No. 142, Original

In the
Supreme Court of the United States

STATE OF FLORIDA,

Plaintiff,

v.

STATE OF GEORGIA,

Defendant.

STATE OF GEORGIA'S RESPONSE TO STATE OF FLORIDA'S POST-TRIAL BRIEF

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TABLE OF CONTENTS

TABLE OF AUTHORITIES

Page(s)

Cases

Rules

INTRODUCTION

The post-trial briefing confirms that Florida has failed to prove its case. Rather than point the Court to the hard facts necessary to justify an equitable apportionment, Florida filled its brief with inaccurate, unreliable, and misleading material that does not withstand even passing scrutiny. Florida relies on written direct testimony that did not hold up to cross-examination. Florida relies on hearsay research papers from third parties who were not called to testify at trial and who either were not deposed or rejected Florida's positions during their depositions. And Florida relies on mischaracterizations of, and selective quotations from, key documents—often when the documents themselves elsewhere refute the conclusions Florida seeks to draw. Florida, in short, acts like the trial in this case never happened. But try as it does, Florida cannot escape the devastating damage that was done to its allegations during the five-week trial, where it became painstakingly clear that Florida does not have the evidence necessary to support its claim to an equitable apportionment.

There are four separate hurdles that Florida has failed to clear, and consequently four separate reasons why the Court should deny Florida's request for an equitable apportionment. ***First***, Florida has failed to join a necessary party. The United States settled one of the most important—and contested—issues in this litigation when it confirmed that a consumption cap in Georgia would ***not*** result in increased flows into Florida during drought operations or periods where basin inflow is less than 5,000 cfs. As the United States said is in its *amicus* brief:

> The Corps expects in an extreme low flow scenario that Apalachicola River flows ***would be very similar with or without a consumption cap***. . . .

U.S. Post-Trial Br. at 17-18 (emphasis added). The United States is now on record validating what Georgia's witnesses have been saying all along: consumption caps on Georgia would not do anything to increase flows into Florida—much less confer any tangible ecological or

environmental benefit—during virtually all of the times when Florida has complained of low flows. The United States also exposed as false Florida's claim throughout this litigation that "a remedy capping Georgia's consumption will ***almost always provide immediate and significant flow benefits*** to the Apalachicola River in Florida." Fla. Post-Trial Br. at 33 (emphasis added). Because a consumption cap will not, in fact, provide any relief to Florida during drought operations or when basin inflow is less than 5,000 cfs without significant changes to federal reservoir operations and the involvement of the Corps, Florida's action must be dismissed.

Second, Florida's alleged injury is speculative or non-existent, and its attenuated chain of causation falls far short of meeting the clear-and-convincing evidence standard. Despite years of discovery and the help of no fewer than twenty experts, Florida still has not shown that Georgia's water use has caused any of its alleged harms in the Bay or the River. Instead of pointing to real evidence proving up its causal chain, Florida rests its injury case almost entirely on misleading descriptions of irrelevant documents that do nothing to help Florida meet its burden of proof. Independent scientists, in work verified by Georgia's experts, have not found any clear evidence linking low River flows to the 2012 oyster collapse. And dozens of Florida's own internal documents repeatedly attribute the collapse to overfishing and poor fisheries management practices. Florida's own experts, moreover, have found no material connection between Georgia's consumption and the ecological health of the Bay. With respect to the River, Florida has not and cannot rebut the plain fact that it has not proven harm to any specific species in the River caused by ***Georgia***, as opposed to changes caused by dam construction, historical dredging, or a series of historic multi-year droughts over the last fifteen years.

Third, the current division of water between Georgia and Florida is plainly equitable. Georgia uses only a small fraction of the total water in the ACF Basin. That is true in wet years,

dry years, and even during the driest times of the driest years. Georgia uses that small amount of water for highly beneficial purposes, supporting millions of people and billions in economic output. In contrast, Florida—which accounts for less than 2.5% of the total population, employment, and economic activity in the ACF Basin—receives ***over 90%*** of all of the water in the ACF Basin the vast majority of the time, and over ***75%*** of available water during the very worst drought times. Florida is thus already receiving its "fair share" of ACF waters. Fla. Post-Trial Br. at 60. Granting Florida's request for even more water, while simultaneously crippling the highly beneficial purposes to which Georgia puts ACF waters, would be the quintessence of inequity.

Fourth, and finally, Florida has not proven that any remedy it has proposed in this case—and there have been many—will either (1) have any meaningful impact on the ecology of the River or Bay; or (2) create benefits that "substantially outweigh" the costs that such a remedy would impose. Florida's failure to develop such remedial evidence is striking: no such evidence was adduced in discovery, none was presented at trial, and none appears in Florida's post-trial brief. Indeed, Florida spends only ***one page*** of its post-trial brief trying to explain how its proposed remedy will redress its alleged ecological harms. Even that meager effort completely ignores the plain truths that Florida's ***own experts*** were forced to admit at trial: even drastic reductions in Georgia's water use would have no material impact on state line flows or the ecology of the River or Bay. At the same time, those same remedies would impose costs on Georgia running into the hundreds of millions (if not billions) of dollars.

As the United States correctly stated in its brief, it is up to the Special Master to determine "whether Florida has proved that a consumption cap would produce enough additional basin inflow at the right times to redress Florida's alleged harm and justify the cost of imposing a

consumption cap in this case." U.S. Post-Trial Br. at 19. The evidence presented at trial—now confirmed by the United States—proves that such a cap is not justified. Eliminating even ***100%*** of Georgia's consumptive use in the ACF Basin would provide Florida ***no additional flows*** during drought or when basin inflow is less than 5,000 cfs—virtually the entire time Florida complains of reduced flows. At most, Florida might receive ***a few days*** of slightly higher flows at the margins of lengthy multi-year drought periods. But Florida has presented no evidence—much less "clear and convincing" evidence—that a few more days of slightly higher flows would confer any meaningful ecological benefit to the Apalachicola River or Bay, or that the substantial costs of generating those few additional days is worth those slender benefits. Florida thus presents this Court with a remedy where "the harm that may result from disrupting established uses is . . . certain and immediate, whereas the potential benefits from" that remedy are "speculative and remote." *Colorado v. New Mexico*, 459 U.S. 176, 187 (1982) (*Colorado I*). Equity does not support relief in such circumstances.

After years of litigation and five weeks of trial, Florida's case fails for the most basic of reasons: Florida has not proven the facts it alleged in its complaint, and it has not established the necessary prerequisites for the extraordinary remedy of an equitable apportionment. In such circumstances, the Supreme Court has not hesitated to deny relief in the past. *See infra* p. 8-10. (discussing cases). The same result should follow here, and Florida's request for an equitable apportionment should be denied.

LEGAL FRAMEWORK

Before turning to the merits of Florida's evidence, Georgia first addresses several overarching legal principles that Florida purports to articulate in its brief. Georgia's opening brief set forth the elements Florida must establish by clear and convincing evidence to receive an equitable apportionment: (1) that it was suffering real and substantial injury proximately caused

by Georgia's water use; (2) that Georgia's water use was inequitable; and (3) that Florida's proposed remedy would redress its alleged injuries and that the benefits of such a remedy would substantially outweigh the costs. Ga. Post-Trial Br. at 16. Florida "embrace[s]" its burden on the first element, Fla. Post-Trial Br. at 14, but denies that it bears the burden of proving that Georgia's water use is inequitable and maintains that its burden with respect to remedy is far lower than what the Supreme Court has required. Neither argument has merit.

A. Florida Bears The Burden Of Proving That Georgia's Upstream Water Use Is Inequitable

As the party seeking to change the status quo through an equitable apportionment, Florida bears the burden of proving that Georgia's upstream uses of water are inequitable and should be capped or reduced by the Supreme Court. *See Colorado I*, 459 U.S. at 187-88 (explaining that the party seeking to "disrupt[] established uses" bears the burden of showing "by clear and convincing evidence that the benefits of the diversion substantially outweigh the harm that might result"); *Kansas v. Colorado*, 206 U.S. 46, 117 (1907) (holding that Kansas, the downstream state, had not "made out a case entitling it to a decree" because, although it had established diminished flows and "perceptible injury," it had not established that Colorado's upstream use was inequitable when compared with Kansas's injury); *Idaho ex rel. Evans v. Oregon*, 462 U.S. 1017, 1028 (1983) ("Idaho [the downstream state] has not proved that Oregon and Washington have mismanaged the resource and will continue to mismanage."); *Washington v. Oregon*, 297 U.S. 517, 523 (1936) (denying Washington's requested relief because "[t]o limit the long established use in Oregon would materially injure Oregon users without a compensating benefit to Washington users"); *see generally* Br. of the State of Colorado as *Amicus Curiae*.

Footnote 13 from *Colorado I*, on which Florida relies in arguing that Georgia bears the burden of proof on this issue, is consistent with this long line of authority. *See* Fla. Post-Trial Br.

at 12-13. Colorado bore the burden of proof in *Colorado I*, not because it was the upstream state as Florida contends, but because it was the state seeking to disrupt the status quo with a new diversion. *See Colorado I*, 459 U.S. at 177 ("The water of the Vermejo River is at present fully appropriated by users in New Mexico. Colorado seeks to divert water for future uses."). In making its argument, Florida ignores the text ***directly above*** footnote 13 which makes clear that "the equities supporting the protection of existing economies will usually be compelling," and that the party "proposing the diversion" from existing uses must "carr[y] its burden." *Id*. at 187-88. Florida plainly is the party seeking to disrupt established uses, and thus Florida is the party that bears the burden of proving that existing uses are inequitable.

The Supreme Court's focus on protecting existing economies is not, as Florida claims, an approach that applies only "in a case involving prior appropriation States." Fla. Post-Trial Br. at 15. Florida tellingly cites no authority for that proposition, and Georgia is aware of none. To the contrary, in explaining why it favors the protection of existing economies and requires states that seek to upset those economies to prove their case under a high burden of proof, *Colorado I* did not draw a distinction between prior appropriation and riparian rights states. Instead, the Court articulated its approach in the context of discussing the federal common law that applies in ***all*** equitable apportionment disputes, *Colorado I*, 459 U.S. at 183-187, and subsequently explained that it presumptively favored existing economies because of "the unique interests involved in water rights disputes between sovereigns," *Colorado v. New Mexico*, 467 U.S. 310, 316 (1984) (*Colorado II*). Moreover, the Court in *Colorado I* specifically refused to apply "the rule of priority" that typically controls under the doctrine of prior appropriation. 459 U.S. at 184. Having directly refused to apply prior appropriation doctrine to the facts before it, it makes no

sense to construe the Supreme Court's statements about the protection of existing economies to apply only in disputes involving prior appropriation states.[1]

B. Florida Was Required To Present Clear And Convincing Evidence That Its Proposed Remedy Would Redress Its Alleged Harms

Florida also bears the substantial evidentiary burden of showing that the remedy it seeks will actually redress its alleged harms. This it cannot do. An equitable apportionment is justified only when a case is "fully and clearly proved." *Colorado v. Kansas*, 320 U.S. 383, 393 (1943). That admonition applies as strongly to the remedial element of Florida's case as it does to the injury and equitable use elements. There is no basis in law or logic for claiming, as Florida does, that it can receive an equitable apportionment even if it cannot prove that its remedy will result in "complete or certain" benefits, so long as it can show that it is "reasonably likely to meaningfully alleviate" the harms of which it complains. Fla. Post-Trial Br. at 17. As a starting matter, Florida cannot even show that much. But even if it could, the Supreme Court has explained that a plaintiff state must "demonstrate[] by ***clear and convincing*** evidence that the benefits of the [proposed] diversion ***substantially*** outweigh the harm that might result." *Colorado I*, 459 U.S. at 187 (emphases added). That standard cannot be met with uncertain evidence that a proposed remedy may or may not generate real ecological benefits. Indeed, the Supreme Court has directly cautioned against ordering relief when benefits are "uncertain," *Washington*, 297 U.S. at 529, or "speculative and remote," *Colorado I*, 459 U.S. at 187.

Idaho ex rel. Evans v. Oregon, 462 U.S. at 1025, does not support Florida's watered-down remedial standard. *Idaho* did not hold that plaintiffs in equitable apportionment actions

[1] In passing, Florida says that "the parties dispute what the 'status quo' was concerning the waters at issue," suggesting that Florida believes that the relevant "status quo" is some time in the past, possibly decades before it filed suit. Fla. Post-Trial Br. at 15. Supreme Court case law, however, makes clear that the relevant "status quo" is circumstances as they existed when the lawsuit was filed: "[I]n determining whether one state is using, or threatening to use, more than its equitable share of the benefits of a stream, all the factors which create equities in favor of one state or the other must be weighed ***as of the date when the controversy is mooted***." *Colorado v. Kansas*, 320 U.S. 383, 394 (1943) (emphasis added).

can satisfy their burden on remedy with uncertain or speculative evidence. Nor did the Court have occasion to issue such a holding: the Court determined that Idaho had met its burden of proving that its proposed remedy was both "workable" and sufficiently likely to increase the "total number of fish" making their way to Idaho. *Id*. at 1026-27. That type of evidence, which establishes a direct link between the remedy sought and redress of the alleged injury, is precisely the type of evidence Florida has utterly failed to present in this case. Indeed, to the extent *Idaho* is relevant at all to this dispute, it only further strengthens ***Georgia's*** arguments. The Court ultimately denied relief in that case because "Idaho ha[d] not demonstrated sufficient injury to justify an equitable decree," and "ha[d] not prove[n] that Oregon and Washington ha[d] mismanaged the resource." *Id*. at 1027-28. Here too, Florida failed to meet its burden of proving a sufficient injury and mismanagement by Georgia.

Florida knows full well that it has failed to develop the necessary evidence on remedy. It is telling that Florida, after a full trial on the merits, now feels compelled to argue for the first time that it faces a lower burden with respect to remedy. Florida has not proven that it can obtain sufficient additional flows of water at necessary times without the Corps as a party. Florida has not proven that any additional flows that might make their way to Florida would have any measurable ecological benefits. And Florida has not proven that the enormous costs its remedies would impose on Georgia are justified. As a result, Florida is now trying to change the evidentiary standard at the eleventh hour to make up for its own failures of proof. The Court should reject that tactic.

C. The Supreme Court Has Previously Denied Relief To States Unable To Prove The Elements Of An Equitable Apportionment

Where a plaintiff in an equitable apportionment action has failed to develop the evidence necessary to meet its burden on one or more of the elements discussed above, the Supreme Court

has not hesitated to deny relief. For example, in *Connecticut v. Massachusetts*, 282 U.S. 660 (1931), Connecticut sought to cap the amount of water Massachusetts could divert from the Connecticut River for water supply purposes in Boston. Connecticut argued that the diversion would harm fish species and increase pollution in the river. *Id*. at 664. The Special Master rejected Connecticut's arguments, and the Supreme Court adopted the Special Master's report. The Court found that Connecticut had failed to prove that "any real or substantial injury or damage will presently result . . . from the diversions by Massachusetts," *id*. at 672, and thus found that no equitable apportionment was warranted. *See also Idaho*, 462 U.S. at 1027 ("A State seeking equitable apportionment under our original jurisdiction must prove by clear and convincing evidence some ***real*** and ***substantial*** injury or damage.") (emphases added).

Similarly, in *Washington v. Oregon*, 297 U.S. 517 (1936), Washington sued to stop farmers in Oregon from diverting the waters of the Walla Walla River for irrigation purposes. The Special Master rejected Washington's arguments, and the Supreme Court adopted the Special Master's report. The Court explained that "the burden of proof [fell] heavily on" Washington as the plaintiff state, and that "[t]he burden ha[d] not been borne." *Id*. at 524. In particular, the Court found that "the injury, if there is any, does not appear by clear and convincing evidence to be one of serious magnitude." *Id*. at 524. As a result, the Court denied Washington relief for reasons that are particularly pertinent to this case:

> To restrain the diversion [by Oregon] . . . would bring distress and even ruin to a long-established settlement of tillers of the soil for no other or better purpose than to vindicate a barren right. This is not the high equity that moves the conscience of the court in giving judgment between states. Far from being that, it is rather the summum jus of power. In default of reasons for removal more urgent and compelling, the tillers of the soil will be left where they have settled.

Id. at 523 (internal citations omitted).

The Court also denied relief to the downstream state in *Colorado v. Kansas*, 320 U.S. 383 (1943). In that case, Kansas complained that Colorado's increasing water consumption had greatly reduced the amount of water flowing into Kansas and caused related harm to Kansas's agricultural interests. Although the Special Master purported to equitably apportion water between Kansas and Colorado, *id*. at 390, the Supreme Court declined to adopt that apportionment. The Court found that the decree sought by Kansas "would inflict serious damage on existing agricultural interests in Colorado." *Id*. at 394. At the same time, the Court found that Kansas has failed to carry its burden of proving that Colorado's water use had "worked a serious detriment to the substantial interests of Kansas." *Id*. at 400. The Court thus dismissed Kansas' prayer for relief, and enjoined Kansas farmers from pursuing suits against Colorado users.

As Florida points out, the Supreme Court did grant equitable relief in *New Jersey v. New York*, 283 U.S. 336, 343-44 (1931). But it did so in very different circumstances, and on a very different evidentiary record, than what is currently before the Court. In terms of factual circumstances, the Court in *New Jersey v. New York* did not curtail any ***existing*** water uses, as Florida purports to do in this case. Rather, the court imposed a limit only on ***future*** water diversions, and even then granted New York around 75% of its projected future needs (440 million gallons per day out of a requested 600 million gallons per day). *Id*. at 346. The capacity for relief also was greater in that case because the Court had authority to dictate release schedules from state reservoirs, an option unavailable to the Court in this case without the participation of the federal government via the Corps. *See id*. at 345 (affirming the Special Master's grant of relief that included scheduling "releasing water from the impounding reservoirs of New York, sufficient to restore the flow" of the Delaware River any time the river level dropped below a certain threshold); *see also* Report of the Special Master in *New Jersey v. New*

York, at 195-96. As an evidentiary matter, the Special Master's Report noted that New Jersey had invested significant resources in "extending and developing" its oyster industry, most prominently by planting enough shell to cultivate ***30,000 new acres*** of planted reefs. *Id.* at 161. Because of New Jersey's stewardship, the Special Master had "no hesitation in finding that the oyster industry in Delaware Bay is a large and important one and that it has been carefully fostered, protected and policed by the State of New Jersey." *Id.* at 162. The record in this case stands in stark contrast. Instead of 30,000 acres of shell planted, Florida reshelled only ***140 total acres from 2004 to 2013***. *See* Sutton Trial Demo. 10; JX-163 (Franklin Cty. Shell Planting log); JX-62 (The Oyster Fishery of the Gulf of Mexico, United States: A Fisheries Mgmt. Plan (2012)). Florida's mismanagement, failure to reshell, and lax enforcement show that the Apalachicola Bay oyster fishery certainly has not been "carefully fostered, protected and policed" by Florida. Report of the Special Master in *New Jersey v. New York*, at 162.

