priority to established uses *only* where doing so is consistent with the water rights doctrine employed by both States to the suit.¹⁸ Georgia attempts to side-step this principle by arguing that because the Court has said that “state law is not *controlling*” in equitable apportionment actions, Ga. Post-Trial Br. 16 (quoting *Colorado v. New Mexico I*, 459 U.S. at 183-84) (emphasis added), the States’ shared riparianism is effectively *irrelevant* here—with the absurd result that the Court

¹⁸ Georgia’s pre-trial brief also pointed to *Kansas v. Colorado* in arguing that Florida bore the burden of proof at the second step of the Court’s burden-shifting framework. *See* Dkt. No. 502, Ga. Pre-Tr. Br. 5 (citing, *inter alia*, 206 U.S. 46, 117 (1907)). Unlike the other cases on which Georgia relied (which all involved two prior appropriation States), *Kansas v. Colorado* involved one prior appropriation State and one riparian State. Georgia’s *post*-trial brief tellingly omits this case in its attempted reformulation of the burden-shifting framework. Because the States in *Kansas v. Colorado* did not share a common approach to water rights, that case does not speak to the scenario presented here, where *both* States’ water rights doctrines hold that past usage does not confer an ongoing, presumptive right to water.

should effectively impose other States' prior appropriation-based doctrines on Florida and Georgia, even though neither recognizes these doctrines in its own laws.

Georgia has it wrong. In the very case it cites, the Supreme Court recognized that federal common law in equitable apportionment actions is guided by the water-law regimes of the party States. *See Colorado v. New Mexico I*, 459 U.S. at 183 (“The laws of the contending states concerning intrastate water disputes are an *important consideration* governing equitable apportionment.” (emphasis added)); *Nebraska v. Wyoming*, 325 U.S. 589, 618 (1945) (considering priority of right in dispute between prior appropriation states); *Washington v. Oregon*, 297 U.S. 517, 544 (1936) (same); *Wyoming v. Colorado*, 286 U.S. 494, 498 (1932) (same). Riparianism thus serves as the “‘guiding principle’ in an allocation between competing States.” *Colorado v. New Mexico I*, 459 U.S. at 184. Under riparian principles, the background shared rule is that downstream users are entitled to the river’s usual and natural flow, subject only to diminution by reasonable upstream uses given then-present circumstances.¹⁹ *See, e.g., id.* at 179 n.4 (“Under the riparian doctrine ... the owner of land contiguous to a watercourse is entitled to have the stream flow by or through his land undiminished in quantity and unpolluted in quality, except that any riparian proprietor may make whatever use of the water that is reasonable with respect to the needs of other appropriators.”); Fla. Post-Trial Br. 16 (citing cases).

¹⁹ Georgia contends that Florida’s pre-trial briefing relied on a “natural flow theory” instead of the regulated riparianism that both States employ, *see* Ga. Post-Trial Br. 17-18 & n.4, but that claim is simply not true. *See* Dkt. No. 501, Fla. Pre-Trial Br. 12 (“[B]oth Florida and Georgia employ so-called ‘regulated’ riparian regimes, which make clear that the states in their sovereign capacity can and should regulate a riparian’s use of water to protect the natural environment and ensure sustainability of the resource.”). Georgia makes no attempt to show that its increasing consumptive uses would be deemed “reasonable” under this shared approach to water regulation, notwithstanding their disastrous effects on the downstream ecosystem.

Georgia thus bears the heavy burden of showing that the “guiding principle” of riparianism should not control under an equitable balancing approach. But, as detailed below, Georgia utterly failed to make that showing.

B. Georgia Must Curb Its Unreasonable Agricultural Consumption

Georgia’s claims about its stewardship of agricultural irrigation can be laid to rest simply by reference to facts that were not even genuinely disputed at trial. Georgia had no answer to the decades’ worth of evidence demonstrating its systematic failure to protect downstream users and the environment in the face of overwhelming evidence of its unsustainable agricultural water use. *See Fla. Post-Trial Br.* 65-68. Likewise, Georgia had no answer for its repeated failures to invoke the FRDPA—the very Act used as a justification to *further expand irrigation*—even as Georgia and independent scientists warned of the dire consequences for failing to do so. *See id.* at 68-74. Georgia does not and cannot claim these decisions were reasonable or equitable, because they are inexcusable by any standard. All Georgia can claim is that, decades later, it is still studying its options.

Georgia’s position is essentially that it can eschew responsible stewardship of its agricultural water use because its farming economy is profitable and depends on irrigation. *See Ga. Post-Trial Br.* 58-59. But that argument rests on a false dichotomy—a choice between irrigating as much as Georgia wants and not irrigating at all. *See id.* at 59 (discussing loss of yield “[w]ithout irrigation”). This is another straw man. Florida is not asking for Georgia to *stop* irrigating; it is simply asking for Georgia to *irrigate reasonably and equitably (i.e. responsibly) particularly during droughts*. The undisputed evidence at trial was that Georgia can substantially reduce the amount of irrigation its farmers apply during drought periods with only modest reductions in yield. *See Sunding PFD ¶ 85 & Tables 4-6. Georgia’s own data confirms this. See JX-169; Masters Test., Trial Tr. vol. 14, at 3630:12-3631:14.*

The idea that farmers can reduce their irrigation significantly without major impacts is not surprising in light of the fact that irrigation in the ACF Basin is largely *discretionary*—it was rarely used until the 1970s, and fewer than half of ACF farms employ *any* irrigation at all even today. *See* Fla. Post-Trial Br. 80; Masters Test., Trial Tr. vol. 14, at 3627:21-3628:2; FX-910 at Slide 2; FX-270. Florida *already* imposes restrictions on the amount its ACF farmers can irrigate, confirming that it is feasible. *See* Cyphers PFD ¶¶ 36-37, 39. And there are many policy solutions available to shield its farmers from the modest economic impact, including buy-back programs, irrigation auctions, crop insurance, and similar measures. *See* Fla. Post-Trial Br. 81-83; GX-868 at 62-63, 77-78; *see generally* FX-911, JX-154. Importantly, Georgia presented *no* trial evidence refuting Florida’s proof that limiting irrigation is feasible, because it was forced to abandon its agricultural resources expert after a particularly devastating deposition. *See* Dkt. No. 473, Fla. Mot. *in Limine* to Preclude Expert Test. by Dr. Suat Irmak at 11-16 (highlighting that Dr. Irmak opined Georgia’s agricultural policies were “reasonable” without comparing them to or against any objective criteria). As a result, at trial Georgia could rely on nothing but vague assertions about the importance of irrigation presented by a *fact* witness, Mr. Masters—a state employee with a personal interest in ensuring that irrigation can continue unabated—who in any event *confirmed*, rather than *refuted*, that limiting irrigation is possible. *See* Masters Test., Trial Tr. vol. 14, at 3573:18-22, 3575:8-17, 3627:21-3628:2, 3634:8-3635:20, 3655:22-3656:6.

The fact that irrigation may be of commercial value to Georgia farmers in the abstract also does not justify Georgia’s inadequate regulatory controls over that irrigation. For example, a portion of Georgia farmers are over-irrigating, resulting in a substantial amount of water that is, at best, wasted and, at worst, actually harming crops. *See* Fla. Post-Trial Br. 81; Sunding PFD ¶¶ 49-50. Curbing excessive irrigation would reduce streamflow depletions without any

materially detrimental impact on crop yield. *See* Sunding PFD ¶ 51, Figs. 3-4. Indeed, wasteful irrigation is so prevalent in Georgia’s portion of the ACF that there is a nickname for center pivot systems watering roads—a “south Georgia car wash”—and road signs warn of this hazard. *See* Masters Test., Trial Tr. vol. 14, at 3615:18-25; FX-118.²⁰ Because excessive irrigation is concentrated among a minority of farmers, Georgia could easily remedy the problem if only it had the political will to do so. At trial, Florida also demonstrated that approximately 90,000 acres in Georgia’s portion of the ACF are irrigated illegally—without any genuine regulatory controls. *See* Sunding PFD ¶ 90 & Tables 4-6; *id.* ¶¶ 46-47 (discussing how Georgia’s own data reveals widespread illegal irrigation); Turner PFD ¶ 127 (describing task force to investigate illegal irrigation, essentially conceding the problem exists, and recognizing impact of this problem on “streamflow”). These uses are neither reasonable nor ones that equity ought to protect.

Finally, it is undisputed that Georgia could do *much* more to minimize the burden of its irrigation on Florida. *See, e.g.*, Fla. Post-Trial Br. 83. For years, Georgia has studied various measures, but has failed to take meaningful action to actually implement them. *See id.* at 73, 81-82 (citing JX-154 and detailing measures Georgia considered but has yet to take to alleviate drought year low flows). Indeed, at trial, Georgia even put a witness on the stand to brag about potential conservation measures that could save many hundreds of cfs worth of water, *even though Georgia has never genuinely pursued implementing those measures.* *See id.* at 83; Masters Test., Trial Tr. vol. 14, at 3668:12-22, 3672:8-12, 3673:12-15 (admitting substantial possible future water savings from implementing Variable Rate Irrigation (“VRI”) and irrigation scheduling, and converting “traveler” irrigation systems to center pivot or drip systems).

²⁰ At least one municipality in Georgia briefly enacted an ordinance prohibiting the watering of roads, before repealing it shortly thereafter due to pressure from farmers. FX-131; FX-132.

Most remarkably, Georgia's post-trial brief includes a laundry list of measures that Georgia claims are "significant and wide-ranging" efforts to conserve agricultural water resources. But, as trial revealed, these "measures" just underscore Georgia's conscious neglect of the downstream harms it knew its consumption was causing or likely to cause:

- **Sound Science Study & 2006 Plan:** When Georgia commenced the Sound Science Study in 1998, EPD was aware for years that its water supply was over-allocated and that irrigation was impacting Flint River flows. *See* FX-6 at FL-ACF-02544445; Reheis Test., Trial Tr. vol. 3, at 639:5-641:14; FX-2 at GA02257044; FX-5 at GA01186515. By the time the 2006 Plan was released, outside experts like USFWS were sounding the alarm bells. FX-46 at GA00537489. And the 2006 Plan's own technical findings, based on the Sound Science Study, admitted that "drought year low flows are reached sooner and are lower than before irrigation became widespread." JX-21 at 22. Despite all this information, Georgia continued to issue irrigation permits, issuing 1,387 permits for 161,623 additional acres, a 17% increase in acreage after January 1, 2007. FX-D-16 (data compiled from JX-132). Further, the low flow provisions in the 2006 Plan currently apply to less than 30 total permits, a "very small number," and do not apply to groundwater permits. Cowie Test., Trial Tr. vol. 9, at 2230:20-2231:9, 2331:9-19.
- **Flint River Drought Protection Act:** As Georgia admits, the FRDPA was used only twice, in 2001 and 2002. *See* Ga. Post-Trial Br. 70; Reheis Test., Trial Tr. vol. 3, at 685:4-7. EPD did not declare a drought or invoke the FRDPA's auction provisions in the droughts in 2007, 2008, 2011, or 2012. *See* FX-47 at GA00537496-98 (letter from USFWS to Georgia admonishing it for not invoking the FRDPA); FX-81; Cowie Test., Trial Tr. vol. 9, at 2259:23-2260:1. Indeed, no funding for the FRDPA was available in 2011 or 2012. *Id.* at 2258:17-2259:1; JX-69 at GA00208715. And Georgia gutted the FRDPA in 2014 by making the drought declaration and auction process discretionary. *See* JX-105 at 3-4 (changing the term "will" to "may"); Turner Test., Trial Tr. vol. 12, at 2969:15-2970:5.
- **Agricultural Metering Program:** Georgia's brief touts (at 70) a 2003 law requiring the installation of flow meters on irrigation systems, yet in actuality the program languishes without funding or enforcement. According to Georgia State employees familiar with the program, the metering program has not had new funding since 2006 or 2007. *See* Eigenberg Dep. 283:14-284:17. Georgia's claims that 80% of Lower Flint region acreage is metered is at odds with the testimony of the Georgia official actually responsible for the program, David Eigenberg (the deputy director of the Georgia Soil and Water Conservation Commission) testified that only 53.1% of irrigation systems in the Lower Flint-Ochlockonee region had meters. *See* Eigenberg Dep. 14:20-15:1, 204:1-11. And even if a meter were installed, that is no guarantee that it is working or providing flow readings. Of the installed meters in that region, only 60-68% of the meters even had meter readings in 2010. *See id.* at 307:10-308:8. This is not surprising, as there is little effort to enforce compliance. For example, the Georgia agency tasked with overseeing the metering program has never reported a single instance of illegal unmetered irrigation water use to EPD for enforcement. Eigenberg Dep.