* * * * *

There is no escaping the Supreme Court's instruction that "[s]ociety's interest in minimizing erroneous decisions in equitable apportionment cases requires that hard facts, not suppositions or opinions, be the basis for interstate diversions." 467 U.S. at 321. Florida agrees that it needs "hard facts" for injury and causation, but the Supreme Court has not carved up equitable apportionment doctrine in the way Florida suggests. In this case, as in the cases cited above, Florida must meet its heightened burden of proof on all elements. Its failure to do so mandates judgment in favor of Georgia.

ARGUMENT

I. FLORIDA CANNOT OBTAIN ITS REQUESTED RELIEF WITHOUT THE CORPS

The United States has now settled one of the most hotly contested issues in this litigation. In its brief, the United States confirmed Georgia's long-standing position that a consumption cap in Georgia would not result in ***any*** increased flows across the state line into Florida during drought operations or low flow periods where basin inflow is less than 5,000 cfs:

> The Corps expects in an extreme low flow scenario that Apalachicola River flows ***would be very similar with or without a consumption cap***. . . .

U.S. Post-Trial Br. at 17-18 (emphasis added).[2] Florida's position—now rejected by the Corps—has been that "a remedy capping Georgia's consumption will ***almost always provide immediate and significant flow benefits*** to the Apalachicola River in Florida," including when the Corps is in drought operations or basin inflow has dropped below 5,000 cfs. Fla. Post-Trial Br. at 33 (emphasis added). Georgia has maintained throughout the litigation that Florida's position was contrary to established Corps operations during drought and low flows, and the United States has now made clear that Georgia's position is correct and Florida's is wrong.

At the motion to dismiss stage, the Special Master cautioned that "Florida's claim will live or die based on whether Florida can show that a consumption cap is justified and will afford adequate relief." Order on Motion to Dismiss, at 13. The evidence now shows that a consumption cap alone will not afford relief to Florida—at least during drought operations or

[2] As explained below, although they use slightly different terminology, Georgia and the United States are in agreement as to the operation of the Corps' reservoirs under the RIOP and the updated Water Control Manual. *See infra* I.2. Georgia has previously used the term "low flows" to refer to basin inflows below 5,000 cfs, and for consistency with prior testimony will do so again in this brief. *See, e.g.*, Tr. 3337:16-3338:7 (Zeng) (discussing the Corps' "low flow operation" as guaranteeing 5,000 cfs at the state when basin inflow is less than 5,000 cfs). The United States refers to basin inflow below 5,000 cfs as "extreme low flows," and basin inflows of 5,000-10,000 cfs as "low flows." U.S. Post-Trial Br. at 17-18. As explained throughout this brief, Florida has presented an inaccurate and ultimately wrong picture of how the Corps will handle increased inflows from the Flint River when the Corps is either in drought operations or when basin inflow is less than 5,000 cfs (which Georgia calls "low flow" and the Corps has now called "extreme low flow").

when basin inflow is less than 5,000 cfs—without significant changes to federal reservoir operations and the involvement of the Corps. Accordingly, Florida's action must be dismissed. *See* Fed. R. Civ. P. 12(b)(7), Fed. R. Civ. P. 19(a)-(b); *Arizona v. California*, 298 U.S. 558, 571-72 (1936) (dismissing equitable apportionment action because, *inter alia*, a decree entered in the "absence of the United States, could have no finality").[3]

A. The United States Confirmed That The Corps Operates Its Reservoirs To Offset Flint Flows During Drought And Low Flows

The United States unambiguously stated in its brief that "the Corps will 'offset' additional basin inflow from the Flint River by storing more water on the Chattahoochee River" during drought operations or when basin inflow is less than 5,000 cfs. U.S. Post-Trial Br. at 12. According to the United States, any increased flows generated on the Flint River during these times "would generally result in a net increase in storage upstream"—not increased flows into Florida. *See* U.S. Post-Trial Br. at 13. All the while, the Corps would "maintain[] flow into Florida of roughly 5,000 cfs." *Id.* According to the United States, increases in Flint River flows by as much as ***2,000 cfs*** during drought would not increase flows into Florida by ***a single cfs***.[4] *See id.* at 17 (explaining that if Flint River flows were increased by as much as 2,000 cfs during drought operations or when basin inflow is less than 5,000 cfs, "then the Corps would not need to release water from storage to meet the minimum flow requirement and would not do so as a matter of course").

[3] Regardless of whether the United States is a required party, Florida also failed to offer sufficient proof that its proposed remedy would remedy any alleged harms under current Corps operations. Florida's analyses of its proposed remedy are incorrect because they rely on Florida's "Lake Seminole Model," which includes critically flawed assumptions about the way the Corps releases water during drought operations, Ga. Post-Trial Br. at 9-10, as confirmed by the United States' *amicus* brief.

[4] As Georgia's experts have consistently explained, 2,000 cfs is an amount so high that it could not possibly be generated even if Georgia eliminated 100% of irrigation in the Flint Basin. *See* Tr. 3310:13-19 (Zeng) (explaining that Florida's 2,000 cfs remedy scenario simply "cannot be physically accomplished because that number is more than [Georgia's] total consumptive use").

The United States is now on record validating what Georgia's witnesses have been saying all along: consumption caps on Georgia would not do anything to increase flows into Florida—much less confer any tangible ecological or environmental benefit—during drought or periods with basin inflow under 5,000 cfs, which are the times when Florida claims it needs additional water the most. *See, e.g.*, Bedient Direct, ¶¶ 45-47 (testimony from Dr. Philip Bedient, Georgia's expert in reservoir operations, that "[t]he offsetting operation . . . means that increased inflow from the Flint River would be balanced out by releases from the Chattahoochee River to satisfy the 5,000 cfs minimum flow target" and that "[a]s a result, during drought or low-flow periods, increases in Flint River flow would generally not lead to any increases in state-line flow into Florida during those times"); Tr. 3341:24-3342:6 (Zeng) (testimony from Dr. Wei Zeng, Georgia's chief hydrologist, that if Georgia's consumptive use were reduced on the Flint River, "[t]he Corps would reduce release from the Chattahoochee side so that the combined water going into Jim Woodruff is just 5,000 cfs. Now, that is in effect putting that extra water into storage by releasing less.").[5]

The United States' description of how the federal reservoirs work is entirely consistent with that presented by Georgia throughout this litigation. At trial, Georgia's witnesses discussed at length the same rules described by the United States in its brief. *See* Tr. 3334:13-3338:7 (Zeng) (describing the RIOP rules as controlling releases according to three factors: season, composite conservation storage, and basin inflow); Bedient Direct, ¶¶ 34-39 (same); U.S. Post-Trial Br. at 5-12 (same). Both Dr. Bedient and Dr. Zeng relied on the same documents the United States cites in its brief, methodically describing the complex RIOP rules outlined in Table

[5] By the end of trial, even Florida's testifying experts seemed to appreciate that the Corps operates its reservoirs to offset flows. The Special Master asked Dr. Peter Shanahan, one of Florida's experts on reservoir operations: "[I]f we're actually using less water in the lower basin, it would move water upstream; wouldn't it?" Dr. Shanahan responded: "Well, the—if they were using less water, ***it might allow them to hold more water upstream and let less go downstream, yes***." Tr. 2552:24-2553:7 (Shanahan) (emphasis added).

2.1-5 of the Corps' DEIS. *See* Bedient Direct, at 18; Zeng. Trial Demo. 9 (below). In his written direct testimony, Dr. Bedient carefully outlined the RIOP's rules for storage and release of water in the reservoirs, and applied those same rules to situations involving hypothetical increases in basin inflow (*e.g.*, from consumption caps). *See* Bedient Direct, ¶¶ 34-59. At trial, Dr. Zeng likewise explained the same Corps operating rules in detail by walking through the chart from the RIOP that dictates how the Corps stores or releases water under various scenarios. That is the same chart the United States included in its brief to explain Corps operations, and it explains those rules in the same way that Dr. Zeng did at trial:

Table 2.1-5.
May 2012 RIOP for Jim Woodruff Lock and Dam, Apalachicola River Minimum Discharge from Woodruff Lock and Dam by Month and by Basin Inflow (BI) Rates

Months	Composite conservation storage zone	Basin inflow (BI) (cfs)	Releases from Jim Woodruff Lock and Dam (cfs)	BI available for storage[a]
March–May	Zones 1 and 2	≥ 34,000 ≥ 16,000 and < 34,000 ≥ 5,000 and < 16,000 < 5,000	≥ 25,000 ≥ 16,000+50% BI > 16,000 ≥ BI ≥ 5,000	Up to 100% BI>25,000 Up to 50% BI>16,000
	Zone 3	≥ 39,000 ≥ 11,000 and < 39,000 ≥ 5,000 and < 11,000 < 5,000	≥ 25,000 ≥ 11,000+50% BI > 11,000 ≥ BI ≥ 5,000	Up to 100% BI>25,000 Up to 50% BI>11,000
June–November	Zones 1, 2, and 3	≥ 22,000 ≥ 10,000 and < 22,000 ≥ 5,000 and < 10,000 < 5,000	≥ 16,000 ≥ 10,000+50% BI > 10,000 ≥ BI ≥ 5,000	Up to 100% BI>16,000 Up to 50% BI>10,000
December–February	Zones 1, 2, and 3	≥ 5,000 < 5,000	≥ 5,000 (Store all BI> 5,000) ≥ 5,000	Up to 100% BI > 5,000
At all times	Zone 4	NA	≥ 5,000	Up to 100% BI > 5,000
At all times	Drought Zone	NA	≥ 4,500[b]	Up to 100% BI > 4,500

Sources: USACE, Mobile District 2012; USFWS 2012
Notes:
[a] Consistent with safety requirements, flood risk management purposes, and equipment capabilities.
[b] Once composite conservation storage falls below top of Drought Zone, ramp-down to 4,500 cfs will occur at a rate of 0.25 ft/day.

Under the rules outlined in Table 2.1-5, at all times when either the Corps is in drought operations (*i.e.*, composite conservation storage is in Zone 4) or basin inflow is less than 5,000 cfs, the Corps operates its reservoirs to guarantee only the minimum of 5,000 cfs into Florida.

No Florida witnessed testified to the complex rules of the RIOP or Table 2.1-5. Nor did any Florida witness ever ***apply*** these rules to determine how a consumption cap would affect

releases into Florida like Georgia's experts did.[6] Based on analysis applying the same rules described by the United States, Dr. Bedient found that in a year like 2007, Florida would not receive ***any*** benefit from increased basin inflow for 278 total days (76% of the year), including most of the low-flow months in the summer and fall. Bedient Direct, ¶¶ 53-54. In a year like 2012, Florida would not receive ***any*** benefit from increased basin inflow for 307 days (85% of the year), including zero days of increased flow in the summer or fall months. *Id.* ¶¶ 56-57. By confirming that the Corps would offset flows from the Flint River and thus Florida would receive no benefit from consumption caps during drought operations or when basin inflow is less than 5,000 cfs, the brief submitted by the United States corroborates Dr. Bedient's conclusions.

B. Circumstances Where Increased Flows Would Pass Through To Florida Are Few And Far Between

Recognizing that reductions in Georgia's consumptive use in the ACF Basin would have no impact on flows into Florida during drought conditions, the United States notes in its brief that "substantial increases in basin inflow" ***might*** result in a number of other potential "benefits" to the ACF system during ***non-drought*** conditions. U.S. Post-Trial Br. at 2, 13. For instance, the United States notes that when basin inflow is between 5,000 and 10,000 cfs, increased flows

[6] The lone exception is Dr. Hornberger, Florida's hydrologist, who modeled consumption caps using ResSim, the well-established Corps model that incorporates the RIOP rules. Dr. Hornberger's ResSim modeling showed exactly what Georgia—and now, the United States—found: eliminating ***half*** of Georgia's total agricultural water use would not lead to ***any*** increase in flows into Florida for many dry months of dry years. Tr. 1933:20-1935:23 (Hornberger) (acknowledging that under ResSim, "a 50 percent reduction in Georgia's agricultural use . . . would produce zero cfs of additional flow at the state line" for hundreds of days under drought-year hydrologic conditions). Neither Dr. Hornberger nor Florida ever reported these results—no doubt because they directly contradict Florida's allegations and undermine its entire justification for a consumption cap on Georgia. *See* Tr. 1935:24-1936:9 (Hornberger); *see generally* Georgia's Motion to Exclude Testimony by Florida based on the Lake Seminole Model (Sept. 16, 2016).

Instead of relying on ResSim and the official operating rules of the Corps, Dr. Hornberger used his highly flawed Lake Seminole Model to analyze the impact of proposed consumption caps. As demonstrated in Georgia's pretrial motion to exclude the Lake Seminole Model and again at trial, the model suffers from many flaws, rendering its results scientifically unreliable. *Id.*; Ga. Post-Trial Br. at 9-10. One of the model's most glaring flaws is that it dictates that increased flows on the Flint River will always immediately pass through to Florida. Ga. Post-Trial Br. at 9-10; Tr. 1947:3-21 (Hornberger) (admitting that in the Lake Seminole Model water simply passes through Lake Seminole and that the model "does not and cannot do any type of calculation involving the other four reservoirs in the ACF system). As confirmed by the United States, however, any water savings during drought operations or when basin inflow is below 5,000 cfs ***will not immediately pass through to Florida*** because they will be offset by decreased releases from the upstream reservoirs. U.S. Post-Trial Br. at 17.

on the Flint River "will be passed through Jim Woodruff Dam, providing an immediate increase in flows to Florida." *Id.* at 15. The United States also notes that additional basin inflow "would be expected to, in some measure, delay the onset of drought operations . . . and quicken the resumption of normal operations after a drought ends." *Id.* at 2. Significantly, the United States "takes no position on whether Florida has proved that a consumption cap would produce enough additional basin inflow at the right times to redress Florida's alleged harm and justify the cost of imposing a consumption cap in this case." *Id.* at 19. The fact is, Georgia's analysis already accounts for both of these potential "benefits," and Georgia's analysis confirms that any increased flows during non-drought conditions from "pass-through" or shortened drought operations are few and far between.

At the outset, although the United States refers to basin inflow of 5,000-10,000 cfs as "low flows," these are ***not*** the same low flows the parties have been focused on throughout this litigation. The low flows Florida has repeatedly complained of are ***drought-year*** flows. *See, e.g.*, Fla. Pre-Trial Br. at 19-21 (complaining at length of low flows during drought periods in 2007, 2008, 2011, and 2012). For the most part, basin inflow during the summer and fall of these drought years is ***less than*** 5,000 cfs. *See* Bedient Direct, Demos. 13-14 (showing basin inflow below 5,000 cfs for most of the summer and fall of 2007 and 2012); Zeng Direct, Demos. 16-17 (showing basin inflow below 5,000 cfs for most of the summer and fall of 2011 and 2012). Likewise, Georgia refers to "low flows" as periods when basin inflow is less than 5,000 cfs. *See, e.g.*, Tr. 3337:16-3338:7 (Zeng) (describing "low flow operation" as guaranteeing only 5,000 cfs when basin inflow is below 5,000 cfs). Thus, basin inflows of 5,000-10,000 cfs are largely higher than the range of flows Florida has complained of. Furthermore, the rules provide for "pass-through" of basin inflow from 5,000-10,000 cfs ***only when the reservoirs are not in***

drought operations. *See* U.S. Post-Trial Br. at 18 (describing Scenario 4 as "flows of between 5,000 and 10,000 cfs ***during a time when the reservoirs have not yet reached a level to trigger drought operations"***) (emphasis added). Under the rules, Florida would not receive any "pass-through" during drought operations even if basin inflow is between 5,000 and 10,000 cfs, regardless of whether and how much basin inflow exceeds 5,000 cfs. *See* JX-124, at 2-71(2015 DEIS). This has the effect of eliminating pass-through for significant periods where basin inflow is higher than 5,000 cfs. *See* Bedient Direct, ¶ 56 (finding no impact whatsoever of consumption caps throughout the summer and fall of 2012 despite long stretches of basin inflow between 5,000 and 10,000 cfs). Moreover, any benefit in terms of shortening drought operations would necessarily occur at the "margins" of drought operations, *i.e.*, at the beginning or end. Thus, according to the rules, any "benefit" to the reservoir system or to Florida in terms of increased "pass-through" flows would only occur during non-drought conditions when the reservoirs are at healthy levels or on the margins of drought operations. Florida has presented no evidence purporting to quantify the impact of consumption caps on "pass-through" flows or shortening drought operations, much less prove by "clear and convincing evidence" that any such marginal benefits outside of drought would lead to any meaningful change to the ecology of the Apalachicola River or Bay.

Georgia's analysis, by contrast, quantifies the impact of both of these non-drought "benefits." Dr. Bedient's modeling of consumption caps uses ResSim. ResSim is a comprehensive reservoir simulation tool that is used by the Corps to manage the reservoir system precisely because it can model the complex interaction among the operating rules and basin conditions that change over time, including consumptive use levels, system-wide storage in the reservoirs, hydrologic conditions, time of year, and other factors, such as when the Corps will

enter or exit drought operations. *See* ACF Final EIS for Master Water Control Manual Updates, at ES-13 (USACE, December 7, 2016) ("USACE FEIS"), at 4-6 to 4-7 (describing how ResSim can simulate "a highly developed and interconnected system like the ACF Basin" over a "full period of record"); GX-1175, at 1 (Reservior Operations Modeling with HEC-RESSIM) (describing how ResSim "mimic[s] the actual decision-making process" of the complex ACF reservoir system); *see also* Bedient Direct, ¶ 63 ("ResSim simulates basin-wide reservoir operations, including the total amount of water stored in each of the reservoirs and released from each of the reservoirs, based on water demand levels, operating rules, and hydrologic conditions.").

Thus, by using ResSim, Dr. Bedient's analysis already considers the "full beneficial impact" of increased basin inflow on both "pass-through" flows and the length of drought operations. U.S. Post-Trial Br. at 13. Even taking into account the impact of increased basin inflow on "pass-through" flows and shortening drought operations, Dr. Bedient's ResSim modeling proves that eliminating a substantial amount of Georgia's consumptive use would still have little impact on state-line flows. For instance, Dr. Bedient found that under the RIOP rules, consumption caps at any level would yield only 14 additional days of "pass-through" during the summer or fall under 2007 hydrologic conditions, and no additional days of "pass-through" under 2012 hydrologic conditions. *See* Bedient Direct, ¶¶ 49-57. ResSim modeling of 19 consumption cap scenarios shows that any minimal increased flows into Florida as a result of "pass-through" or shortened drought operations would be minimal, unpredictable, and outside the low-flow months. *See* Bedient Direct, ¶¶ 78-87 (discussing results of ResSim modeling showing that "additional water entering the ACF Basin and resulting from Georgia's reduced consumptive use would not translate to ***any*** increase in flow at the state line during these critical

low flow months, due to the manner in which the Corps operates its reservoirs" (emphasis in original)); *id.* ¶ 49 (finding that "occasions where reducing Georgia's water use would lead to an increase in state-line flow into Florida are few and far between").

C. Georgia's Reservoir Modeling Uses ResSim, "The Tool Most Capable Of Faithfully Representing" Corps Reservoir Operations In The ACF Basin

As discussed previously, Georgia's experts conducted analysis of the impact of consumption caps based on application of the RIOP's rules and modeling using ResSim, the official reservoir simulation model built and used by the Corps. According to the Corps itself, ResSim is "the standard for USACE reservoir operations modeling" and "a state-of-the-art tool for simulating flow operations in managed systems." GX-408, at EA-33 (USACE Finding of No Significant Impact (2012)); JX-124, at ES-14 n. 2 (2015 DEIS). ResSim was built by the Corps' Hydrologic Engineering Center (HEC), which is "the designated Center of Expertise for the U.S. Army Corps of Engineers in the technical areas of surface and groundwater hydrology, . . . reservoir system analysis, planning analysis, [and] real-time water control management." GX-1231 (USACE, HEC-ResSim web page). The Corps uses ResSim throughout the United States for real-world reservoir and dam operations, including "for flood management, low flow augmentation and water supply for planning studies, detailed reservoir regulation plan investigations, and real-time decision support." GX-1095 (USACE, Hec-ResSim Software Download web page).

In the ACF Basin, ResSim is widely considered to be the best available model of the Corps' reservoir system and is described by the Corps as "the tool most capable of faithfully representing" the reservoir operations in the ACF Basin. *See* JX-124, at 4-3 (2015 DEIS). The Corps relied "extensively" on results from ResSim in order to develop reservoir operations for the proposed WCM. *Id.* at ES-14 (the Corps stating in its DEIS that it "relied extensively on

modeling using the latest software application, HEC-ResSim" in order to "simulate . . . operations for the [various] water management alternatives" of the DEIS and "to identify the various measures that would be further developed, analyzed, and refined toward the goal of developing an updated WCM"). Thus, the Corps relies on results from ResSim in managing a complex basin in order to satisfy numerous project purposes mandated by federal law. Even Florida's own expert in Corps reservoir operations, James Barton, touted the ResSim model as the best available tool for evaluating the reservoir operations in the ACF Basin. Mr. Barton described ResSim as "widely used," "very dependable, reliable," and "state of the art," Barton Dep. Tr. 130:8-15, and testified that "[e]veryone agreed that the model was very much acceptable for use on the ACF system," *Id.* at 134:2-3. Mr. Barton testified that he was "not aware of any" other model that better represents reservoir operations in the ACF Basin. *Id.* at 134:24-135:2. Georgia's experts agree. *See* Bedient Direct, ¶¶ 66-72 (describing ResSim as "the best available software" for simulating the impact of consumption caps on state-line flow).

Florida's attempts to discredit ResSim are futile. *See* Fla. Post-Trial Br. at 21-22. Citing the GWRI UIF Report, Florida argues that ResSim is unable to "accurately identify historic daily discharge or be a predictive model." Fla. Post-Trial Br. at 22. These cherry-picked quotes are irrelevant. Georgia's analysis does not use ResSim to identify "daily discharge" or to be a "predictive model" of any sort. As Georgia has explained at length in briefing and at trial, ResSim was and is used as a ***comparative tool*** for evaluating the impact of alternative management scenarios, including consumption caps, on state-line flows. *See* Bedient Direct, ¶¶ 73-77 (describing the use of ResSim to compare relative state-line flow impacts under various cap scenarios). In fact, the authors of the GWRI UIF Report that Florida relies on have expressly rejected the exact arguments Florida makes about ResSim. Both Dr. Georgakakos and Dr.

Kistenmacher were deposed, and each unambiguously defended the use of ResSim and the UIFs for comparative analysis of the exact kind undertaken by Georgia for this case. *See, e.g.*, Georgakakos Dep. Tr. 218:12-17 ("But for the planning purposes they needed, especially with the comparison of the scenarios and all, I also agreed, and I told them at the very end, that we can use the UIFs that the Corps has developed."); Kistenmacher Dep. Tr. 120:18-25 ("But I would feel comfortable using [the Corps' UIFs] in a sort of comparative way whereby you use ResSim to run two or more scenarios and then instead of fixating on the absolute magnitude of the results you look at the relative differences between those scenarios.").[7] This is exactly how Georgia used ResSim, and this is exactly how the Corps used ResSim in developing its WCM. *See* USACE FEIS, Vol. 3, at 27 (describing the use of ResSim "[i]n order to evaluate the impacts for . . . varying levels of water supply" in the basin). Florida's criticisms of ResSim are a flawed and misleading attempt to undermine the Corps' official reservoir simulation model, which the Corps itself described as "the tool most capable of faithfully representing" the reservoir operations in the ACF Basin. *See* JX-124, at 4-3 (2015 DEIS). The reason Florida attempts to discredit ResSim is because ResSim produces results that are devastating to Florida's claims in this case—namely that a consumption cap on Georgia will not produce added flows into Florida during times that Florida alleges that it needs those additional flows.

[7] Florida did not call either Dr. Georgakakos or Dr. Kistenmacher at trial, and chose not even to play their videotaped deposition testimony as part of their case at trial. Florida relied on the 2012 document they created for the ACF Stakeholders but did not want to subject that report or its authors to cross-examination. Instead, Florida repeatedly cites the GWRI UIF Report (and continues to do so in its brief), even though (as quoted above) the authors of the report agreed under oath that it was appropriate to use ResSim and the Corps' UIF data set for the very comparative purposes for which Georgia use them, and Florida ignores that the authors ***themselves*** used ResSim and the Corps' UIF data set to model reservoir operations for the ACF Stakeholders. Kistenmacher Dep. Tr. 149:10-150:7; Georgakakos Dep. Tr. 218:12-219:17; 344:8-17.

II. FLORIDA FAILED TO PROVE A REAL AND SUBSTANTIAL INJURY CAUSED BY GEORGIA

Florida's opening brief only confirms that Florida has failed to meet its burden of proving a real and substantial injury caused by Georgia's water use. The standard is clear: "A State seeking equitable apportionment under our original jurisdiction must prove by ***clear and convincing evidence*** some ***real and substantial*** injury or damage." *Idaho*, 462 U.S. at 1027 (emphases added). Florida's evidence, however, falls woefully short of meeting that standard. With respect to the Bay, Florida misrepresents research from the same University of Florida professors it tried to intimidate into silence. Florida also relies heavily on a federal fisheries disaster declaration from NOAA. But the fisheries disaster declaration cannot satisfy Florida's burden to prove that Georgia caused the oyster collapse—indeed, ***the declaration never mentions Georgia at all***. With respect to the River, Florida tries—and fails—to prove injury and causation by relying on outdated, un-adopted guidelines from the 1990s, and by trying in vain to attribute geomorphological changes in the River to Georgia.

A. There Is No Clear And Convincing Evidence That The 2012 Oyster Collapse Was Caused By Georgia's Water Use

1. It Is Florida's Burden To Establish Injury And Causation By Clear And Convincing Evidence, Not Georgia's Burden To Establish An Alternative Cause

In an effort to establish causation for the 2012 oyster crash in Apalachicola Bay, Florida incorrectly frames the issue as binary: either overfishing caused the collapse, or Georgia's upstream water use did. *See, e.g.*, Fla. Post-Trial Br. at 36; *id.* at 45. But Georgia does not bear the burden of establishing an alternative cause for the 2012 oyster crash. To the contrary, ***Florida*** bears the burden of proving, under a heightened standard of proof, that it was definitively Georgia's water use that caused the collapse, as opposed to a multitude of other factors that could well have been responsible. *See Pennsylvania v. New Jersey*, 426 U.S. 660,

663 (1976) (*per curiam*) ("[A] plaintiff State must first demonstrate that the injury for which it seeks redress was directly caused by the actions of another State"); *see generally* Ga. Pre-Trial Br. at 27.

As the trial record shows, the alleged causal connection between low river flows and the 2012 oyster collapse is exceptionally weak. *See, e.g.*, Ga. Post-Trial Br. at 22–26. Florida has not presented enough evidence on the issue to even meet a preponderance standard—much less the heightened showing of "clear and convincing evidence" required in an equitable apportionment action. *See* Ga. Post-Trial Br. at 19-22 (discussing relevant burdens of proof). For one, Florida's oyster-harm case relies on a series of factually unsupported inferences: that "(1) reduced freshwater flow caused an increase in salinity in the Bay; (2) increased salinity led to oyster disease, predation, and recruitment failure; and (3) the progression of this depletion event culminated in a Bay-wide crash from which there has been no recovery." Fla. Post-Trial Brief at 36. Florida failed to present credible scientific evidence to prove this attenuated causal chain because such evidence does not exist.

Further, Florida failed to account for several intervening factors that all independently preclude a proximate cause finding linking Georgia's upstream water use to the 2012 oyster crash. Such factors include (i) the occurrence of a historic, multi-year drought in 2011-12, Ga. Post-Trial Br. at 27–28; (ii) Corps operating rules governing the minimum releases into Florida during a drought, *see* GX-1131 (Leitman et al., Management Options During the 2011-2012 Drought on the Apalachicola River: A Systems Dynamic Model Evaluation (2015)); (iii) Florida's response to the 2010 BP oil spill in which it allowed unlimited and unsustainable oyster harvesting during a period of high demand due to oyster fishery closures in other states, Ga. Post-Trial Br. at 27–33; and (iv) a history of lax enforcement of oyster-harvesting regulations in

Apalachicola Bay, including an near total non-enforcement of rules against the harvesting of juvenile and undersized oysters in the years immediately preceding the collapse, Ga. Post-Trial Br. at 28–29.

Even if the Court was to ignore the many intervening factors that preclude a finding of liability—including overwhelming evidence of overharvesting and poor fishery management leading to the collapse—Florida still has not established that low flows caused by upstream consumption caused a mass oyster die off in 2012. In light of the multitude of intervening factors, and the lack of evidence attributing the oyster collapse to upstream water consumption in Georgia, Florida has not met its burden of proving proximate causation. *See Aransas Project v. Shaw*, 775 F.3d 641, 663 (5th Cir. 2014) (*per curiam*) (finding that "proximate cause was lacking as a matter of law" concerning plaintiffs' theory of how higher salinities—through a multi-step chain of causation similar to Florida's—killed endangered whooping cranes in a Texas estuary because "imposing liability on the State defendants in the face of multiple, natural, independent, unpredictable and interrelated forces affecting the cranes' estuary environment goes too far."). Florida's case fails because it makes no effort to separate out the many potential factors that could have contributed to the oyster collapse—including unsustainable levels of harvest.

2. Florida Misrepresents The University Of Florida Scientists' Research Concerning The Cause Of the Collapse

Florida badly misrepresents the findings of University of Florida scientists Dr. Bill Pine and Dr. Karl Havens in an effort to blunt the unambiguous scientific conclusion they reached: that there was and is no "clear" or "convincing" evidence of "a connection between Apalachicola River flow and oyster mortality." Pine Dep. Tr. 291:14-292:14, 223:24-225:5 (GX-1355); *see also* Havens Dep Tr. 175:3-21 (testifying that his team "never found any quantitative linkage between flow from the [Apalachicola] river and the crash with the oysters.") (GX-1349).

Relying heavily on a 2015 article published by Edward Camp, Dr. Pine, Dr. Havens, and others from the University of Florida ("Camp Article"), Florida argues that Dr. Pine and Dr. Havens ultimately attributed the oyster collapse to low river flows. *See* Fla. Post-Trial Br. at 46 (citing JX-167) (referring to the Camp Article). Florida's *post hoc* gloss on Dr. Pine's and Dr. Havens' research, which remains the most reliable scientific evidence concerning the 2012 Apalachicola Bay oyster collapse, is unconvincing for several reasons.[8]

To begin, it is hard to take seriously Florida's newfound claim that the work done by Dr. Pine and Dr. Havens "support[s] Florida's position." Fla. Post-Trial Br. at 45. In late 2014, Dr. Pine himself wrote the following about his research: "At issue is the perception that the work I've led undermines the [S]tate of Florida's assertion in the ongoing lawsuit that the Apalachicola oyster collapse was caused by water policy in Georgia," GX-778 (12/20/14 email from B. Pine to K. Havens and others), and that overall his Curious Case paper "weakens [Florida's] legal position." GX-770 (11/25/14 email B. Pine to E. Hellgren) (referring to GX-789 (Pine, et al., "The curious case of eastern oyster *Crassostrea virginica* stock status in Apalachicola Bay, Florida," *Ecology and Society* (2015))). Dr. Havens likewise recognized in an email to a federal government official that "[r]esults from some of the [Sea Grant] funded research strongly supports the GA case, which will be interesting. The work is very rigorous and already is accepted in peer-reviewed journals." GX-799 (2/9/15 email K. Havens to NOAA official). The Florida legal team itself understood that Dr. Pine's research could "be

[8] Contrary to Florida's assertions, Fla. Post-Trial Br. at 7 and 46, Georgia sought trial subpoenas for both Dr. Pine and Dr. Havens after Florida objected to deposition designations for those witnesses. *See* Letter from C. Primis to Special Master (October 19, 2016). Florida then (for reasons unknown) dropped its objections to the designations, obviating the need for the Special Master to issue trial subpoenas. *See* Letter from P. Perry to Special Master (October 19, 2016); Order (October 20, 2016) ("Given that Florida does not object to the use of deposition designations for Dr. Haven and Dr. Pine, . . . the Special Master will not issue any trial subpoenas at this time."). Having previously waived its objections to having Dr. Pine and Dr. Havens testify through deposition designation—and indeed having specifically asked the Special Master to deny the request for trial subpoenas—Florida cannot now try to use that same fact to undermine the truthfulness and reliability of their testimony.

disadvantageous to [its] legal position," which is precisely why it threatened retaliation against Dr. Pine if he published his findings. GX-782 (12/30/14 email B. Pine to J. Payne and E. Hellgren); GX-778 ("[T]he attorneys thought the papers should be withdrawn, and if they were published . . . they could 'make things difficult for me.'"). Set against this backdrop, Florida's late-breaking claim that this same research somehow helps Florida is a non-starter.

Moreover, the Camp Article did not find (as Florida claims it did) that low river flows caused the 2012 oyster collapse. Fla. Post-Trial Br. at 46 (citing JX-167). To the contrary, that article expressly stated that the authors were "***not able to identify a specific proximal cause***" of the collapse and cited Dr. Pine's Curious Case article to support that proposition. JX-167 at 6 (emphasis added); Fla Post-Trial Br. at 46. In addition, the next paragraph of Camp Article makes clear that the collapse was likely the result of "multiple drivers," and could not be connected to any single cause:

> [The] proposed multiple reasons for the 2012 collapse are not unlike earlier observations for Apalachicola Bay and other oyster fisheries. In general, declines and collapses of oyster fisheries and oyster mortality events have been associated with ***multiple drivers***, ***including overfishing***, disease, ***structural habitat loss,*** hypoxia, and changing salinity regimes.

JX-167 at 6 (emphases added).

Florida's attempt to use the Camp Article to undermine Dr. Pine's and Dr. Haven's findings is also undermined by unambiguous testimony given by both witnesses in this case. Dr. Pine plainly admitted that he has not seen any evidence to support the allegation in Florida's complaint that "reduced freshwater inflows . . . caused a collapse of the Apalachicola Bay oyster fishery." *See* Pine Dep. Tr. 307:15-308:6 (addressing ¶ 54 of Florida's complaint) (GX-1355). And Dr. Havens, whose team first looked at this issue, testified in late 2015 that his independent team of scientists "never found any quantitative linkage between flow from the [Apalachicola] river and the crash with the oysters." Havens Dep. Tr. 175:3-21 (GX-1349). Florida's selective

use of the Camp Article cannot and does not detract from that plain testimony given under oath in this case.[9]

3. The NOAA Disaster Declaration Does Not Establish That Low River Flows Caused The Collapse

The NOAA disaster declaration, upon which Florida heavily relies, does not help Florida prove (as it must) that water consumption in Georgia caused the 2012 oyster collapse. *See* Fla. Post-Trial Br. at 43-44. As set forth below, the declaration is not entitled to administrative deference under the law. And factually, it confirms—rather than refutes—that overharvesting played a role in the collapse, further undermining Florida's oyster harm case.

a. The Disaster Declaration Is Not Entitled To Administrative Deference

Contrary to Florida's argument, NOAA's disaster declaration is not entitled to administrative deference. *See* Fla. Post-Trial Br. at 37. It bears none of the hallmarks of agency decisions to which courts afford deference: the declaration was not made pursuant to formal agency adjudication, nor was it subject to the notice-and-comment process applicable to administrative rulemaking. *See Wos v. E.M.A. ex rel. Johnson*, 133 S. Ct. 1391, 1402 (2013) (no deference afforded to agency opinion letters); *Christensen v. Harris Cty.*, 529 U.S. 576, 587 (2000) ("Interpretations such as those in opinion letters—like interpretations contained in policy statements, agency manuals, and enforcement guidelines, all of which lack the force of law—do not warrant *Chevron*-style deference."). Moreover, neither Georgia, nor any other party, had the opportunity to litigate or dispute the issues presented to NOAA for determination. *See Kremer v.*

[9] Florida also focuses on a statement in Dr. Pine's *Curious Case* paper that he did not evaluate the effect of Georgia's water use on flows into Florida. Fla. Post-Trial Br. at 45. This statement is ultimately irrelevant. Dr. Pine's work definitively established that there is no causal connection between low flows and the 2012 oyster collapse. That conclusion is the same whether low flows were caused by drought, the Corps, Florida, Georgia, or any other factor because Dr. Pine's work was focused on the connection between "low freshwater discharge into Apalachicola Bay" and oyster mortality—regardless of why flows were what they were. *See* GX-789, at 6 (*Curious Case* paper).