63:4-64:1. And there is no penalty for a farmer tampering with an installed flow meter. *See id.* at 55:1-11.

- **State & Regional Water Planning Process:** Georgia also praises its state and regional water planning efforts, which were developed pursuant to state law to ensure that water uses within the state were consistent with conservation and sustainable use. *See* Ga. Post-Trial Br. 71. But these very plans demonstrated that Georgia was far exceeding its own “sustainable yield” limits for the Upper Floridan Aquifer in the Dougherty Plain (the Lower Flint River Basin), as well as Georgia’s “sustainability criteria” in dry and drought years for the Flint River generally. *See* FX-24 at 3-6, 3-9 (horizontal row for Bainbridge gage identifying 1,376 cfs shortfall); GX-1247 at ES-4 (“The [resource assessment] model identified a substantial shortfall in meeting EPD criteria for surface water flows in the Flint River Basin at Bainbridge under both current and forecast demands.”); *id.* at 3-4, 3-6; Caldwell Dep. 37:15-25 (“I can only conclude that the estimated current use of groundwater from the Upper Floridan aquifer in the Dougherty plain is incongruent with the sustainable yield as determined by the sustainable yield criteria used in the groundwater assessment.”). Despite these findings, Georgia failed to implement any of the “High Priority Management Practices” identified in the Lower Flint-Ochlockonee Regional Water Plan, including replacing surface water withdrawals with groundwater withdrawals, and improving the enforcement of existing permits and regulations. FX-24 at ES-5; Ga. Post-Trial Br. 71; Cowie Test., Trial Tr. vol. 9, at 2250:5-2251:6 (Georgia is still studying moving surface water permits to groundwater); Turner Test., Trial Tr. vol. 12, at 3028:2-16 (explaining that surface water users will not be moved to groundwater by 2017 because Georgia is still studying the issue).
- **Irrigation Efficiency Requirements:** Georgia claims that the requirement in its 2014 legislation that irrigation systems achieve 80% efficiency requirements is “aggressive.” Ga. Post-Trial Br. 72. Hardly. Director Turner described the legislation as “modest” and admitted that 90% of center pivots required no major changes to meet the efficiency requirement. *See* Turner Test., Trial Tr. vol. 12, at 2971:1-24. Indeed, the efficiency requirements do not even apply to all irrigation systems, including nearly 1900 traveler systems that are already *less efficient than center pivots*. *See id.* at 2971:25-2972:9; Masters Test., Trial Tr. vol. 14, at 3672:1-12. Even for new center pivots, Mr. Masters confirmed that new equipment is not enough, irrigation systems need to be optimized by technicians at the Mobile Irrigation Lab (MIL) to achieve uniform application and maximum efficiency. *See* Masters PFD ¶ 75. Yet Georgia documents demonstrate that only about 1% of center pivots in Georgia have been optimized by Georgia’s MIL. Fla. Post-Trial Br. 65; *see, e.g.*, GX-1126; Masters PFD at 21 (Masters Demo. 6) (number of center pivots). Georgia also fails to mention that there are a number of commercially available technologies and techniques that can achieve irrigation efficiencies well above 80%, none of which are widely used or mandated in Georgia, including irrigation scheduling, soil moisture monitoring, and VRI. Masters Test., Trial Tr. vol. 14, at 3673:23-3674:23, 3668:3-15, 3668:18-22; *see also id.* at 3670:6-13 (Masters did not dispute that only 10 farmers use VRI systems in Georgia).
- **2012 Permitting Moratorium:** Georgia claims that in 2012 the State “effectively capped further growth of irrigated acreage in the ACF Basin that most impact streamflow” through a permitting moratorium announced by then EPD Director Turner. *See* Ga. Post-Trial Br. 72. But Georgia fails to note that (1) this moratorium only applied to new applications, not

applications pending at the time it was announced, (2) is re-evaluated every November, and (3) is maintained only at the discretion of the EPD Director. *See* JX-73; Turner Test., Trial Tr. vol. 12, at 3090:16-3091:2. Moreover, it is difficult to understand why Georgia would so strenuously oppose an equitable cap on its irrigation if it genuinely intended to adhere to the moratorium.

- **Illegally Irrigated Acreage “Special Task Force”:** Simply put, the Special Task Force is a farce, composed entirely of non-EPD personnel, all but one of whom are affiliated with Georgia farm-interests—including farming interests that have filed an amicus brief in this case opposing any restriction at all on Georgia agriculture. *See* FX-921. Florida identified over 2,595 permits in the Flint River Basin alone that were associated with illegally irrigated acres. *See* FX-788. Of those, 200 permits were each associated with more than 100 illegally irrigated acres. FX-D-51 (data compiled from FX-788). Even after Florida pointed out these violations that Georgia surely could have discovered had it been serious about enforcement, Georgia EPD has issued only 30 Notices of Violation. *See* Ga. Post-Trial Br. 72-73. In light of the composition of the Task Force and the extent of the illegal irrigation, it is hard to understand it as anything other than a Potemkin enforcement effort created for the purposes of this litigation.