Chem. Constr. Corp., 456 U.S. 461, 484 n. 26 (1982) (explaining that "res judicata is properly applied to decisions of an administration agency" only "so long as opposing parties had an adequate opportunity to litigate disputed issues of fact" and the "agency [was] acting in a judicial capacity."). And, given that it was issued in 2013, NOAA certainly did not have available to it the substantial evidence that has been compiled in this case, including the statistical analyses performed by University of Florida scientists and Georgia's oyster ecologist and fisheries management expert, Dr. Romuald Lipcius, proving that there was ***no correlation*** between low river flows and oyster mortality. Where, as here, an agency decision is based on a limited evidentiary record with no opportunity for opposing views, courts give it no deference. *See Kappos v. Hyatt*, 132 S. Ct. 1690, 1696 (2012) (it "makes little sense for [a] court to apply a deferential standard of review to [agency] factual findings that are contradicted by . . . new evidence," because "no matter how great [the agency's] authority or expertise, [it] cannot account for evidence that it has never seen").

b. NOAA Concluded The Collapse Resulted From Multiple Causes, Including Overharvesting

Even if the NOAA Declaration did receive deference, it would not save Florida's case. The history of Florida's request to NOAA for a disaster declaration is telling. From start to finish it involves NOAA's recognition that overharvesting played a role in the collapse, and Florida's efforts to mislead NOAA about that fact. At the very outset, in his official request for a disaster declaration, Florida's Governor Scott acknowledged that "increase[d] fishing effort . . . led to overharvesting of illegal and sub-legal oysters further damaging an already stressed population." JX-77, at FL-ACF-03386187 (2012 Fla. Disaster Request & 2012 FDACS Report). The official FDACS 2012 oyster report Governor Scott attached to his letter is replete with statements that overharvesting and illegal harvesting were taking place. *Id.* at FL-ACF-

03386190. Not surprisingly, the NOAA scientist who first reviewed the request, Dr. Laura Petes, immediately concluded that: "Harvesting pressure and practices are also contributing to low oyster numbers." FX-412, at NOAA-0003818 (9/21/12 L. Petes Memo re Fla. Oyster Disaster Declaration). And the NOAA official who dealt directly with Florida FWC subsequently advised after reviewing the draft of the report: "[Y]ou need to address the statements about Florida continues [sic] to allow harvest of undersized oysters, big time." GX-572 (4/22/13 email from NOAA official to D. Heil of FWC).

NOAA's initial conclusion that overharvesting caused the collapse created a frantic scramble inside FWC to persuade NOAA otherwise. GX-569 (4/23/2013 email from D. Heil to J. Estes) (stating "**I WILL NEED ASSISTANCE TO ADDRESS THIS**.") (emphasis in original); GX-574, at FL-ACF-01936043 (4/26/13 email from D. Heil to J. McCawley) (explaining that NOAA's "initial conclusion was overharvesting."). To address this, Florida FWC produced a report for NOAA that included partial and misleading information. In the final report it submitted to NOAA, Florida ***purposefully omitted*** references to overharvesting and poor fisheries-management practices precisely because it was concerned that FWC's mismanagement of the Bay would jeopardize its application.

Indeed, after reviewing a late draft of the report, officials from FDACS—FWC's sister agency—expressed concern that in Florida's attempt "to build a stronger case for" the disaster request, certain of FDACS's statements made in its oyster reports "are now being misrepresented," "and subsequently false conclusions can be drawn." GX-1244, at FL-ACF-03685533 (5/8/13 email from K. Knickerbocker to L. Conti). Florida's selective use of official state documents even caused concern with some of FWC's own scientists, one of whom refused to go along with the agency's misleading results-driven approach. *See, e.g.*, GX-593, at FL-

ACF-01822149 (5/13/13 email from FWC Scientist R. Gandy to colleagues) (noting that "overfishing" is "downplayed" in the FWC Report and that the oyster collapse is instead "blamed on freshwater due to inflow changes," even though the "case" for establishing a link between low water flows and the oyster crash was "weak"). FWC personnel also inserted into the final report language saying that the collapse was "the result of upstream consumption." JX-96, at FL-ACF-03475200 (8/5/13 email from J. Estes to R. Crabtree attaching FWC Report & Appendices). This unsupported allegation prompted Dr. Pine to email an FWC official to say that he was "surprised that FWC is able to identify 'water management policies' in the letter as making the drought worse," and that "[i]f anything clearly the reservoirs were supplementing the flows in the Apalachicola River[.]" GX-645 (August 2013 email from B. Pine to J. Estes); Pine Dep. Tr. 229:16-230:1 (stating that he had not seen data sufficient to support the FWC report's conclusion that "The cause of the oyster decline is a lack of freshwater flow.") (GX- 1355); Pine Dep. Tr. 184:7-185:21 (GX- 1355). This doctored FWC report was the principal document Florida submitted to NOAA—with the other documents citing concerns with overharvesting conveniently relegated to the appendix.

Despite Florida's concerted effort to mislead it, NOAA ***still*** found that Florida's poor fishery practices were in part to blame for the oyster collapse. NOAA's disaster declaration specifically pointed to increased harvesting pressure, harvesting of undersized oysters, and lack of compliance with regulations as affecting the population of oysters in Apalachicola Bay. FX-413, at NOAA-0022897 (NOAA Disaster Declaration Memo). While it concluded that "drought conditions" were "central" to the collapse, it did not find that Florida's poor fisheries

management practices were irrelevant, or not part of the causal chain leading to the collapse. *Id.* at NOAA-0022898.[10]

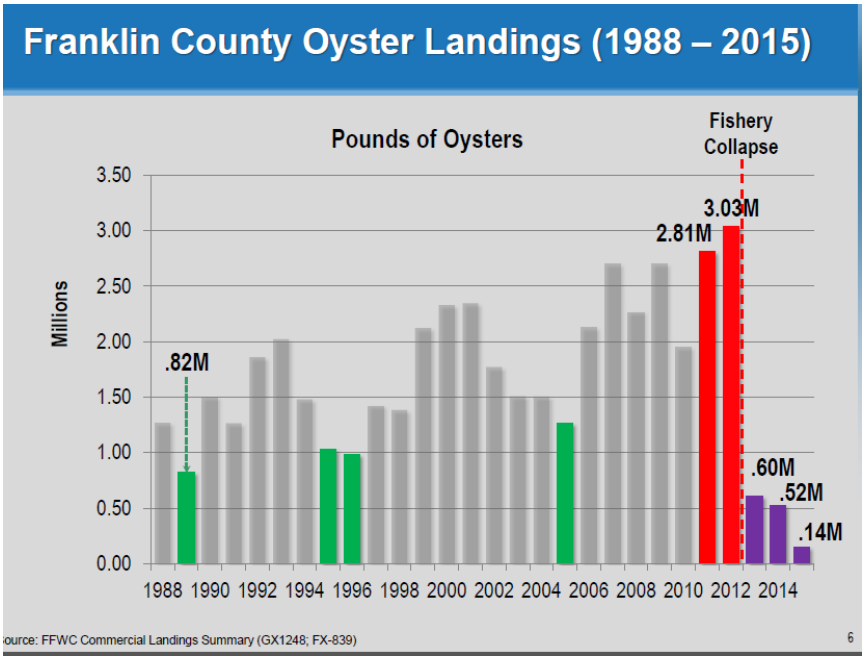
Regardless, the NOAA declaration does nothing to further Florida's case against Georgia. The NOAA declaration conspicuously did ***not*** conclude that Georgia's upstream water use caused the collapse. The final declaration made no mention of Georgia's upstream water use and instead attributed the collapse to drought conditions and reduced level of releases from the federal dams in the ACF Basin. *Id.*

4. Florida Has No Response To The Overwhelming Evidence That Its Poor Fishery Management Contributed To The 2012 Oyster Collapse

The burden of establishing injury and causation is Florida's and Florida's alone. Accordingly, Florida's failure to meet its burden of showing clear and convincing evidence that Georgia's upstream water consumption caused the 2012 oyster collapse is the end of the inquiry. Although it was not required to do so, Georgia nonetheless presented overwhelming evidence confirming that Florida's poor management of the oyster resources in the Bay was the true cause of the collapse. The contemporaneous official documents, the testimony at trial, and expert analysis of Florida's official fishery data—data Florida does not dispute—all prove that Florida's fishery mismanagement led to the collapse.

First, Florida's official harvesting records document a dramatic increase in oyster harvests in the years immediately preceding the collapse. As the red bars in the demonstrative below show, in 2011 and 2012 Florida allowed harvesting of more oysters than at any time in the prior ***25 years***:

[10] Florida misreads the Magnuson-Stevens Fishery Act when it claims that NOAA could not have declared a disaster "if it concluded that poor oyster management practices caused the collapse." Fla. Post-Trial Br. at 44. In its decision memorandum issued in August 2013, NOAA explained that "the fact that overfishing may have occurred or is occurring does not ***preclude*** a determination that a fishery disaster occurred, if other factors are more central to the disaster." FX-413, at NOAA-0022897 (NOAA Disaster Declaration Memo) (emphasis added).



Sutton Trial Demo. 6 (based on FX-839 (Annual Oyster Landings in Franklin County)). Mark Berrigan, FDACS Bureau Chief in charge of monitoring oyster resources in the Bay for more than 30 years, admitted in a moment of candor why the numbers spiked so high in the years after the Deepwater Horizon oil spill and continued into the historic drought of 2011 and 2012. Florida fishery managers let the oystermen fish unabatedly in order to take advantage of high prices in the market for oysters:

> Q. And then we also have in these two years the highest -- the largest -- the highest amount of pounds of oysters landed in Apalachicola Bay in the prior 25 years. Right?
>
> A. That is correct. Highest demand, highest price, more fishermen.

Tr. 1023:18-23 (Berrigan); *See also* Tr. 977:4-10 (Berrigan) ("There was extreme harvesting pressure," which had "a debilitating effect" on the oyster stocks).

Second, not only did FWC permit these record harvests to occur during a drought period, but Florida also failed to reshell its principal oyster bars for any of the preceding 10 years. JX-150 (Berrigan Notes for FDACS Report, July 2012); Tr. 958:10-959:15 (Berrigan) (discussing

same). Although Florida officials all acknowledge how important reshelling is to restore the oyster resource, Florida reshelled little throughout the Bay and not at all on the critical oyster producing reefs in the years leading up to the collapse. *See* Sutton Trial Demo. 10; JX-163 (Franklin Cty. Shell Planting log); JX-62 (The Oyster Fishery of the Gulf of Mexico, United States: A Regional Management Plan (2012)); Tr. 1374:9-13 (Sutton) ("It's a best management practice that's been employed for many, many decades.").

Third, Florida's own internal records show that harvesting of undersized oysters was widespread in Apalachicola Bay both before and after the 2012 oyster collapse. GX-662, at FL-ACF-01206456 (Law Enforcement Perspective of the Oyster Issues in Apalachicola (2013)) ("It is a well-known fact that there has always been harvest of undersized oysters from Apalachicola Bay."); GX-1308, at FL-ACF-03480916 ("There is demand for undersized product, and until the demand is reduced enforcement will continue to face challenges.") (4/3/13 email from R. Beaton to J. Estes & C. Wood attaching Oyster Situation Report). Indeed, in 2010—two full years before the oyster collapse—oyster dealers in Apalachicola were "encouraging" oystermen to harvest sub-legal oysters and publicly advertising that they would purchase undersized oysters. Tr. 1124:2-21 (Beaton); GX-1287, at FL-ACF-00316390- FL-ACF-00316391 (8/25/10 email from R. Beaton and picture at Oyster house). As the head law enforcement officer overseeing Florida's oyster-harvesting enforcement explained: law enforcement was "greatly outnumbered and the risk/reward for harvesting undersized [oysters wa]s a motivating factor" for harvesting sub-legal oysters in the Bay. GX-1308, at FL-ACF-03480916 (4/3/13 email from R. Beaton to J. Estes & C. Wood attaching Oyster Situation Report); Tr. 1097:2-24 (Beaton). And by October 2013, "oyster harvesting violations in the Bay" "were on the rise with extreme and gross malice." Tr. 1137:4-15 (Beaton); JX-134, at 1 (Operation Plan for Black Pearl). Florida's own

officials deemed this activity to be a "substantial abuse of the resource." GX-1295, at FL-ACF-00343007.

Numerous additional Florida government documents confirm that overharvesting—especially during a drought when the resource is already stressed—precipitated the oyster fishery collapse. Mr. Berrigan noted at the time that "the overall poor condition" of the oyster reefs was at least partially attributable to "fishery practices." JX-77, at FL-ACF-03386190 (2012 FDACS Oyster Assessment Report). As he wrote in 2012 and also confirmed in his trial testimony, "overharvesting is most damaging when environmental conditions are less than optimal, recruitment is low, and natural mortality is high," precisely the environmental conditions that existed in the Bay during 2012 when Florida allowed unlimited harvesting. Tr. 831:18-23 (Berrigan). In the face of Mr. Berrigan's contemporaneous statements, Mr. Berrigan's after-the-fact written direct testimony simply is not credible when he now insists that low flows caused a Bay-wide "depletion event." *See, e.g.*, Berrigan Direct, ¶¶ 41, 48.[11]

Because it has no response to the overwhelming evidence in its official documents and data, Florida resorts to misleading attacks on Georgia's expert, Dr. Lipcius. Dr. Lipcius did not "concede at trial that there was evidence of oyster mortality due to widespread saltwater predation." Fla. Post-Trial Br. at 7. To the contrary, Dr. Lipcius testified in his written direct that predation can increase when salinities increase, and that "this can elevate predation on oysters ***in localized areas***" Lipcius Direct, ¶ 63 (emphasis added).[12] Dr. Lipcius never testified

[11] Florida suggests that Dr. Havens ruled out overharvesting as a cause, but Dr. Havens was clear in his testimony that the research was "inconclusive as to whether [] overfishing had occurred in 2012," and that he has "never concluded definitively" that overfishing was not responsible for the crash. Havens Dep. Tr. (GX-1349) at 240:24-241:12 (GX-1349).

[12] In other words, Dr. Lipcius examined Mr. Berrigan's and Dr. Kimbro's hard data on predation, and concluded that predation may have increased on certain reefs—such as Tommy Ward's. *See* Tr. 4403:12-15(Lipcius) (explaining that Tommy Ward's lease are in a "part of Apalachicola Bay [that] has some of the highest salinities. . . . And if I were to predict where you're going to have the highest levels of mortality, it would be exactly in those areas in the

in favor of—and the evidence does not support—Florida's belief that higher salinity levels caused the ***entire Bay*** to collapse from increased predation. There is absolutely no evidence to support such a novel theory. Increased salinity and increased localized predation had occurred in every drought, ***without*** previously leading to a collapse of the entire bay. Lipcius Direct, ¶ 63-64. In fact, as Dr. Lipcius explained, there is no documented instance anywhere of a drought and increased predation causing an entire fishery to collapse. Lipcius Direct, ¶ 64 ("[T]here is no documented instance in the scientific literature of a population-wide collapse of oysters due to magnified predation resulting from high salinities during a drought[.]"). Dr. Lipcius further testified, "[n]ot only is Florida's predation theory inconsistent with all the scientific literature, but it is refuted by the scientific evidence—including the official FDACS, Division of Aquaculture resource assessment data—and even the data collected by [Florida expert] Dr. Kimbro himself."[13] Lipcius Direct, ¶ 65. The low level of predation demonstrated by that data is flatly inconsistent with Florida's Bay-wide, "depletion event" theory. *See* Lipcius Direct, ¶¶ 75, 82 (discussing the lack of predator abundance seen in both the FDACS data and Dr. Kimbro's data).

Florida's reliance on Mr. Berrigan's statements at the Franklin County Board of County Commissioners meeting on September 6, 2012 as evidence that low river flows crashed the population is also misplaced. *See* Fla. Post-Trial Br. at 39 (citing FX-608 and FX-875). Mr. Berrigan's own admissions at that meeting effectively preclude any finding by "clear and

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high salinity areas."). That does not suggest, and Dr. Lipcius does not believe, that there was widespread predation across the Bay. The evidence, in fact, refutes that assertion. *See* Lipcius Direct, ¶ 65.

[13] The lengths Florida goes to in order to recast Dr. Lipcius's testimony are troubling. As just one example, at no time did Dr. Lipcius "conced[e] at trial that his pre-filed direct testimony was 'false.'" *See* Fla. Post-Trial Br. at 36. In this portion of his cross-examination, Florida's counsel was reading headings and sub-headings from the written direct's table of contents to Dr. Lipcius without telling Dr. Lipcius where he was reading from, while simultaneously ignoring the actual written testimony where Dr. Lipcius explains in detail what his testimony was and the basis for his opinions.

convincing" evidence that low river flows, as opposed to "multiple, natural, independent, unpredictable and interrelated forces," caused the collapse. *See Aransas Project*, 775 F.3d at 663.

At that meeting, Mr. Berrigan noted that the Bay's "most important reefs" had "lost a lot of reef structure" from being fished "hard" and that Florida management had "to figure out methods of restoring those." *See* Berrigan Trial Demo. 1 and FX-875. He also explained that there were areas of the Bay that had "normal reef structure, normal oyster populations," and that these areas were places Florida had "been planting over the last few years" with additional shell. As a result, these reefs "show[ed] normal distributions, normal size frequencies, and those type of things. Normal spat, normal juveniles, adults, normal mortality." Berrigan Trial Demo. 6; FX-875. This is precisely what Dr. Lipcius, found in his analysis of official FDACS data. Oyster bars that were lightly fished or restored were doing just as well after the collapse as before, while the heavily-fished bars experienced a substantial decline. Tr. 4384:5-15 (Lipcius). And significantly, despite Florida's so-called bay-wide "depletion event" theory, Mr. Berrigan expressly admitted that, based on his examination of restored reefs at the western portion of the Bay: "You can't say all the oysters are dead. You can't say there's no spatfall. You know, there are pockets here which represent one thing. It means that you didn't have a mass extinction of oysters there." Berrigan Trial Demo. 8 (FX-608); Tr. 874:23-875:1 (Berrigan).

Florida cannot escape the evidence reflected in its contemporaneous documents, witness testimony, and official data. Taken together, they conclusively establish that Florida's mismanagement and unsustainable harvesting—not Georgia water consumption or low River flows—caused the oyster fishery collapse.