At bottom, Georgia boasts about the economic output of its farming economy but is unwilling to invest even a tiny fraction of it to reduce the impact that economy is having on a shared interstate resource. *That* is not reasonable or equitable by any measure.

C. Georgia Must Take Reasonable Steps To Curb Its M&I Use

Georgia touts its M&I use and points to a multitude of conservation efforts to distract from the fact that Georgia does not and cannot quantify any *reductions* in its consumptive use that are attributable to its purported conservation efforts. That is because the conservation efforts Georgia identifies consist only of words without corresponding actions. At trial, Georgia’s two primary M&I witnesses, Katie Kirkpatrick and Peter Mayer, pointed to startlingly little in terms of tangible reductions in Georgia’s M&I use. Moreover, although Georgia claims that its conservation efforts are lowering the amount of water Atlanta needs from the Army Corps, it is undisputed that Georgia has asked the Army Corps to provide still *more* water than it currently consumes as part of the forthcoming Water Control Manual. *See* JX-126; Mayer PFD ¶ 89 (projecting 47 mgd increase in M&I consumption in Metro Atlanta from 2011 levels).

Georgia admits it consumes water for M&I use without regard to the impacts on the Apalachicola River and Bay. Mr. Mayer, the expert upon whom Georgia relies, acknowledged that “reasonable” in the water use context means “using water in a way that is conscious of the ecosystem and of other water users who also rely on the same water.” Mayer Test., Trial Tr. vol. 14, at 3497:15-3498:2. But Mr. Mayer *did not* even consider “the impact of Georgia’s water use on the ecosystems or other water users throughout the ACF Basin.” *Id.* at 3498:14-3499:5. Nor did he analyze the impact of Georgia’s water use on *any* fish and wildlife species *or* on downstream habitats. *See id.* at 3499:6-10. Similarly, Mr. Mayer opined on the reasonableness of Georgia’s future M&I use, without considering how growth in water use would impact downstream users. *See id.* at 3502:8-16 (“Q. ... [I]n your assessment of future growth still no analysis of impacts on downstream users. Correct? A. Again, that was something that other experts were tasked with.”).²¹ Ms. Kirkpatrick similarly acknowledged that Metro Atlanta’s water planning does not consider how much water is left to flow to downstream users and reservoirs. Kirkpatrick Test., Trial Tr. vol. 13, at 3413:17-3415:4.

Instead, the only time Georgia addresses its M&I consumption is when Georgia is pressed to do so by pending litigation. For example, the 2009 Water Contingency Planning Task Force studied how to minimize Georgia’s water consumption only because of a court order that put Metro Atlant’s water supply at risk. *See generally* JX-41; Kirkpatrick PFD ¶¶ 57-59; Kirkpatrick Test., Trial Tr. vol. 13, at 3392:17-25. At trial, Ms. Kirkpatrick admitted that

²¹ Georgia discusses decreases in Metro Atlanta’s per capita water use throughout its post-trial brief. *See, e.g.*, Ga. Post-Trial Br. 63-64. But Georgia and its expert, Mr. Mayer, cannot and do not attribute any of those decreases to specific conservation efforts by Georgia. As Mr. Mayer acknowledged, the decreases are likely part of a recent nationwide urbanization trend that has resulted in lower per capita use as urban concentrations increase. Mayer Test., Trial Tr. vol. 14, at 3565:6-3566:7. In any event, per capita use says nothing about consumptive use (only withdrawals) or overall demand.

Georgia still has not implemented several of the so-called “no regrets” options the Task Force recommended that Georgia undertake regardless of the legal proceedings. Kirkpatrick Test., Trial Tr. vol. 13, at 3396:9-3398:10. Once the litigation pressure was gone, Georgia abandoned these recommendations. Likewise, Georgia’s own legislative history acknowledges that “it took a ruling from a federal court to spur the General Assembly to” pass the Water Stewardship Act. FX-905 at 208. The “not-so-subtle intent of the General Assembly in passing the Act was to influence the ongoing negotiations with Florida and Alabama, Congress, and the court hearing Georgia’s appeal” in the Tri-State water litigation. *See* FX-905 at 204. Similarly, Georgia’s own expert testified to Atlanta’s purported commitment to leak abatement and the *need* to remain vigilant in these efforts. *See* Mayer Test., Trial Tr. vol. 14, at 3508:24-3509:24 (“[A]s you repair leaks, more leaks appear, particularly in older water systems. So it’s—water loss control and leak abatement is an ongoing process that really will never end for water utilities. It’s something that they have to do every single year.”); *see also* Sunding PFD ¶ 44 (“water leaks themselves are costly to municipal utilities”). Yet Georgia protests the portion of Florida’s remedy that suggests Georgia perform more aggressive leak abatement.

Meanwhile, even the measures Georgia *did* ultimately take—enacting the Water Stewardship Act and promulgating the 2015 Drought Management Rule—lack teeth and are internally criticized as too “modest” and otherwise rife with exceptions that “appear to virtually undo any benefits.” FX-313 at 9, 18; GX-935 at 6-11 (incorporating exceptions from the Water Stewardship Act). And none of these measures address the impacts of Atlanta’s M&I use on the Upper Flint River. Organizations such as the Flint Riverkeeper and American Rivers repeatedly warn that increased consumptive use, interbasin transfers, and urbanization are decreasing flows

in the Upper Flint. *See Fla. Post-Trial Br. 4, 59.* Neither Ms. Kirkpatrick nor Mr. Mayer identified any steps Georgia is taking to address those impacts.

Finally, the multitude of watering restrictions that Georgia identifies mean nothing if Georgia does not actually *employ* them during drought. But history shows that Georgia is unwilling to take steps to mitigate the impacts of its consumption during these crucial times. In 2007, for example, Alabama's governor chastised Georgia because it did not impose any watering restrictions until the end of the summer, leaving Georgians to spend "all summer during a drought watering their lawns and flowers." FX-905 at 190. In 2010, Georgia passed the Water Stewardship Act, which both Mr. Mayer and Ms. Kirkpatrick tout as evidence of Georgia's commitment to water conservation. But in the following two years, 2011-2012, EPD never declared a drought, meaning there were no restrictions on outdoor lawn watering or M&I use during that entire time. And nothing in the Water Stewardship Act limits the amount or frequency of lawn watering. Likewise, Ms. Kirkpatrick and Mr. Mayer boast about Georgia's 2015 changes to its Drought Management Rule. Just last month, Governor Deal acknowledged that Atlanta and much of Georgia have been mired in a six-month drought. FX-896. But Georgia refused to invoke any meaningful outdoor watering restrictions until after the summer ended. *See FX-897 (drought declaration); Mayer Test., Trial Tr. vol. 14, at 3526:19-24 ("Q. And the level 2 declaration that was last week, it's now November. Right? A. It is now November, yes. Q. And you agree that's after the peak water use months. Correct? A. Yes. It's after the peak water use months.")*. Georgia acknowledges that lawn watering restrictions are effective tools to reduce urban consumptive use. Mayer Test., Trial Tr. vol. 14 at 3523:5-24. Yet it has consistently declined to implement such measures when they are needed most. In short,

regardless of how the burden is allocated, the record overwhelmingly establishes that the balance of equities tips in favor of an apportionment.

V. A CONSUMPTION CAP IS AN EQUITABLE AND PRACTICABLE REMEDY THAT WILL HELP MITIGATE FLORIDA’S INJURIES WHILE ALLOWING REASONABLE SHARED USE OF THE INTERSTATE RESOURCE

Georgia argues that no cap on its consumption is reasonable and that, in any event, Florida has not identified the specific cap it needs to avoid any harms. Ga. Post-Trial Br. 80-88. It is wrong on both counts. First, as the United States has recognized, “[a]n equitable apportionment undoubtedly can take the form of a limitation on water consumption by an upstream state.” U.S. MTD Opp’n 11 (citing Colorado River Compact art. III). And, second, here, Florida has specified the particular limitation needed: the Court should cap Georgia’s consumption at existing levels and reduce its consumption by up to 2,000 cfs in peak summer months of a drought year like 2011. Such a remedy would result in meaningful benefits to the Apalachicola River and Bay in both drought and non-drought years.

There is no question that in times of drought, in particular, the Apalachicola River and Bay ecosystems suffer from Georgia’s over consumption. Fla. Post-Trial Br. 42, 48-52; *see supra* Section III. A reduction in Georgia’s consumption and attendant additional flows will help ameliorate the ecological harms to the Bay and River during dry periods and droughts. Georgia criticizes Florida for not identifying a single minimum flow level “necessary to protect the ecology of the Apalachicola Bay or Floodplain.” Ga. Post-Trial Br. 86. But the law does not require Florida to identify a single minimum flow level that would cure all harm, and doing so is neither practical nor scientifically consistent with the ecological harms identified in this case.

What Florida must do is prove that additional flows from a 2,000 cfs reduction in Georgia’s consumption will result in meaningful benefits to the Bay and River. It has done so. For example, Dr. Glibert found that compared to a scenario that models Georgia’s projected

increased future consumption, a conservative Florida remedy scenario that provides even less than 2,000 cfs improves important nutrient (nitrate) availability to the lower food web between 62% to greater than 500%, depending on the location in the Bay, during the summer months in dry years. Glibert PFD ¶ 32. Dr. Glibert also found meaningful improvements in temperature in the Bay and dissolved oxygen. *Id.* ¶¶ 59, 60. As Dr. Glibert explains, low dissolved oxygen is harmful for all plants and animals, *id.* ¶ 53, and cooler temperatures from increased River water would benefit the Bay ecosystem. *Id.* ¶¶ 57, 89.

Moreover, it remains undisputed that, as a general matter, additional freshwater flows will decrease the salinity in Apalachicola Bay. *See* McAnally PFD ¶ 17 (“If all else is equal, reducing freshwater flow increases average salinity and adding freshwater flow decreases average salinity.”); Greenblatt PFD ¶ 13 (“I found that observed salinity in the Bay is strongly tied to the volume of freshwater that enters the Bay; during low flow periods, higher salinities are observed, and conversely, during high flow periods, lower salinities are observed.”). Florida has proven that reductions in salinity would improve the Apalachicola Bay ecosystem, including for Florida’s prized oysters. The uniform testimony is that decreased salinity helps flush harmful oyster predators from the Bay. *See* Kimbro PFD ¶¶ 81, 83 & Fig. 10. And as USFWS determined, even avoiding a relatively small 1.0 ppt increase in the median salinity at East Bay could make a meaningful difference in the survival rates of juvenile oysters and sturgeon. JX-122, USFWS Coordination Act Report at 34.²²

Likewise, Dr. Allan found that even under a more conservative remedy than Florida is seeking here, meaningful reductions in harm would occur for the mussel assemblages, fish

²² Georgia mischaracterized Dr. White’s results from modeling the remedy scenario. Ga. Post-Trial Br. 26. The 1.2% increase in oyster biomass was a conservative estimate for *one* particular bar located far from the mouth of the river, and he predicted much larger increases in oyster abundance at bars closer to the river mouth. White Test., Trial Tr. vol. 7, at 1724:24-1725:14.