B. Florida's Alleged Harms To The Apalachicola Bay Ecosystem Are Speculative And Refuted By Data And Testimony

Florida continues to argue—without any scientific foundation or factual basis—that increased salinity in the Bay causes changes in the composition of "microscopic algae" at the base of the food web, which in turn "reverberate[s] up the food chain" and compromise the health of the entire Bay ecosystem. *See* Fla. Post-Trial Br. at 48-49. Florida failed to prove any harm resulting from salinity changes and likewise failed to prove its speculative theory of "cascading effects" at trial.

Florida's continuing premise that very minor salinity changes would have an impact on the Bay's ecology is unsupportable. Fla. Post-Trial Br. at 79-80. As Florida's own salinity modeling expert has testified—and as clearly shown in salinity maps attached to her written direct testimony—even extreme cuts in Georgia's consumptive use would have only a small impact on salinity levels in the Bay. Tr. 1750:6-1758:16, 1768:1-1778:1 (Greenblatt). For example, cutting Georgia's agricultural water use by 50 percent would increase salinity by, at most, a few parts per thousand in very limited areas of the Bay, and between zero and one part per thousand in the vast majority of the Bay. *See* Tr. 1773:20-1775:25 (discussing salinity changes under Dr. Hornberger's "50% Cut remedy scenario" for the low-flow years of 2011 and 2012), Tr. 4120:15-4121:14 (McAnally) (discussing salinity changes under a similar conservation scenario). These small incremental changes in salinity would be "essentially unnoticeable" to plant and animal species, Tr. 4240:14-23 (Menzie), all of which are accustomed to natural variation in weekly average salinities of up to 18.6 parts per thousand. Menzie Direct, ¶¶ 73-78. Analysis from Georgia's ecology expert, Dr. Charles Menzie, showed that these wide natural variations in salinity occur throughout the Bay, including at the two main oyster bars—

Cat Point and Dry Bar—and "far exceed any changes caused by . . . incremental increases in freshwater flow." Menzie Direct, ¶¶ 76-77.

Florida also continues to speculate that low freshwater inflows have compromised nutrient levels in the Bay. *See* Fla. Post-Trial Br. at 48-49. But Florida's expert, Dr. Glibert, admitted that she does not have evidence that impaired food availability has in fact impacted species in the upper food web, including oysters or any species of fish. Tr. 1841:5-9, 1852:7-11 (Glibert). Dr. Menzie similarly testified that he had not "seen any evidence of impaired nutrition for ***any*** species in the Bay as a result of low flows." Tr. 4236:17-20 (Menzie) (emphasis added).

Given the lack of physical or other scientific evidence of actual harm to the Bay, Florida retreats to abstract "general principles" to construct an elaborate but unproven chain "to link changes at the base of the food web to changes at the upper levels of the food web." Tr. 1839:6-11 (Glibert). But Florida has no data to support this theory. While Dr. Glibert cursorily and inaccurately cites to fish data that she did not analyze, Tr. 1849:2-4 (Glibert) ("analyz[ing] fish data" was "outside the scope of [her] work"), that data was thoroughly analyzed by Dr. Menzie. Looking at the entirety of the available data over a forty-year period, Dr. Menzie "did not find any evidence of any long-term change to the fish communities." Menzie Direct, ¶ 136. To the contrary, species in the Bay are being sustained and the food web remains intact. Menzie Direct, ¶ 138. Without actual data proving harm to fish or other species at the top of the food web, Florida's alleged harm to the Bay is based on nothing more than speculation and an unproven causal chain. Such an unproven theory falls well short of the "real or substantial injury" required to justify an equitable apportionment. *See Connecticut*, 282 U.S. at 672; *Idaho*, 462 U.S. at 1029 (each denying relief due to lack of substantial injury); *see also Aransas Project*, at 775 F.3d at

663 (rejecting an attempt to establish liability under the Endangered Species Act through a similarly attenuated chain of causation).

C. Florida Has Not Proven That Georgia's Water Use Has Harmed The Apalachicola River Ecosystem

Florida's opening brief also highlights its failure to develop the hard facts needed to support its claim that Georgia's water use has harmed the Apalachicola River ecosystem. Florida failed to present evidence at trial that ***any*** species in the Apalachicola River or floodplain has been harmed by Georgia's water use. And its broader claim that Georgia's water use has harmed the "entire ecosystem" including "amphibians, reptiles, birds, and mammals," Fla. Post-Trial Br. at 50, similarly fell apart at trial when Florida's expert on river ecology, Dr. David Allan, admitted that he never studied any amphibians, reptiles, birds, or mammals, and has "no information of any change in [any of those] populations caused by Georgia's water use." Tr. 547:11-548:1 (Allan); *see also* Ga. Post-Trial Br. at 47-48. Confronted with these problems at the core of its River-injury case, Florida now tries to meet its burden by relying heavily on outdated, nonbinding guidance from EPA and USFWS and broad generalizations that low flows are stressful ecological events. Neither, however, can overcome the plain reality that there is no evidence (clear, convincing, or otherwise) that Georgia's water consumption caused any of the problems about which Florida complains. In fact, Florida itself has for years blamed the federal government for these very same harms; it cannot now change its entire story and pin the blame on Georgia, and certainly not to the level of proof demanded by the Supreme Court.

1. EPA/USFWS Instream Guidelines Cannot Provide Clear And Convincing Evidence Of Harm Or Causation

Recognizing that it failed to present any evidence of real and substantial harm to the riverine ecosystem due to Georgia's upstream water use, Florida now relies principally on informal, non-binding EPA/USWFS guidelines developed in 1999. Fla. Post-Trial Br. at 7, 50-

51 (citing FX-599 (1999 Instream Flow Guidelines)). As it did throughout trial, however, Florida mischaracterizes the import and legal significance of these "guidelines," and its claim that Georgia somehow failed to "comply" with a nonbinding, outdated document that has no legal effect falls far short of meeting its evidentiary burden.

First, the informal guidelines have no legal effect and were never formally adopted by EPA or USFWS. Instead, those agencies developed the guidelines during the ACF Compact negotiations to serve as a "tool" that, "along with other modeling tools," could "aid in the evaluation . . . of the impacts of Compact allocation proposals" among the states and the Corps. FX-599 (1999 Instream Flow Guidelines); Tr. 713:5-714:9 (Reheis) (guidelines were developed for "evaluation of allocation proposals" in the Compact negotiations); Tr. 368:21-25 (Struhs) (confirming that USFWS "provid[ed] the guidelines to increase the chance of a successful resolution."). The guidelines were not official regulations, they were not subject to formal notice-and-comment rulemaking, and they were never published in the Federal Register. Tr. 714:16-715:5 (Reheis) (explaining that, if the USFWS had sought to adopt the guidelines, "I would have assumed that there would be a very large public process through the federal register and so on . . . And I'm not aware of that ever happening"). Moreover, neither the States nor the Corps ever formally adopted or approved the guidelines as binding, legal requirements during the ACF Compact negotiations or at any point thereafter. The guidelines are thus not entitled to administrative deference. *See supra* at II.A.3.a. (explaining that nonbinding, informal agency guidance is not entitled to deference).

Second, more-recent agency findings have rendered obsolete whatever value these informal guidelines may have had 15 to 20 years ago. USFWS—one of the two agencies that created the 1999 Guidelines—has evaluated the flow regime established by the Corps on at least

four separate occasions since 1999. In each and every instance, USFWS approved the 5,000 cfs minimum set by the Corps and found it sufficient to protect endangered River species in Florida, even though that minimum departs in fundamental ways from the nonbinding guidance offered in 1999. *See* GX-123 (2006 BIOP); GX-232 (2008 BIOP); JX-72 (2012 BIOP); JX-168 (2016 BIOP). For example, in the most recent Biological Opinion that was released in September 2016, USFWS examined "how the flow regime affects habitat conditions for listed species," and concluded that the flow regime "will not destroy or adversely modify designated critical habitat." JX-168, at 3 (2016 BIOP). This 2016 finding from USFWS, made pursuant to the directives of the Endangered Species Act, is far more relevant than informal "guidance" issued more than 16 years ago.[14]

Third, even if this Court were persuaded that outdated, nonbinding guidance has some relevance in this case, Florida has applied the ***wrong*** guidelines and asks this Court to commit error by doing the same. Florida points the Court to instream flow guidance that applied only during the "pre-Woodruff Dam" era and that included "[e]stimates of the natural [flow] regime." *See* FX-599, at FL-ACF-02545908 (1999 Instream Flow Guidelines). But as the guidelines themselves explain, that is not the correct baseline from which to evaluate flows in a river system (like the Apalachicola) that is regulated by dams and reservoirs. Instead, the relevant minima (to the extent relevant at all) are those found in the "baseline regime," not the "natural regime." FX-599, at FL-ACF-02545881 (1999 Instream Flow Guidelines) (and only departure "from the

[14] Florida is wrong when it suggests that the USFWS Biological Opinions focus ***only*** on likelihood of extinction. Fla. Post-Trial Br. at 56. Each of the Biological Opinions includes a comprehensive analysis of the ecosystem. *See* JX-168, at 65 (2016 BIOP) ("This section describes . . . [the] ecosystem, within the action area and is intended to set the stage for the analysis of the effects of the action."). USFWS reviews population changes and status more generally when assessing risks to endangered species. *See id.* at 63 (describing the population of Gulf Sturgeon in "the Apalachicola River system [as] 'stable.'"); *id.* at 113 ("Although periodic drought-induced mortality may cause some localized population declines, we currently consider the [fat threeridge's] status to be stable or improving."). USFWS also analyzes whether the proposed flow regime would "adversely modify designated critical habitat." *Id.* at 3.

environmental baseline" required additional agency consultation—not natural regime) (emphasis added). Florida's mistake is significant: in most months, the baseline streamflow guidelines are considerably lower than the estimates of the natural regime—in many cases by thousands of cubic feet per second. FX-599, App. A at 17 (FL-ACF-02545911).

Finally, the ultimate irrelevance of the 1999 Guidelines is confirmed by the complete absence of a reference or citation to those guidelines in the testimony from Florida's key river ecology witnesses—Ted Hoehn and Dr. Allan. Mr. Hoehn, a biologist at Florida FWC, participated in the Compact negotiations and his role was to "determine what the biological effects" might be from each proposal—so, presumably he should have been familiar with the guidelines. Tr. 286:13-21 (Hoehn). But Mr. Hoehn never mentioned these guidelines at all in his written direct testimony or at trial. Dr. Allan is the expert Florida hired to testify about the ecosystem of the Apalachicola River. Dr. Allan likewise never mentioned the guidelines in his expert report, during his deposition, in his written direct, or in his live testimony at trial. That reveals the 1999 Guidelines for what they really are: a last-ditch argument that Florida has resorted to only because it was unable to prove actual, substantial harm to the riverine ecosystem.

2. Evidence At Trial Undermines Florida's Claim That Upstream Consumption Is The Only Possible Cause Of Harm To The River

It is essentially undisputed that Corps activities have caused substantial physical changes to the ecosystem of the Apalachicola River and floodplains and that those consequences are still being felt today. Indeed, Florida's own witnesses admitted that certain changes to the river are effectively permanent—like the down-cutting of the river channel that resulted from the construction of Jim Woodruff Dam. Dr. Mathias Kondolf, Florida's geomorphology expert, explained that the Apalachicola River in the stretch beneath Woodruff Dam will remain five feet

lower permanently without "a major undertaking" to "put back in sufficient sedimentation in the first 20 miles" below the dam. Tr. 2566:3-17 (Kondolf).

Nonetheless, Florida claims that other historic Corps activities—such as dredging—are no longer impacting the ecology of the River, and thus that any further harm must be attributable to Georgia's upstream water use. That is simply not the case. In a report only recently submitted by Dr. Kondolf and his colleagues to Florida FWC, Dr. Kondolf made clear that the Corps' historical dredging activities still affect the riverine ecosystem today. GX-1335, at 3 (Kondolf, 2015 Memo to State of Florida) ("Numerous dredge spoil piles continue to . . . feed sand into the channel at high flows."); *id.* at 31 ("Spoil mounds from past dredging is likely a continual source of sediment."). At trial, Dr. Kondolf tried to distance himself from this report because he knew it contradicted his sworn testimony in this case. Tr. 2742:10-2743:7 (Kondolf). But ultimately Dr. Kondolf was forced to admit that "these remaining dredge spoils are a persistent source of sand to the River." Tr. 2727:19-24 (Kondolf). Dr. Kondolf was also forced to concede that his "team reported to Florida Fish and Wildlife a year ago in 2015 that sand and dredge spoils ***are still going back into the river and can clog sloughs***." Tr. 2727:13-17 (Kondolf) (emphasis added).

Florida also cites to Dr. Allan's written direct testimony in support of its claim that Georgia alone, and not physical changes to the River and floodplain, caused Florida's alleged harms. But Florida ignores Dr. Allen's live testimony at trial where he repeatedly admitted he has no basis whatsoever to opine on causation or the relative role of physical changes to the channel having nothing to do with Georgia:

- "I did not do any separate analyses of different causes of harm." Tr. 514:25-515:1 (Allan).
- "I did not attempt to partition out and, therefore, have a relative number for the impact of Georgia's consumption versus another cause versus another cause." Tr. 516:6-18 (Allan).

- "Q: It's true isn't it, that you did no analysis to determine whether the Corps' dam and reservoir operations have any effect on river floodplain inundation in the Apalachicola River?

  A: That's correct." Tr. 517:2-7 (Allan).

- "Q: Dr. Allan, it's true that you have no expert opinion on whether water level decline caused by channel change is probably the most serious anthropogenic impact that has occurred so far in the Apalachicola River and floodplain. True?

  A: True." Tr. 524:2-9 (Allan).

Given these admissions, Dr. Allan certainly cannot provide a clear and convincing basis that any harms are caused by Georgia and not the Corps or some other reason.[15]

3. Events in Swift Slough Show That Florida Has Failed To Prove Georgia Caused Its Alleged Harms

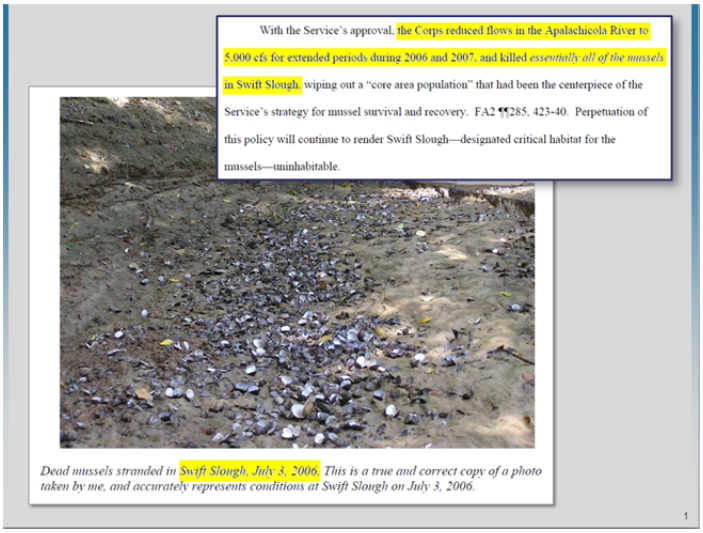
At trial, Florida's attempt to use events in Swift Slough to establish that Georgia caused harm to the River completely fell apart. In his written direct testimony, Mr. Hoehn "highlighted" Swift Slough and included pictures of dead mussels there from 2006 because he "want[ed] this Court to know something important happened in Swift Slough." Tr. 175:11-13; 175:24-176:1 (Hoehn). Dr. Allan similarly used Swift Slough as a "representative slough" in his written direct testimony and pointed to a documented mortality event in 2006 as proof that Georgia's water use was causing harm. Allan Direct, ¶ 45. At trial, however, it became indisputably clear that Swift Slough became disconnected from the River because of (a) sand blocking the entries to the slough at lower flows requiring flows above 5,000 cfs to connect the slough; and (b) the Corps' decision to maintain flows at 5,000 cfs during recent droughts. *See* Ga. Post-Trial Br. at 43.

[15] Florida attempts to blame Georgia for the actions undertaken by the Corps. But Dr. Kondolf was forced to admit that "the dam was built as a result of an Act of Congress." Tr. 2717:16-18 (Kondolf). The "Committee on Rivers and Harbors of the House of Representatives" requested the navigation project proposal from the "Secretary of War" who "is appointed by the President of the United States." Tr. 2717:19-2718:14 (Kondolf). The proposal makes clear that the project was to benefit "local interests" in the entire region—including "sawmills at Blountstown and Apalachicola, and . . . paper mill at Panama City" which are all within Florida. JX-1, at 3-4 (H.R. Doc. No. 342 (1939)).

Indeed, in prior litigation Florida was explicit about who was ultimately responsible for the mussel mortality event when it told a federal court that:

> With the [US Fish and Wildlife] Service's approval, ***the Corps reduced flows*** in the Apalachicola River to 5,000 cfs for extended periods during 2006 and 2007, ***and killed essentially all of the mussels in Swift Slough***.

GX-1274, at 48 (Fla. and City of Apalachicola's Joint Mot & Memo for Summ. J. on Phase 2 Claims, *In re Tri-State Water Rights Litig.*, No. 3:07-MD-1-PAM/JRK (M.D. Fla. Dec. 9, 2009), ECF No. 309) (emphasis modified).



As illustrated in the above demonstrative, on cross-examination, Mr. Hoehn had no choice but to admit that Florida's claims against Georgia are directly undermined by Florida's own position in prior litigation:

> Q: And I just want to confirm, Mr. Hoehn, when the State of Florida tells the federal court that the Corps killed essentially all of the mussels in Swift Slough in 2006 and 2007, they're talking about the same mussels in the picture you have advanced in this court. Correct?
>
> A. That is correct.

Tr. 217:12-19 (Hoehn).

Given this testimony, it is not surprising that Florida did not include Mr. Hoehn's picture of dead mussels in Swift Slough in its opening brief. Instead, Florida now presents pictures of

different sloughs like "Hog Slough" and "Dog Slough." Fla. Post-Trial Br. at 53. But Hog Slough and Dog Slough are also "located in an area of the River that experienced significant historical dredging." Kondolf Direct, ¶ 48; Tr. 2598:7-10 (Kondolf) ("Hog Slough is located" "where all that dredging took place."). Thus, the same factors affecting Swift Slough also impact the sloughs Florida now relies on. Just as happened in Swift Slough, the "Corps pumped dredged sand into some sloughs or disposed of dredge spoils upstream of some slough mouths, such that the sand would be carried into the sloughs by inflowing river water." Kondolf Direct, ¶ 18. Thus, as Florida has consistently maintained, the Corps has caused sloughs in the Apalachicola River to become disconnected from the river by increasing sand deposits at the entrances to the sloughs (thus increasing the amount of water needed cause inundation) and simultaneously reducing releases from Woodruff Dam. *See* Ga. Post-Trial Br. at 43, 50-55. At a minimum, these facts and prior claims by Florida undermine any claim of clear and convincing evidence that Georgia is to blame for the conditions in the sloughs.[16]

III. GEORGIA'S CONSUMPTIVE USE HAS NOT HAD A MATERIAL IMPACT ON STREAMFLOW WITHIN GEORGIA OR INTO FLORIDA

The evidence presented at trial disproves Florida's hyperbolic claims that Georgia's consumptive use has "exploded" and has "profoundly altered" the hydrology of the Basin. *See* Fla. Post-Trial Br. at 2, 5. In truth, the best available data on Georgia's consumptive use—collected and refined over the past decade by Georgia EPD—shows that Georgia's water use is patently reasonable, and that Florida's estimates are inflated multiple times over. The evidence also shows that the "streamflow depletions" Florida attributes to Georgia reflect significant

[16] Florida also did not present any evidence that any mussel mortality event or fish die-off has ever occurred because of low flows (or any other reason) in Hog Slough or Dog Slough. In fact, USFWS does not even identify those sloughs as critical habitat for any endangered mussel. *See* JX-168, at 119 (2016 BIOP) (describing critical habitat). USFWS carefully monitors the mussel populations in the Apalachicola River and has not reported a mass mortality event occurring in Hog Slough or Dog Slough in any of the recent Biological Opinions. *See* GX-123 (2006 BIOP), JX-72 (2012 BIOP), JX-168 (2016 BIOP).

errors and biases in Florida's models, and that Georgia's water use in the ACF Basin has had only a minimal impact on streamflow and groundwater levels, both of which are driven primarily by climate and weather—not water withdrawals.

A. Georgia's Total Consumptive Use, Which Is Based On Over A Decade Of Rigorous Data Collection And Analysis, Is Far Lower And More Reasonable Than What Florida Alleges

Georgia has invested heavily in understanding its own water use and today has great confidence in how much consumptive use is actually occurring within its own borders. *See* Tr. 3301:9-3302:11 (Zeng) (explaining how Georgia "track[s] hundreds of withdrawing and returning facilities" and reviews "readings from thousands of irrigation systems" to determine its consumptive use). Georgia's knowledge of its consumptive use is based on "over a decade of work by multiple state agencies, state universities, contractors, and regional and local water planning districts as part of a statewide planning effort." Zeng Direct, ¶ 5. Georgia has invested heavily in collection and analysis of consumptive use because "understanding . . . the amount of consumptive use is the building block in understanding hydrology in the basin and understanding how well we're managing the resources." Tr. 3301:9-19 (Zeng).

The direct testimony of Dr. Zeng, Georgia's chief hydrologist who has directed Georgia EPD's collection and analysis of consumptive use data for 10 years, contains ***23 pages*** of detailed technical information explaining the data and methods used by Georgia EPD to support its quantification of total consumptive use in the state. *See* Zeng Direct, ¶¶ 15-73 (pp. 4-26). Georgia's knowledge of total municipal and industrial ("M&I") consumptive use is based on a comprehensive database of "hundreds of withdrawing and returning facilities," representing total M&I withdrawals and returns in the Basin every month. Tr. 3301:25-3302:6 (Zeng). This data shows that "Georgia's M&I consumptive use remains only a fraction of total withdrawals," because even during drought years, Georgia returns back into the river system over 70% of water

withdrawn for M&I purposes. Zeng Direct, ¶ 34; Mayer Direct, ¶ 34. Georgia's knowledge of agricultural consumptive use is based on extensive field measurements collected and refined over the past decade, including "a comprehensive network of agricultural metering, which provides hard data on actual irrigation withdrawals for thousands of metered irrigation systems," "a comprehensive database of wetted acreage throughout the state," and "a high-quality groundwater model that gives us the best available analysis of how groundwater pumping may result in surface water flow reductions." Zeng Direct, ¶ 57. This data has resulted in the "best estimates of agricultural withdrawals, including streamflow impacts" available. Zeng Direct, ¶ 45.

All told, the combined M&I and agricultural use data shows that Georgia's total consumptive use in the ACF Basin has never exceeded an annual average of 900 cfs in drought years, and on a monthly basis has only ever exceeded 1,800 cfs in a single month, during "extreme drought conditions." *See* Zeng Direct, ¶ 5; Zeng Trial Demo. 3. This means that, on average, Georgia's annual consumptive use in drought years represents only ***4-5%*** of the total amount of water flowing across the state line into Florida (roughly 21,000 cfs), and during the worst drought month on record Florida still received three times what Georgia consumed. Tr. 3303:20-3304:4, 3370:18-3371:4 (Zeng).

By contrast, Florida has alleged that under ***"very conservative"*** assumptions, the amount of consumptive use occurring in Georgia's ACF Basin has exceeded ***5,000 cfs*** in peak months of dry years. Hornberger Direct, ¶ 3(e) (emphasis added); Tr. 3307:14-25 (Zeng); Zeng Trial Demo. 4. Florida's estimates are highly inflated and inaccurate: they are "10 times as large" as Georgia's average consumptive use in a normal year, "more than five times" Georgia's average consumptive use in a dry year, and "three times as much" as Georgia's highest consumptive use

ever recorded in a single month, roughly 1,800 cfs. Tr. 3308:5-14 (Zeng). In fact, Florida's estimates are so high that it is simply "not possible" for Georgia to achieve this level of consumptive use. *See* Tr. 3309:6-3310:5 (Zeng) (testimony from Dr. Zeng that it is impossible for Georgia to consume 5,000 cfs, which Florida itself claimed represented the water use of 19 million people and 4 million irrigated acres).

No Florida witness has ever offered a rigorous scientific response to the 23 pages of detailed technical discussion in Dr. Zeng's direct testimony of Georgia EPD's consumptive use data. Instead, Florida's estimates are based on analysis conducted by a single witness—Dr. Samuel Flewelling—who has no first-hand knowledge of Georgia's consumptive use and who did not testify at trial. Florida dropped Dr. Flewelling from its witness list and instead shoe-horned his analysis into the testimony of another witness, Dr. George Hornberger, who simply adopted Dr. Flewelling's work wholesale without conducting any independent analysis. *See* Tr. 2013:25-2014:22 (Hornberger) (admitting that for his opinions quantifying Georgia's consumptive use, he is "relying on another Florida expert, Dr. Flewelling" and that he "did not do independent calculations" of that work). The underlying work by Dr. Flewelling whose testimony was never admitted into evidence or subjected to cross examination—significantly inflates Georgia's consumptive use for multiple reasons, including "the inclusion of the aquifers that do not connect" to streams in the Lower ACF Basin, "the fact that groundwater pumping, even from the connected aquifer, was counted as . . . one-to-one reduction in streamflow, which is not supported by scientific evidence," and because of confirmed "double-counting in Florida's methodology." Tr. 3308:15-3309:5 (Zeng).

Florida's estimate of Georgia's consumptive use also apparently includes "net evaporative losses of up to 1,200 cfs" from small surface impoundments in Georgia. *See* Fla.

Post-Trial Br. at 21. But Florida has not offered any evidence or expert testimony linking evaporative losses in small ponds in Georgia to reduction in state-line flows into Florida. Florida also vastly overstates the amount of evaporation from these small impoundments. The GWRI UIF Report cited by Florida acknowledges that the 1,200 cfs figure "overestimates the net evaporation losses" because it assumes "the impoundments are full" when in fact "most of these impoundments are expected to dry out at the early stages of a severe drought." FX-534, at 191, 198 (explaining that "mean annual net evaporation losses are estimated around 225 cfs"). Florida itself admits that its estimates of total evaporative losses during dry years are significantly overstated based on the use of an inflated cumulative surface area. *See* Tr. 2020:10-2021:2 (Hornberger) (admitting surface area calculations were conducted based on wet years, which leaders to higher estimates than if dry years were used). Florida's focus on the 1,200 cfs peak number from GWRI also ignores that its own expert, Dr. Flewelling, calculated net evaporative losses approaching only 400 cfs during summer months in drought years. Hornberger Direct, ¶ 81. The Corps likewise estimated peak evaporative losses from non-federal reservoirs to be far lower than 1,200 cfs. *See* JX-124, at 4-25 (Table 4.1-8).

Florida's inflated estimates are also directly contradicted by the "hard data" and thousands of "measurements by instrumentation" showing actual consumptive use levels in Georgia's ACF Basin far lower than what Florida alleges. Zeng Direct, ¶ 57; Tr. 3307:4 (Zeng).[17] The reliability and validity of Georgia's consumptive use estimates has been

[17] Florida cites a single statement from GWRI's UIF Report to suggest that Georgia's agricultural consumptive use may be under-counted in some dry years. *See* Fla. Post-Trial Br. at 21 (citing FX-534, at 21). The cited statement is entirely misplaced because that statement is limited to estimating crop water use ***where no such data is available***. *See* FX-534, at 10 (GWRI UIF Report) (noting that "comprehensive measurements of the exact withdrawals are not available"). Georgia's agricultural consumptive use is based on extensive data and field measurements on agricultural withdrawals from thousands of sites, including from the Agricultural Metering Program. Zeng Direct, ¶¶ 46-52. Thus, GWRI's statements regarding approximation of crop water use using crop models is irrelevant. The cited statement is also misleading with respect to UIFs because the UIFs are universally

confirmed by third parties who have reviewed this data and methods used by Georgia EPD. Federal agencies, including the Corps and USGS, have reviewed and accepted Georgia's consumptive use estimates. Tr. 3312:2-3313:7 (Zeng). As recently as December 2016, the Corps reviewed and accepted Georgia's consumptive use estimates in a detailed technical appendix to its Final Environmental Impact Statement for its revised Water Control Manual. *See* USACE FEIS Appendix O, at 28-50. Additionally, the ACF Stakeholders Sustainable Water Management Plan, which relies on "the best available water withdrawals and return data," reflects consumptive use estimates much closer to Georgia's, not Florida's. Tr. 3313:14-3315:19 (Zeng); GX-1325, at 2, 28 (ACF Stakeholders Sustainable Water Mgmt. Plan).

B. Florida Relies On Admittedly Biased And Error-Prone Rainfall-Runoff Models To Support Its Inflated Consumptive Use Numbers

Without any actual data to justify its inflated estimates of Georgia's water use, Florida resorts to rainfall-runoff modeling to "back into" its own estimates of how much water Georgia uses. Florida's experts use rainfall-runoff models to "forecast" what flows "should have been" in the ACF Basin absent any consumptive use, and attribute the difference between model-predicted flows and observed flows to Georgia's consumptive use. Bedient Direct, ¶ 215. But because Florida's hydrologists failed to account for the "significant error" and bias ***that they admit exists*** in their models, these rainfall-runoff are "completely unreliable for use in reaching any opinions regarding the impact of Georgia's water use." *See* Bedient Direct, ¶¶ 216, 229. These models contain inherent error and uncertainty that tends to exaggerate the impact of Georgia's consumptive use, including by ***thousands of cfs***, and Florida relies on these admittedly

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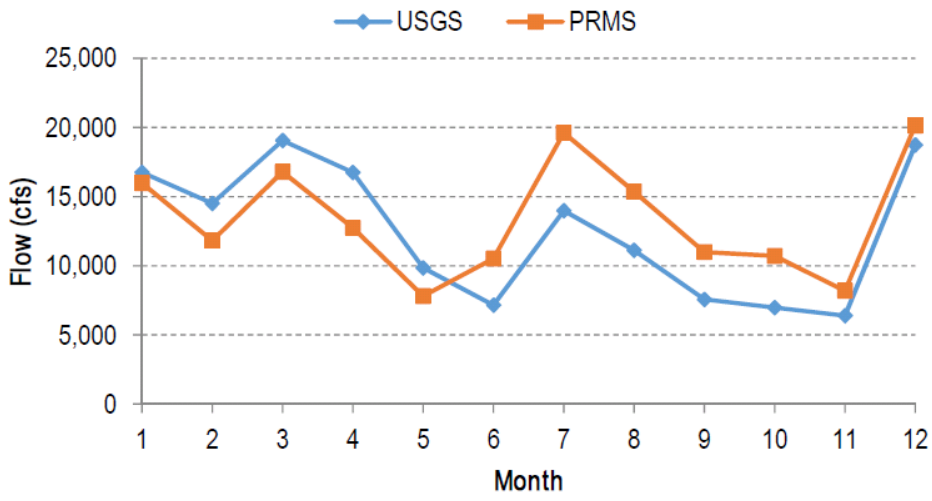
considered acceptable for use when comparing different scenarios using ResSim, including by the GWRI Report authors themselves. *See* Kistenmacher Dep. Tr. 119:18-120:25; Georgakakos Dep. Tr. 218:12-17.

error-prone models to predict the amount of Georgia's consumptive use, but that prediction is essentially within the "margin of error" of those models.

For instance, the "PRMS" model used by Dr. Hornberger suffers from a range of inherent error between 2,000 cfs and 6,000 cfs, which is larger than the total amount of consumptive use Florida attributes to Georgia. *Id.* ¶¶ 226-227. The PRMS model is also biased because it over-predicts flows by as much as 50%—or over 5,000 cfs—in dry years. *Id.* ¶ 232. The obvious bias in Dr. Hornberger's PRMS model for a representative drought year is shown in Bedient Direct, Demo. 62, which shows actual observed flows in blue and modeled flows in orange for a representative drought year prior to the construction of the Corps reservoir system:



As shown in Bedient Direct, Demo. 62, the PRMS model over-predicted flows during the late summer and early fall period (the typical low flow season) by an average of about ***4,000 cfs***. Bedient Direct, ¶¶ 232-33. Even though Dr. Hornberger admits an inherent bias in his PRMS model of "several thousand of cfs," Dr. Hornberger attributes the entire difference between his model prediction and the observed flows to Georgia's consumptive use, even though he admits no consumptive use occurred in that representative drought year. Tr. 2010:20-2011:1 (Hornberger). This proves that the model itself is biased because it is over-predicting flows.

This inherent bias in Dr. Hornberger's model has the effect of "exaggerating the 'streamflow depletion' [Dr. Hornberger] attributes to Georgia's consumptive use." Bedient Direct, ¶ 230.

Dr. Dennis Lettenmaier's rainfall-runoff models suffer from even greater bias and error. Dr. Lettenmaier admitted that his models over-predict by as much as ***10,000 cfs***, more than ***twice*** the amount of consumptive use Florida attributes to Georgia. Tr. 2402:6-13 (Lettenmaier) (admitting that his models overpredict flows by as much as "200 millimeters [which] is about 10,000 cfs"). Dr. Lettenmaier was forced to concede that his models are biased. Tr. 2401:1-4 (Lettenmaier) (admitting that his models are all overpredicting flows throughout the entire period of record). Florida claims that all of these models consistently show the same results, thereby reinforcing their accuracy. *See* Fla. Post-Trial Br. at 25 (claiming that its experts "independently produced similar results" using rainfall-runoff models). But once the bias and uncertainty is taken into account, the results of Florida's hydrologic modeling are not nearly as consistent as Florida claims. Dr. Lettenmaier himself acknowledged that his runoff models predicted an upper bound of Georgia's consumptive use at ***11,617 cfs***—over 100% higher than Dr. Hornberger's maximum estimate. Tr. 2394:18-2396:10 (Lettenmaier). Despite acknowledging the existence of significant error and bias in their models, Florida's hydrologists did nothing to account for it. Bedient Direct, ¶ 216. As a result, these models are "completely unreliable for use in reaching any opinions regarding the impact of Georgia's water use." Bedient Direct, ¶ 229.

C. Georgia's Water Use Does Not Materially Impact Groundwater Levels In The Basin

Florida's claims regarding Georgia's consumptive use are especially exaggerated with respect to its claims regarding the impact of agricultural groundwater pumping. The evidence shows that groundwater pumping in Georgia has a minimal impact on streamflow within Georgia and at the state line—even during periods of drought and peak irrigation when flows are at their

lowest and agricultural water use is at its highest. *See* Panday Direct, ¶ 52, Demo. 15. Groundwater modeling done by Dr. Sorab Panday, Georgia's groundwater expert and the only expert who actually ran a groundwater model in this case, confirms that streamflow reductions caused by groundwater pumping are small both as an absolute matter and as compared to flows into Florida. And Dr. Panday was also the only expert to independently analyze groundwater trends in the Basin. That work confirmed that the growth in groundwater pumping over the past 30 years has not had a significant impact on groundwater levels; even as pumping has increased, groundwater levels have remained stable. *See* Panday Direct, ¶¶ 116-124.

Groundwater modeling is the best way to quantify how groundwater pumping impacts streamflow. Dr. Panday used the Jones and Torak MODFE model to analyze the impact of groundwater pumping from the Upper Floridan Aquifer on streamflows. Panday Direct, ¶ 36. "The Jones and Torak MODFE model, was specifically designed to evaluate the impact of pumping" on groundwater flow to streams. Tr. 3861:13-21 (Panday). Florida's groundwater expert, Dr. David Langseth was not called to testify at trial, but he previously admitted that the Jones and Torak MODFE model is "the best currently available simulation model" to quantify "the relationship between pumping . . . and streamflow depletions." FX-795, at 36 (Langseth Report). Dr. Langseth also acknowledged that the results from the Jones and Torak "model results are reliable . . . and are generally accepted in the scientific community." *Id.* at 41.