assemblages, Gulf sturgeon, and Tupelo-Cypress swamp trees. *See* Allan PFD ¶¶ 73-74. He testified unequivocally that he had “[n]o doubt whatsoever that more water will benefit the system.” Allan Test., Trial Tr. vol. 3, at 592:6-22. Similarly, Dr. Kondolf testified that even a modest increase in flow would significantly increase slough connectivity, explaining that a 2,000 cfs increase when flows are 5,000 cfs would connect several dozen additional sloughs to the river. Kondolf Test., Trial Tr. vol. 10, at 2629:7-15. These conclusions are consistent with the USFWS and EPA findings of nearly 20 years ago. *See* FX-599 at FL-ACF-02545883-84, FL-ACF-02545894. A reduction in consumption, and attendant increase in Apalachicola River flows, will ensure that the 1999 USFWS and EPA Instream Flow Guidelines are achieved much more often, preventing the “detrimental effects” outlined by the expert federal agencies. *See* FX-599 at FL-ACF-02545883; Fla. Post-Trial Br. 7, 50-51.

Critically, an all-year consumption cap is appropriate to avoid significant harm to the Apalachicola River and Bay ecosystems, now and in the future. Fla. Post-Trial Br. 35-58 (outlining evidence of harm to the ecosystems caused by reduced flows); *see supra* Section III. A consumption cap that applies even during non-drought years would help keep reservoirs full, protecting and preserving the River and Bay ecosystem so that higher flows are available to help it better withstand stress in dry years.

In the Apalachicola River, for example, higher flows during non-drought periods would inundate more floodplain habitat, as some sloughs disconnect at flows as high as 19,000 cfs. Allan Test., Trial Tr. vol. 3, at 583:11-15; *see* GX-7, App. 2. Above 19,000 cfs, the water spreads out even further away from the sloughs, inundating increasingly more of the floodplain, more habitat, and more floodplain forest—which will help prevent grasses from establishing in larger areas of swamp forest, keeping the forest from changing in character. *See* FX-790 at 52-

53; Allan PFD ¶ 59. Because monthly flows are, on average, below 19,000 cfs between May and December, increased flows during that period will benefit the River. *See, e.g.*, GX-866; Bedient Report at 24. Increased inundation leads to stronger fish year classes, which help serve to protect the fish population from subsequent low flow periods that have weaker year classes. *See* FX-790 (Allan Report) at 122-123; *cf.* Allan PFD ¶ 47.

In the Apalachicola Bay, increased flows during non-drought periods would reduce salinity, ensuring that any oyster predators are flushed out more thoroughly. *See* Kimbro PFD ¶¶ 81, 83 & Fig. 10 (predation strength decreases with decreased salinity). And, increased flows would yield higher nutrient concentrations that are beneficial to the Bay ecosystem, even at higher flows. *See* Glibert PFD p. 25, Fig. 9 & Fig. 10 (remedy compared to future improves nutrients by over 10% even in high flow (>14,500 cfs) summer months). Lastly, because of the federal reservoirs, a consumption cap during non-drought years will provide a buffer to protect against harms that result in drier times. As the Corps explained, additional flow from a consumption cap during wet times “would provide a cushion during low-flow periods, so that it would be possible to maintain a flow rate of greater than 5,000 cfs for a longer period of time without any alteration of the Corps’ operations.” U.S. Post-Trial Br. 18-19.

Without an all-year consumption cap, Georgia’s consumption will only continue to increase, exacerbating problems during all years. *See* Sunding PFD ¶¶ 40-41; Hornberger PFD ¶¶ 125-126; FX-786 at 34-36 (Flewelling Expert Report, §8.2). Even assuming increased return flows in Metro Atlanta, Georgia still admits that its M&I consumptive use is likely to grow by 47 mgd (approximately 70 cfs) by 2050. Mayer PFD ¶ 89. This can easily be offset by reasonable measures in the Flint River Basin or Metro Atlanta itself. And it is difficult to see why Georgia would so strenuously oppose capping its agricultural consumption if it truly intended to stick to

its permitting moratorium, as it now claims. Even under Georgia's flawed view of the equitable apportionment burden shifting framework, *Georgia bears the burden of demonstrating that it should be allowed to continue increasing its water consumption because it is the party seeking to alter the so-called "status quo."* See Ga. Post-Trial Br. 16 (claiming that "the Court puts substantial burdens on a State that seeks to upset the status quo through an equitable apportionment action"); Ga. Pre-Trial Br. 5. Georgia has failed to carry that burden here.

Florida's economist, Dr. Sunding, demonstrated precisely how Georgia could implement at reasonable cost a consumption cap and a drought-year reduction in streamflow depletions of 2,000 cfs. Georgia could undertake a variety of the options Florida presented at trial. See Fla. Post-Trial Br. 81-84. These measures are not only easy to implement, but many have already been considered by Georgia itself. See *id.*; JX-154. Additionally, Georgia could implement VRI and irrigation scheduling, and switch its remaining traveler irrigation systems to center pivot or drip systems, for significant additional streamflow gains at little cost, or engage in the type of sod-based rotations that have already been addressed by the agricultural scientists in both Florida and Georgia. See Fla. Post-Trial Br. 83; see e.g., FX-960 at 44-45, 47 (projecting 70-80% savings in water use from using a different crop rotation, while still increasing farm income).

Contrary to Georgia's argument, Florida's proposed drought-year remedy is possible to achieve. Georgia's claims that the proposed cap exceeds Georgia's total consumptive use is demonstrably false. Ga. Post-Trial Br. 83-84. Florida's experts used multiple lines of evidence to demonstrate that Georgia's consumptive use causes streamflow depletions in the range of 3,500 to 4,000 cfs in the summer of low-flow years. See Fla. Post-Trial Br. 23-26. The multiple lines of evidence included comparing more recent droughts with past droughts, analyzing basin yield, and running multiple rainfall runoff models. *Id.*; see also *supra* at 24-26. And the

testimony at trial made clear that it is “certainly hydrologically feasible” and “hydrologically reasonable” for Georgia to reduce streamflow depletions by 2,000 cfs in the summer of low-flow years. Hornberger Test., Trial Tr. vol. 8, at 2073:15-2074:3; *see supra* at 16-17.