Dr. Panday's results from the Jones and Torak model "show that the amount of water flowing into the stream from the aquifer beneath the stream is not materially impacted by agricultural irrigation pumping by Georgia in the Lower ACF River Basin." Panday Direct, ¶ 50. Dr. Panday observed that the impact from groundwater pumping was minimal when compared to the actual flow of water into Florida. For example, in 2011, "the maximum monthly average

reduction in streamflow was 511 cfs as a result of groundwater pumping in the Georgia portion of the Lower ACF River Basin while minimum flows into Florida were almost 10 times larger at 5,000 cfs." Panday Direct, ¶ 52 (discussing Panday Direct, Demo. 15); Tr. 3865:19-3866:13 (Panday) (discussing Panday Direct, Demo 13).[18]

In contrast to Dr. Panday's consistent and scientifically defensible approach, Florida's groundwater analysis constantly shifted throughout the case to accommodate Florida's changing litigation positions. Dr. Langseth's reported results showed that groundwater pumping on average reduced groundwater flow to rivers and streams in Georgia by a factor of about 40%, which was consistent with Dr. Panday's results. *See* Panday Direct, ¶ 86; Langseth Dep. Tr. 356:14-19 (explaining that "40.6" is the "impact factor for pumping just for the Upper Floridan."); Langseth Dep. Tr. 1079:8-1080:4. But that created a problem for Florida: Dr. Langseth's results showed that Dr. Sunding's proposed remedies were ***impossible***—Dr. Sunding's "conservation options" purported to save ***more water than Georgia even uses***. *See* Ga. Post-Trial Br. at 81-84. As a result, Florida had another expert, Dr. Hornberger, testify that Georgia's groundwater use has a much larger impact to streamflow. *See* Hornberger Direct, ¶ 101. Dr. Hornberger did no independent analysis and no groundwater modeling to justify his new, inflated analysis; instead, he relied exclusively on results from an outdated model from the 1990s.[19] *See* Hornberger Direct, ¶ 100. Dr. Panday explained that the model Dr. Hornberger came to rely on for the first time in his direct testimony "is now out-of-date and no longer

[18] The total impact from groundwater pumping in aquifers other than the Upper Floridan Aquifer is so insignificant on state-line flows, that "[p]rior studies that evaluated the basin-wide impact of groundwater pumping on streamflow in the ACF River Basin focused only on the" Upper Floridan Aquifer. Panday Direct, ¶ 73. Dr. Panday was the only expert to "evaluate[] the possible impact of all groundwater pumping from non-[Upper Floridan] aquifers." Panday Direct, ¶ 73. He found that "at peak summer month, the maximum impact that groundwater withdrawals from" those other aquifers "have about a 21 cfs impact on streamflow." Tr. 3771:3-8(Panday); *see* Panday Direct, Demo. 28.

[19] Florida tries to excuse its shifting positions by noting that Dr. Panday used that same old model for a project he completed in the 1990s. Fla. Post-Trial Br. at 28-29. But the fact that Dr. Panday used a model 20 years ago when it was the best model available does not make it appropriate to use today.

reflects the USGS's best understanding of the UFA and groundwater pumping distribution." Panday Direct, ¶ 88; *see* Tr. 3857:5-11 (Panday). Florida's own expert, Dr. Langseth also rejected that old model as "clearly superseded" by the Jones and Torak model—the model that Dr. Panday used. FX-795, at 37 (Expert Report of D. Langseth). Even Dr. Hornberger admitted that the Jones and Torak model uses "more up-to-date data" and "USGS specifically described the Jones and Torak as an improvement" over the old model. Tr. 2035:11-17 (Hornberger). Florida's inflated estimates of the impact of Georgia's groundwater on streamflow has no analytical justification and is entirely litigation-driven.[20]

D. Streamflow and Groundwater Level Trends Are Driven By Climate—Not Georgia

As much as Florida tries to avoid it, a fundamental principle of hydrology is that streamflow and groundwater levels are largely controlled by climate and weather. Tr. 4017:23-4018:6 (Bedient). This is particularly true in the ACF Basin, where the past decade has witnessed an increase in the number, frequency, and duration of droughts. In addition to causing reductions in streamflow levels, *see* Ga. Post-Trial Br. at Section IV.D., recent droughts have also caused reductions in groundwater levels. Dr. Panday's analysis confirmed the obvious: if there is less rain, groundwater levels go down, and if there is more rain, groundwater levels go up. This pattern generally repeats itself every year: "Lower water levels during the dry summer months will rise rapidly during the wetter winter months to about the same level each year."

[20] Florida is also wrong when it suggests that Dr. Panday did not consider the long-term impact of pumping. *See* Fla. Post-Trial Br. at 28-29. Dr. Panday analyzed multi-year droughts and found that groundwater pumping in the Lower ACF River Basin has minimal "carry-over" impact on streamflow in the following year, even during back-to-back drought years. Panday Direct, ¶ 72. Dr. Panday used the Jones and Torak model to "analyz[e] the impact of pumping from one year on streamflow the following year under back-to-back drought conditions." Panday Direct, ¶ 72; *see* Tr. 3824:9-20 (Panday). Dr. Panday found that "an additional 73 cfs in reduction to streamflow gets carried over into the next year." Panday Direct, ¶ 72; Tr. 3824:23-3825:7 ("I just isolated out the impact of pumping, and that was small.") (Panday). In other words, if the first year of drought had a peak monthly impact on streamflow of 511 cfs, during the second year of drought, the peak monthly impact would be 584 cfs. *See* Panday Direct, Demo. 24. None of Florida's experts quantified the impact of groundwater pumping in multi-year droughts.

Panday Direct, ¶ 116; *see* Tr. 3875:12-25 (Panday). During multi-year droughts, there are less winter rains and thus water levels "may not rise back fully," but "once there is a return of normal precipitation" "water levels bounce right back up and the aquifer gets fully recharged." Tr. 3875:12-25 (Panday).

Florida claims that Georgia's groundwater pumping caused groundwater declines during the multi-year drought of 2011-2012, but Dr. Panday's analysis definitively disproved that assertion. Fla. Post-Trial Br. at 29-30. To analyze the primary drivers of groundwater levels, Dr. Panday compared water levels in Georgia during the 2011-2012 drought with water levels in Florida. Panday Direct, ¶¶ 116-117. "If Georgia's water consumption was the primary driver in changes to groundwater levels," then there should be "stark differences between [Upper Floridan Aquifer] water levels in Florida and Georgia." Panday Direct, ¶ 117. Instead, Dr. Panday observed that groundwater in Florida had "the same signature" as wells in Georgia. Tr. 3872:14-3873:16 (Panday). This confirmed "that regional weather is the primary driver of water level change and rebound, not pumping in Georgia." Panday Direct, ¶ 117.

Observed groundwater levels from USGS monitoring wells also confirmed that when droughts end, the Upper Floridan Aquifer quickly and fully recharges. Tr. 3875:12-25 (Panday); *see* Panday Direct, Demo. 35c (monthly water levels consistently returning to 140 MSL after drought conditions end). The Upper Floridan Aquifer is healthy and although there may be a short-term decline in groundwater levels during drought, those changes are driven by weather, not pumping, and in any event, the aquifer fully recharges when the weather returns to normal.

IV. THE EQUITIES TIP DECIDEDLY IN GEORGIA'S FAVOR

Although Supreme Court precedent makes it unnecessary to evaluate the equities given Florida's failure to prove that it is suffering real and substantial injury caused by Georgia's water use, the trial record nonetheless proves that the equities strongly favor Georgia. ***First***, all of

Florida's equities arguments ignore the fundamental fact that Florida already receives the vast majority of ACF water under all climatic conditions. When evaluated from that baseline, all of Florida's equitable claims fall apart. ***Second***, in several important respects, Florida has not been a responsible steward of its own resources in the ACF Basin, most notably by mismanaging the Apalachicola Bay oyster fishery and by permitting, and later failing to remediate, dredging activities throughout the Apalachicola River. ***Third***, Florida's complaints about Georgia's management of agricultural water resources rely on cherry-picked documents and quotations devoid of context and ignore the significant and comprehensive efforts Georgia has undertaken in the past 15 years to conserve and regulate agricultural irrigation. ***Fourth***, Florida has tellingly abandoned all attempts to argue that Georgia's M&I water use is inequitable, despite the allegations in its complaint that Atlanta's growth presented the most direct threat to Florida. ***Finally***, Florida wrongly tries to blame Georgia for the demise of the ACF Compact negotiations, when ample evidence—including testimony from Florida's own witnesses and statements from Florida's own documents—show that Florida was to blame.

A. Florida Already Receives An Equitable Share of ACF Waters

The fundamental problem with all of Florida's equitable arguments is that Florida ignores the current division of water in the ACF Basin. Florida insists that this Court must "limit[] Georgia's diversions" to "ensure[] that Florida will receive its fair share of the waters at issue." Fla. Post-Trial Br. at 60. But by any measure, Florida ***already receives*** a disproportionate share of ACF waters. As measured by annual average consumptive use, Florida receives ***over 90%*** of all of the water in the ACF Basin in all years—including wet, normal, and dry years. *See* Zeng Direct, p. 6, Demo. 1 (Georgia's total annual average consumptive use in normal years amounts to only 2.5% of state-line flows); Tr. 3303:17-3304:2 (Zeng) (Georgia's total annual average consumptive use in dry and drought years has never exceeded 4-5% of state-line flows); Stavins

Direct, ¶ 32 (using different analysis to find that Georgia consumes 4% of the total water available in the ACF Basin in an average years and 8% in a dry year). Even if the relevant time period is narrowed to the driest months of the driest years, Florida still receives over ***75%*** of the total water available in the ACF Basin in those adverse climatic conditions. *See* Stavins Direct, ¶ 32 (Georgia consumes only 24% of the total waters available in the driest season of a dry year, defined as the driest three months of 2011).

That is more than Florida's "fair share" of ACF waters. Florida accounts for only 2.2% of the total population, 1.2% of employment, and less than 1% of economic activity in the ACF Basin. *See* Ga. Post-Trial Br. at Section IV.A. By sharp contrast, Georgia accounts for more than 92% of the total economic activity, employment, and population in the Basin. *Id.* In such circumstances, the current division of water resources between Georgia and Florida is the very definition of equitable. Indeed, given these facts, it would be grossly ***inequitable*** to further curtail existing uses in Georgia for the purpose of giving Florida an even greater share of ACF waters. *See, e.g.*, *Colorado I*, 459 U.S. at 186 (denying relief "on the ground that the great benefit to [the upstream state] outweigh[s] the detriment to [the downstream state]"); *Kansas*, 206 U.S. at 117 (denying relief notwithstanding "perceptible injury" where upstream use "transform[ed] thousands of acres into fertile fields"); *Washington*, 297 U.S. at 523 (denying relief where remedy would injure upstream state with no benefit to downstream state).

It is also worth emphasizing that Florida receives the overwhelming majority of water in the ACF Basin in large part because of the infrastructure investments that ***Georgia*** has made to treat and return large amounts of water to the ACF Basin. Tr. 3545:8-15 (Mayer); Tr. 3440:4-23 (Kirkpatrick). For example, utilities in the Metro Water District have spent more than a billion dollars to construct and operate indirect potable reuse facilities that return highly treated

wastewater to the ACF Basin. Mayer Direct, ¶ 75; JX-37, at 7-5 to 7-6 (GA Water Supply and Conservation Mgmt. Plan) (describing, for example, reuse facilities in Gwinnett County and Clayton County that return water to the ACF Basin). District water systems have also spent hundreds of millions of dollars on leak abatement and other water-supply infrastructure projects that reduce overall consumptive use. Tr. 3530:5-11 (Mayer); Mayer Direct, ¶¶ 65, 79-81; GX-286, at GWNT-DWR0012554 - GWNT-DWR0012557 (Summary of Water Conservation, Water Mgmt. and Water Efficiency Projects with Special Focus on The Lake Lanier/Chattahoochee River Users (2009)).

B. Florida Has Been A Poor Steward Of Its Resources In The Basin

While Georgia has invested heavily to reduce its consumptive use in the Basin, Florida has in important respects failed to preserve the ecosystem in the Apalachicola River and Bay. These failures of stewardship must be accounted for in analyzing the relative equities between Georgia and Florida.

First, as discussed above, Florida has grossly mismanaged the Apalachicola Bay oyster fishery. Florida (i) allowed unsustainable and record levels of oyster harvesting in the Bay during a drought that Florida says caused "the worst low river flows in recorded history," Fla. Post-Trial Br. at 30; (ii) opened the bay to unrestricted harvesting and overfishing following the Deepwater Horizon oil spill, a step that Florida officials themselves described as a "use it or lose it" attitude; (iii) failed to restore oyster habitat through reshelling efforts while the record harvests occurred; and (iv) failed to enforce size and bag limits in the Bay during the same time period, which led to substantial overharvesting of juvenile and undersized oysters. *See infra* II.A. As Mr. Berrigan—"Florida's most knowledgeable and experienced employee regarding oyster resources in Apalachicola Bay," Fla. Post-Trial Br. at 37—admitted in September 2012,

Florida's management practices "bent" the oyster fishery "until [it] broke." GX-1357 (Berrigan Demos.); FX-608 (Video of Franklin Board of Comm'rs Meeting (Sept. 6, 2012))

Second, Florida allowed dredging activities in the Apalachicola River to persist for decades and has not remediated the impact of those activities on river and floodplain habitats. By permitting Corps dredging that deepened the river channel and clogged sloughs, Florida allowed slough and floodplain habitats to become disconnected from the River. *See* Ga. Post-Trial Br. at 42. Florida vaguely suggests that it has taken steps to remediate the effects of the dredging, but the fact is that Florida has largely done nothing to unplug clogged up sloughs, notwithstanding recommendations by its own expert to do so. *See* Tr. 2702:12-2703:22 (Kondolf); Fla. Post-Trial Br. at 52; GX-248, at 42 (Kondolf, Restoration Prospects for the Apalachicola River (2009)) (Kondolf explaining that "plug removal could potentially yield significant benefits" in Swift Slough). And although Florida tries to lay the blame for those dredging activities on Georgia's doorstep, Fla. Post-Trial Br. at 62, it is undisputed that ***Florida*** granted permits to the Corps to undertake those dredging activities. Tr. 2853:1-8 (Kondolf). Having itself sanctioned the dredging, Florida cannot turn around and blame Georgia. And because Florida has done almost nothing to remedy the ecological impact of those dredging activities, significantly greater flows are required to connect the slough and floodplains to the main river. *See* Ga. Post-Trial Br. at 42.

Third, Florida destroyed the natural swamps and wetland ecosystems that once existed in Tate's Hell State Forest, a major wetland area that is "is adjacent to and drains directly into Apalachicola Bay." Fla. Post-Trial Br. at 62. As Florida's own internal documents explain:

> During the 1950s through 1970s, thousands of acres of pine flatwoods and the drier portions of many wetland ecosystems were converted to slash pine plantation. More than 800 miles of roads were constructed and drainage ditches were constructed along most roads to provide road fill and drain nearby wetlands.

> . . . ***These large-scale habitat alterations significantly impacted historical ecological communities and altered the magnitude, timing, and quality of surface water runoff discharged from Tate's Hell Swamp to Apalachicola Bay, East Bay, and surrounding waters.***

JX-133, at 1 (Tate's Hell State Forest Hydrologic Restoration Plan) (emphasis added); *see also* GX-1044 (Florida Forest Service website explaining that "[p]ast management practices have disrupted the function of the natural ecosystems on Tate's Hell State Forest."). Although Florida attempts to feature its remediation efforts at Tate's Hell, Florida has restored only a small fraction of the 800 miles of roads and ditches in Tate's Hell that devastated the hydrology and ecology of the region. According to Florida's own estimates, restoration activities in Tate's Hell could take as long as 20 years "[d]ue to the large area encompassed by Tate's Hell State Forest and the extensive degree of hydrologic impacts." JX-133, at 5 (Tate's Hell State Forest Hydrologic Restoration Plan).

Fourth, although Florida spends much of its brief complaining about agricultural irrigation in Georgia, evidence at trial shows that Florida allowed irrigated acreage in the Florida portion of the ACF Basin to more than double between 2002 and 2015. Tr. 2115:22-2116:18 (Cyphers); FX-862a, at 54 (FSAID Final Report). Irrigation has particularly spiked in recent years: from 2012 to 2015, irrigated acreage increased by more than 10,000 acres in Jackson County, Florida alone. Tr. 2116:19-2117:9 (Cyphers); FX-862a, at 54 (FSAID Final Report). Despite this substantial growth in irrigation, Florida has not conducted any analysis to quantify the impact that irrigation in Florida has on river flows in the ACF Basin. Tr. 2119:8-12 (Cyphers).

Fifth, Florida argues that Georgia can and should emulate Florida's agricultural permitting program. Fla. Post-Trial Br. at 64-65. But Florida's agricultural permitting limits and regulations do not impose any real constraint on agricultural irrigation in the Florida portion of

the ACF Basin. Although the NWFWMD imposes a numerical limit on water use in its agricultural permits, the limit is designed to provide the "maximum yield" in most years. Tr. 2132:2-5 (Cyphers). Enforcement of these maximum water use limits is also extraordinarily rare. Guy Gowens, an Assistant Director of the NWFWMD who has worked at the District for more than 28 years, could not recall even a single instance where a permit has ever been revoked or suspended. Gowens Dep. Tr. 158:17-21. Instead, the NWFWMD has granted new or modified permits that guaranteed additional quantities of water to permit holders who had violated their existing permit terms, instead of actually enforcing those permits as written. GX-219 (NWFWMD Water Permit Use Application Staff Report). The NWFWMD has also chosen not to impose mandatory water use restrictions on agricultural irrigation in the Florida ACF, particularly during drought periods. Although the NWFWMD has the authority to implement mandatory water use restrictions, it has not done so since 2000 despite several multi-year droughts over that period. Tr. 2123:15-2124:2 (Cyphers).

Sixth, the NWFWMD has failed to establish a single set of minimum flows and levels in the last 20 years even though such minimum flows and levels are required by Florida law. Tr. 2124:11-2125:13 (Cyphers). In an internal Florida memo, the current director of the NWFWMD admitted that it was "blatantly obvious" that for over a decade the district "had no intention of following the law and implementing the [minimum flows and levels]." GX-526, at FL-ACF-02947369 (2013 NWFWMD Memo.). In a case where Florida's entire complaint focuses on increasing minimum flows in the Apalachicola River, Florida's decision to ignore its own internal laws regarding minimum flows should be given significant weight.

Finally, Florida's contribution of flow into the Apalachicola River and Bay has declined by ***thousands of cfs*** compared to what Florida contributed to flows in the past. *See* Ga. Post-

Trial Br. 78-79; Bedient Direct, ¶¶ 130-141; Panday Direct, ¶ 83; Zeng Direct, ¶ 153. As flows from Florida have decreased, the relative percentage of flow coming from Georgia has increased. *See* Ga. Post-Trial Br. at 79-80; Zeng Direct, Demo. 14; Bedient Direct, ¶ 140. In a footnote of its brief, Florida cites to a single letter from USGS and claims that these massive changes are caused by gage measurement errors. Fla. Post-Trial Br. at 35, n. 6 (citing FX-515). But that letter cannot save Florida's position because the USGS explains that the error only impacted measurements during high flows from 1990-2002. FX-515. Even when ignoring 1990-2002 and comparing only Florida's contribution to flows pre-1990 and post-2002, there is still a notable decline in Florida's contribution to the River and Bay. Panday Direct, Demo. 29; Tr. 3849:16-22 (Panday) ("The letter from . . . the USGS indicated that the gages were wrong between 1990 and 2002, I believe. So I can look at data pre-1990 and post-2002, and I come to the same conclusion.").