Georgia points to Dr. Langseth’s testimony to argue that there is not enough agricultural water use in Georgia to support the remedy that Dr. Sunding analyzed. *See* Ga. Post-Trial Br. 82. But this comparison is intentionally misleading. Dr. Langseth’s and Dr. Sunding’s analyses were very different—Dr. Sunding evaluated a remedy based on Georgia’s total streamflow depletions of about 3,500 to 4,000 cfs, whereas Dr. Langseth intentionally evaluated just select categories of Georgia’s water use—which he knew undercounted those specific uses—in order to identify locations where pumping in the Upper Floridan Aquifer could be cut back to improve streamflow in the most hydrologically efficient manner. *See* Langseth Dep. 124:19-23, 255:13-24 (comparing Sunding and Langseth scenarios is comparing “apples and oranges”); FX-795 at SS-6 to SS-7 (“I evaluated the most hydrologically efficient manner of reducing irrigation withdrawals to increase streamflow.”). In other words, Dr. Sunding’s analysis was, by design, far broader in scope, and was based on consumption estimates known to be more fulsome and accurate. Georgia’s expert, Dr. Panday, acknowledged that Dr. Sunding and Dr. Langseth were analyzing “different conservation scenarios” and admitted that he had not “compared them against one another.” Panday Test., Trial Tr. vol. 15, at 3854:7-17.

Similarly, Dr. Flewelling’s estimate of municipal and industrial consumption by Georgia was also intended to be an underestimate of just *one category* of Georgia’s water use. Hornberger PFD ¶¶ 71, 94. Specifically, Dr. Flewelling’s estimate of M&I consumptive use constitutes “an under-accounting for several reasons, including: (a) it relies on Georgia’s data, which is incomplete and undercounts water use; and (b) it is not feasible to identify and quantify

each individual water user, so certain water users are omitted entirely.” *Id.*; FX-786 (Dr. Flewelling Expert Report) at 21-22 (estimate of Georgia’s municipal and industrial consumptive use is “significantly understated” as it relies on Georgia’s reported data, which is biased low). Again, Georgia’s own hydrologists at Georgia Tech understood Georgia’s consumption estimates to be an under-accounting. *See Fla. Post-Trial Br.* 21-22. Viewed honestly—rather than in the artificial piecemeal manner Georgia is presenting—the evidence overwhelmingly shows that Georgia’s water use causes streamflow depletions in the range of 3,500 to 4,000 cfs in summer months in dry years, and that reducing this by 2,000 cfs would be both possible and reasonable. *See id.* at 23-25 (showing that, consistent with GWRI recommendations, a rainfall runoff model and objective gage data accurately capture Georgia’s summer dry year streamflow depletion at 3,500 to 4,000 cfs); *see also* FX-534 at 193 (the effects of human-induced groundwater changes and small and medium sized impoundments can be more accurately assessed using rainfall run-off models); Hornberger PFD ¶¶ 50-52, Table 1 (comparing data for 1954, 1955, 2011, and 2012); *id.* ¶ 53, Table 2 (showing an approximately 3,600 cfs decline in summer streamflow between the drought years of 1931 and 2011). Importantly, even if Georgia were right that the magnitude of achievable reduction in consumption is less than what Florida’s experts have demonstrated, it does not—and cannot—dispute that these conservation measures would deliver more water to Florida to reduce the harm that Florida is suffering.

Georgia’s arguments about the cost of Florida’s proposed remedy are similarly misguided. *See Ga. Post-Trial Br.* 84-85. The true cost of Florida’s proposed remedy is a small fraction of what Georgia asserts. *See Fla. Post-Trial Br.* 85. Georgia’s M&I cost figures do not take into account that Georgia has already committed to carrying out both municipal leak abatement and drought-time outdoor watering bans. *See supra* at 61-62. Georgia’s estimates of

the regional impacts of Florida’s remedy are similarly inflated as they do not account for the fact that (1) Georgia farmers currently use significant amounts of water that do not increase agricultural productivity; (2) use of deficit irrigation—rather than completely eliminating irrigation—would limit decreases in crop yield; (3) Georgia farmers could reduce water use by improving the efficiency of their irrigation equipment; and (4) compensation for water conservation efforts would have a stimulus effect on the local economy, among other factors. *See* Sunding PFD ¶¶ 91-92, 104. Just a small set of these proposed remedies in the Flint River Basin would provide far more streamflow cfs savings than the entire projected increase in consumptive use in Metro Atlanta by 2050. *Compare id.* Tables 4-6 (detailing cfs savings), *with* Ga. Post-Trial Br. 64 *and* Mayer PFD ¶ 89 (projecting 47 mgd increase in Metro Atlanta from 2011 M&I consumptive use levels).

Critically, Florida’s proposed remedy would modestly impact—not wipe out—Georgia’s row crop production. *See* Sunding PFD at 44, Tables 4-6. Fewer than half of farms in Georgia’s portion of the ACF Basin are irrigated at all, despite the fact that Georgia farmers pay nothing for the water itself. *See id.* ¶¶ 22, 37. This is because, due to the low value of row crop agriculture in Georgia, the benefits of irrigation often are not worth the cost of installing and maintaining irrigation equipment.²³ *Id.* ¶ 22. In other words, to those farmers, the fluctuations in crop yield due to variation in rainfall are worth the modest risk from an economic perspective.²⁴ Georgia’s hyperbole notwithstanding, the reality is that row crop agriculture—the only industry Florida’s

²³ The value of Georgia ACF rotation crops is so low that grapes produced on approximately 100,000 acres in a single California county produce more revenue than all Georgia ACF rotation crops combined. Sunding PFD ¶ 20; Stavins PFD ¶ 17 (Stavins Demo. 2).

²⁴ In its post-trial brief, Georgia misrepresents Dr. Sunding’s opinion on the risk of crop failure for farmers who practice dryland farming. Ga. Post-Tr. Br. 59. The quote Georgia attributes to Dr. Sunding is not from Dr. Sunding but from Georgia’s attorney; Dr. Sunding simply stated that an increased risk of crop failure is “possible.” Sunding Test., Trial Tr. vol. 11, at 2829:5-9.

proposed remedy would impact—comprises less than one-third of the Georgia ACF’s agricultural economy. *See* Stavins PFD ¶ 17 (Stavins Demo. 2). Even in the Lower Flint River Basin, where agriculture is most concentrated, agricultural activity accounts for only five percent of economic output. *See id.* ¶ 19. And, contrary to Georgia’s claims, its agricultural industry is *not* “one of the largest and most productive in the nation” or one on which “our nation depend[s].” Ga. Post-Trial Br. 58-59. (Of course, a remedy funded by the Georgia State Government would not need to impose costs on local farmers; it could instead compensate them as the FRDPA contemplated.) The truth is that Georgia is *not even in the top 10 agricultural producing states in the country*. *See* Sunding PFD ¶ 20. In any event, neither the equitable principles that govern an apportionment in this case nor anything else provides that profits must outweigh existing harm to the environment when it comes to allocating use among two or more States that share a water source. As Dr. Sunding testified, other states have implemented remedies of the type contemplated here. *See* Sunding Test., Trial Tr. vol. 11, at 2851:3-22, 2867:8-17 (auctions in Klamath River Basin); *id.* at 2852:5-2853:7 (buybacks of irrigation rights in Nevada’s Newlands Irrigation District); *id.* at 2853:16-2854:20 (caps on irrigation in Imperial Irrigation District); *id.* at 2854:21-2856:4 (consumption caps in Republican River region of Nebraska).

Given the modest economic impacts that Florida’s remedy would have, Georgia is forced to bolster its claims of economic harm by pointing to a range of water uses that are wholly unaffected by Florida’s proposed remedy. For instance, that Georgia uses ACF water for “drinking, cooking, cleaning, and other everyday uses” is irrelevant, because such uses do not impact streamflow and would not be impacted at all by Florida’s proposed remedy (whether in

the M&I or agricultural sectors).²⁵ Ga. Post-Tr. Br. 58; Sunding PFD at 44, Tables 4-6. Nor would Florida’s proposed remedy impact industries such as poultry processing, pharmaceutical manufacturing, and aircraft manufacturing. *See* Sunding PFD at 44, Tables 4-6.

Florida has shown that is entitled to the relief it has requested, as well as any other relief this Court “deems just and appropriate.” Compl. 21; *see also* Fed. R. Civ. P. 54(c). What equity should not allow is a disposition allowing Georgia’s consumption to continue and, indeed, continue to increase as it has for decades now, unchecked—to the great if not catastrophic detriment of the Apalachicola River Basin, its natural resources, and its residents.

CONCLUSION

As demonstrated in its post-trial brief and in the discussion above, Florida has proven, by clear and convincing evidence, that Georgia’s consumption of water is harming Florida and that an equitable apportionment is necessary and appropriate here to remedy those harms. Florida has also shown (and the United States agrees) that such an equitable apportionment can be achieved without the involvement of, or prejudice to, the Corps.

Of course, the Special Master has recommended on multiple occasions that the parties resolve this dispute amicably. Florida agrees that a settlement should have been possible long ago and remains willing to negotiate in good faith to this day. Georgia has suggested at times that the Corps should be part of a settlement negotiation, as it was during the time before the Federal Compact failed. Florida has never had any objection to negotiating with the Corps along with Georgia, but Florida has also always recognized that the Corps can only manage the water that remains after Georgia has consumed whatever water it desires. Georgia has been willing to

²⁵ The measures Dr. Sunding proposes to conserve water in the M&I sector—leak abatement, outdoor water use restrictions, and eliminating interbasin transfers—have nothing to do with such “everyday uses.”

volunteer that the Corps take differing management approaches to operating its dams, so long as Georgia itself is not subject to any consumption limitations. But without limits on Georgia's consumption, the Corps will ultimately lack enough water to protect downstream flows; thus, a promise by the Corps alone is illusory, without a consumption cap on Georgia. That is why both EPA and USFWS recognized in the 1990s that a limit on Georgia consumption would ultimately be necessary. *See* FX-35a at FL-ACF-03781832-33 (USFWS 1999 recommendation that the states negotiate consumptive use limits); FX-35b (EPA 1999 recommendation that Compact allocation sustain "existing aquatic communities"); *see* Reheis Test., Trial Tr. vol. 3, at 670:9-673:24. Georgia has never been willing to accept any limitation on its own consumption.

Perhaps that political reality would change if Georgia felt it had no choice but to negotiate, or to face a significant cap on its consumption. The Apalachicola Bay and River, and the surrounding community, are being strangled by Georgia's ever increasing water consumption. Florida wishes that a settlement had been possible years ago, but it has been forced to take the only avenue it can to protect this national treasure. Florida has met its burden in establishing that it has been injured and that it is entitled to an equitable apportionment of the waters at issue. Accordingly, Florida respectfully urges this Court to grant the requested relief.

Dated: December 29, 2016

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No. 142, Original

In the
Supreme Court of the United States

STATE OF FLORIDA,

Plaintiff,

v.

STATE OF GEORGIA,

Defendant.

Before the Special Master

Hon. Ralph I. Lancaster

CERTIFICATE OF SERVICE

This is to certify that the STATE OF FLORIDA'S POST-TRIAL RESPONSE BRIEF has been served on this 29th day of December 2016, in the manner specified below:

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