C. Florida's Attempt To Diminish Georgia's Conservation Achievements Is Unconvincing

As discussed at length in Georgia's opening brief, Georgia has taken substantial and innovative steps to enhance water management and conserve agricultural water resources in the ACF Basin. *See* Ga. Post-Trial Br. at Section IV.C. Florida attempts to paint Georgia as a poor steward by pointing to a selection of disparate events or statements made in historical documents, many from the late 1990s. But those efforts miss the fundamental point that Georgia has proactively managed its agricultural water resources over the course of the past 20 years to address the very concerns first highlighted by Director Reheis in the late 1990s.[21]

[21] To address the deficiencies in the testimony from witnesses who actually came to trial, Florida devotes much of its opening brief to hearsay statements made by David Hicks and Dr. Stephen Golladay of the Jones Center that are subject to objection by Georgia. *See* Fla. Post-Trial Br. at 6, 28, 68, 71, 72 (citing work by Hicks and Golladay as evidence of (i) declining flows, (ii) a causal link between agricultural water use and alleged low flows, and (iii) ecological harm). Florida misstates the record, however, when it repeatedly calls Mr. Hicks and Dr. Golladay "Georgia scientists" and "technical advisors," "expert technical advisors," or "technical experts" to Georgia, *see id.*

Much of Florida's case at trial and its post-trial briefing focused on statements by Director Harold Reheis in the late 1990s. Citing those statements, Florida claims that "Georgia has long been aware of the significant issues its agricultural consumption is causing on the Flint River." Fla. Post-Trial Br. at 65. But as Director Reheis explained, these statements were made based on rudimentary models, crude estimates of agricultural water use, and other outdated data. *See, e.g.*, Tr. 704:19-705:17 (Reheis) (1990s-era groundwater model was "rudimentary," and Georgia "didn't know how well it calibrated to real life . . . situations"), 703:8-24 (Reheis) (there was "a lot of doubt" in the late 1990s about how many acres were irrigated); Reheis Direct, ¶ 27 (no precise estimate of agricultural water use as of the late 1990s); *see also* Tr. 303:12-304:16 (Hoehn) (Florida's lead technical representative during the Comprehensive Study acknowledging that "agriculture was -- it was a big unknown at the time. There were a lot of discussions and lots of modelers going back and forth."). Predictions of water use and streamflow impact in the late 1990s are thus not a reliable indicator of what actually was happening on the ground.

Notwithstanding the uncertainties in the data and models available at the time, Georgia promptly took action to better understand and manage agricultural water use. Specifically, in 1999, Georgia placed a ***six-year*** moratorium on new irrigation permits in the Flint Basin. Reheis Direct, ¶ 47. While the moratorium was in place, Georgia initiated a Sound Science Study to analyze and document how many acres were being irrigated; how much water was being used for agricultural purposes; and the impact of agricultural pumping on streamflows in the Flint River Basin. Reheis Direct, ¶ 37; Tr. 697:9-698:10 (Reheis). As Director Reheis explained, "I am glad

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at 5, 6, 8, 28, 59, 68, 71, 72. Both of these individuals work for the J.W. Jones Ecological Research Center, which is neither a state institution nor a state-affiliated entity. Moreover, Florida not only failed to call them as witnesses at trial, but Florida did not even depose them. Florida's reliance on the hearsay of unaffiliated third-parties that were never deposed or subject to cross-examination at trial underscores the inadmissibility and unreliable nature of this evidence. That Florida relies so heavily on this unreliable hearsay also highlights the overall weakness of its case.

that we did research these issues more thoroughly, because the more extreme outputs" of the 1990s-era modeling "turned out to be wrong." Reheis Direct, ¶ 34. The Flint River has never run dry as some of the 1990s-era modeling and data had predicted, and indeed Flint River flows have remained at healthy levels.[22] Reheis Direct, ¶ 34.; *see also* Tr. 688:3-21 (Reheis) ("Thank goodness the Flint River has never dried up and thank goodness our concerns about the model being not accurate in that regard were correct. It was not accurate. The Flint River hasn't dried up.").

Georgia also took a series of legislative actions during the pendency of the Sound Science Study, including: empowering the State to administer an auction to take acreage out of irrigation during times of drought, requiring the installation of flow meters on irrigation withdrawals; and requiring comprehensive regional water planning in the ACF Basin (as well as in other areas of the state). *See* JX-9 (Flint River Drought Protection Act); Reheis Direct, ¶ 60 (Agricultural Metering Program); GX-64 (2004 Act mandating a state-wide water plan). The Sound Science Study culminated in the release of the Flint River Basin Regional Water Development and Conservation Plan in 2006, which overhauled Georgia's agricultural permitting program and limited the areas in which new permits could be issued depending on the hydrological sensitivity of withdrawals. Couch Direct, ¶ 12; JX-21 (2006 Plan).

Those significant and costly efforts by Georgia over the past 15 years have paid substantial dividends. Despite Florida's claim that irrigated acreage in the ACF Basin has increased unabated, recent trends in irrigated acreage actually highlight steps taken by Georgia

[22] Citing to a set of talking points dated April 1999, Florida claims that Director Reheis "acknowledged . . . that Georgia would, at some point, need to impose a 'cap' on agricultural acreage." Fla. Post-Trial Br. at 65-66 (citing FX-5, at 1 (Reheis Statement for Southwest GA Summit (1999)). By "cap," Director Reheis meant "a moratorium on the issuance of new permits." Reheis Direct, ¶ 41. The full quote from the document cited by Florida makes this clear. FX-5, at 1 (Reheis Statement for Southwest GA Summit (1999) ("I do believe that the state will need to put a cap on water depletions . . . but . . . we will not institute a moratorium at this time.") (emphasis omitted). Georgia announced a moratorium on the issuance of new permits a few months later. Reheis Direct, ¶¶ 42, 47; Tr. 699:7-22 (Reheis).

and its farmers to mitigate the impacts of its water use. For example, in just the past few years, Georgia farmers have shifted around 30,000 irrigated acres away from surface water sources to groundwater sources, which have less impact on streamflow. *See* Tr. 3701:25-3702:25 (Masters). Georgia farmers have also vastly improved their efficiency by moving irrigated acreage from less efficient traveler systems to much more efficient center pivot systems. *See* Masters Direct, ¶¶ 62-63.

As Florida notes, there have been periods since 1999 in which Georgia has issued agricultural withdrawal permits in the ACF Basin. *See* Fla. Post-Trial Brief at 66, 67 (stating that Georgia has issued roughly 2200 permits issued since 1999). But the issuance of those permits was entirely reasonable when set in proper context. The vast majority of new permits issued since 1999 are in locations that have little to no impact on streamflow into Florida. *See* Masters Direct, ¶ 55; Tr. 3705:5-21 (Masters). "Over 84 percent of those new permits" are in areas where scientific modeling shows that "withdrawals . . . had little to no impact on the actual streamflow." Tr. 3705:5-12, 3705:19-21 (Masters). And for the remaining 16% of permits, the vast majority were either "backlogged permits that were issued [pursuant to] the 2006 [Flint River] Plan or . . . permits that were issued for aquifers other than the Upper Floridan [Aquifer,]" for which the "best available science" showed that there was "little to no impact on streamflow[.]" *See* Tr. 3706:3-13 (Masters); Masters Trial Demo. 2. Florida also included in its analysis over 400 permits that are listed in the Agricultural Permitting Database as "[I]nactive," which designates permits that are not in use. *See* Tr. 3703:21-3704:1 (Masters). Obviously permits that are not being used have no impact on consumptive water use or streamflows.

Florida attempts to undermine Georgia's decision to issue these permits by pointing to two letters from 2006, neither of which actually supports Florida's position. The first is a letter

from the Georgia Wildlife Resources Division warning that allocation of additional permits "for either surface water or Upper Floridian Aquifer groundwater" could have adverse consequences on ecology in the "Spring Creek sub-basin" in Georgia. Fla. Post-Trial Br. at 67. But that is precisely the reason why Georgia limited the vast majority of new permits to areas that have little-to-no impact on streamflow into Florida, Tr. 3705:5-12, 3705:19-21 (Masters), and Florida has offered no evidence that Georgia has granted new permits in sensitive portions of the Flint River Basin. Florida also cites a letter from USFWS stating that "some portion of the current permits, or some portion of the volume of water currently permitted for withdrawal is beyond the volume of water that is protective of downstream users." However, Florida failed to mention that by "downstream users," USFWS was specifically referring to "downstream ***agricultural*** users" and "the aquatic system" in Spring Creek ***in Georgia***. *See* FX-46, at GA00537489 (USFWS Comments on Flint River Basin Regional Water Development Plan (2006)) (emphases added).[23]

Florida's related argument that "Georgia's agricultural permits do not limit the amount of irrigation water that can be applied per acre by a farmer" is also irrelevant and overlooks the important limitations on pumping that do exist. Fla. Post-Trial Br. at 65. Both Florida and Georgia's experts agree that the vast majority of Georgia farmers ***under***water their crops. *Id*. at 69. Indeed, Dr. Sunding's own analysis shows that up to 90% of the irrigated acreage in Georgia was "under watered" for the years 2008 to 2013. Tr. 4525:14-4527:8 (Stavins); Stavins Trial Demo. 6; *see* Tr. 2823:3-8 (Sunding). Moreover, agricultural water withdrawal permits do

[23] More broadly, Florida has provided no evidence linking flows in Spring Creek to flows in the Apalachicola River. Tr. 1988:12-1989:16 (Hornberger) (Dr. Hornberger agreeing that he does not "know how much or how little flows from Spring Creek influence flows at the state line" and testifying that "It's not my contention that there's a direct connection" between flows at Spring Creek and the state line). Indeed, the evidence presented at trial shows that Spring Creek flows are often a local phenomenon that do not necessarily have any impact below the state line. Tr. 1992:1-8 (Hornberger) (admitting Reynoldsville Gage has "never measured zero flow conditions" "even in the drought years of 2007, 2011, and 2012); *see* Panday Direct, ¶ 140 (explaining that the difference between pre- and post-irrigation low flows at Spring Creek is about 10-20 cfs).

"specify pump capacity and acreage limitations[,]" which limit the rate at which a farmer can withdraw water and the area to which he or she can apply it. Tr. 2223:5-6 (Cowie). Farmers in Georgia also have strong incentives not to over-irrigate their crops, because of the "cost of withdrawing water and applying it to their fields" and because "[i]t can be just as harmful to irrigate a crop too much as for a crop to not have enough water." Tr. 3696:4-3697:7 (Masters); *see also* Tr. 2223:10-13 (Cowie) (applying too much water "would damage the crop" and "doesn't make good business sense").

Georgia's water use also does not "violate" what Florida incorrectly describes as sustainability "requirements" or "limits" set forth in the Lower-Flint Ochlockonee Regional Water Plan ("LFO Plan"). *See* Fla. Pre-Trial Brief at 32-33; Fla. Post-Trial Brief at 69. The surface water assessment in the LFO Plan that Florida points to was "not a sustainability requirement," nor was it a "requirement to be met in the river." Tr. 2304:5-2305:24 (Cowie). It was a "modeling exercise[]" designed to "identify areas where the [W]ater [P]lanning [C]ouncils" should pay attention during the planning process. Tr. 2302:2-25 (Cowie). It did not assess "observed conditions in the river" and was "not intended to replicate what actually occurred on the river." Tr. 2302:2-25, 2245:20-24 (Cowie). To that end, the 1,376 cfs "Shortfall" figure to which Florida points never occurred in the real world and was instead a model output that occurred only by comparing an "artificially high demand," comprised of the highest reported demand from each month over a five year-period, to the lowest point on a 68-year streamflow record. Tr. 2302:2-2304:4 (Cowie).

Florida similarly misrepresents the findings of the LFO Plan when it argues that groundwater pumping in the Upper Floridan Aquifer is greater than the "sustainable yield" of that Aquifer. Fla. Post-Trial Brief at 69. The LFO Plan did not purport to set a "ceiling" of use

that cannot be exceeded, nor was it intended to evaluate the impact of water use on basin-wide river flows. Cowie Direct, ¶ 46; Panday Direct, ¶ 133. Rather, the sustainable yield criterion was selected to "identify potential ***local*** or regional impacts." Tr. 2307:17-2308:16 (Cowie) (emphasis added). Accordingly, the "sustainable yield" threshold was triggered if flows decreased by 40% in ***any*** location in the Basin. Because some of the creeks in the ACF are extremely small, that threshold could be triggered by minor reductions in flow. Tr. 2200:9-14 (Cowie); JX-160, at Figure S-7 (Synopsis Groundwater Availability Assessment (2010)); Panday Direct, ¶ 134. For example, the sustainable yield criteria for the entire Upper Floridan Aquifer was determined based on a reduction in baseflow ***of less than 0.7 cfs*** at a small stream called Muckaloochee Creek located in the northern portion of the Flint River Basin. Cowie Direct, ¶ 49; JX-160, at Figure S-7 (Synopsis Groundwater Availability Assessment (2010)); Panday Direct, ¶ 135.[24] Such a small flow reduction may be of local significance in Muckaloochee Creek, but it has "virtually no impact at all" on the state line flow into Florida, and therefore no relevance at all to the issues in this case. Panday Direct, ¶ 135; *see also* Tr. 2312:18-2313:10 (Cowie).

D. Georgia Reasonably Declined To Implement The Flint River Drought Protection Act In 2007-2008 and 2011-2012

The Flint River Drought Protection Act ("FRDPA") was a "good faith" attempt by Georgia to develop a tool that could reduce agricultural irrigation in the Flint River during times of severe drought. Tr. 2993:23-25 (Turner).[25] Unfortunately, the FRDPA has proven to be of

[24] Florida attempts to save its sustainable yield arguments by claiming "the analysis was based on a long list of stream and river segments throughout the Basin which were each evaluated separately before a comprehensive conclusion regarding sustainable flows was reached." Fla. Post-Trial Brief at 69 n. 9 (citing JX-57, at 7-10 & tables 1-3) (Technical Memo on Dougherty Plain Sustainable Yield Groundwater Model (2011)). Again, Florida's argument is refuted by the document it cites, which confirms: "There was ***only one criterion violation*** indicated in the model domain, located . . . in the northern portion of the Dougherty Plain." JX-57, at 11 (emphasis added).

[25] Florida claims that Director "Reheis pointedly admitted at trial that ACF Georgia farmers 'should not' be irrigating during periods of severe drought." Fla. Post-Trial Br. at 66 (citing Reheis Direct, ¶ 51.) This is a

limited utility. The irrigation auctions conducted under the Act in 2000 and 2001 did not provide the intended streamflow benefit to the Flint River because of the disparate way in which acreage was removed from irrigation. Tr. 3003:2-11, 3056:8-3057:2 (Turner); Turner Direct, ¶ 93. And the March 1 triggering deadline has proven to be difficult to apply in practice: that time of year is historically a wet period, making it extremely difficult to predict climactic conditions for the remaining nine months of the year. Turner Direct, ¶ 86.

In light of those limitations, it was eminently reasonable for Georgia not to implement the FRDPA during the 2007-2009 drought. As then-EPD Director Couch explained, the 2007-2008 drought "primarily affected the northern half of the State, including metro-Atlanta"—not the southwestern portion of the State encompassing the Flint River basin. Turner Direct, ¶ 85. EPD thus implemented other, more-effective tools to address drought conditions. Director Couch declared a severe drought under the M&I drought-management rules, triggering a set of aggressive conservation measures aimed at significantly reducing water consumption in the northern portion of the state. Tr. 3142:23-3143:6 (Couch); Couch Direct, ¶¶ 40-42. The drought declaration involved a ***total ban on outdoor water use in 61 counties*** in north Georgia, including all of metropolitan Atlanta, for ***over a year***. Couch Direct, ¶ 42; JX-24 (9/28/07 GA DNR Press Release). As Georgia's M&I expert Peter Mayer testified, the total ban was a "highly effective" drought response that resulted in a "tremendous[]" decline in consumptive use. Tr. 3523:10-18, 3534:16-23 (Mayer). The total ban also came at significant cost to Georgia's economy, including the loss of $3.15 billion dollars in the horticulture industry and 35,000 jobs. Couch Direct, ¶ 43; Mayer Direct, ¶ 131; GX-209 (UGA 2008 Urban Agriculture Industries in GA).

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mischaracterization of the record. Director Reheis simply stated that compliance rates for a prohibition on irrigation are likely to be higher if farmers receive compensation for lost crop yields. Reheis Direct, ¶ 51. He never said farmers "should not" be irrigating during droughts. *Id*.

Georgia made a similarly reasonable decision during the 2011-2012 drought. The extreme lack of precipitation during the usually wet months of 2011 and early 2012 produced significantly depleted streamflow and aquifer levels in the Lower Flint Basin. Turner Direct, ¶ 92; *see also* Ga. Post-Trial Br. at Section V.D. As a result, many farmers were not even irrigating from surface water at the start of the growing season in 2012. Turner Direct, ¶ 92. The Upper Floridan Aquifer's interaction with and support of baseflow in the streams of the Lower Flint Basin was so diminished that any modest reduction in agricultural withdrawals was not going to improve baseflow. Turner Direct, ¶ 92. Rather than address these facts, Florida plucks a single quote from an EPD press release to support the notion that Director Turner falsely "declared" that invoking the FRDPA auction in 2012 would have a negligible impact on streamflow in "the entirety of the Flint Basin." Fla. Post-Trial Br. at 70 (citing JX-69). That is simply not true. The streamflow analysis referenced by Director Turner and throughout the press release was carefully limited to the Lower Flint basin and the Spring Creek watershed:

> Southwest Georgia has experienced historically low basin inflow within several areas of ***the lower Flint River basin*** for several months, and it's going to take a significant amount of rain to improve conditions. . . . This year's evaluation of ***streams in the lower Flint River basin*** shows that some are very likely to go dry during the summer months even without irrigation due to a lack of rainfall and already depleted groundwater levels. For example, in part of the ***Spring Creek watershed*** there is already little streamflow from which farmers may withdraw water and the groundwater level in some areas is expected to be so low that further withdrawals will not affect flow in the streams.

JX-69 (3/1/12 GA DNR Press Release) (internal quotations omitted and emphases added). It was the "consensus of [EPD] staff" that given these conditions, the extreme lack of precipitation, the severely depleted aquifer levels, and the irrigation auction deficiencies described above, a voluntary irrigation auction in 2012 would not meaningfully affect streamflow in the Lower Flint Basin. Tr. 3003:19-3004:2, 3006:19-3007:10, 2083:6-15 (Turner); Turner Direct, ¶ 93; JX-69, at GA00208715 (3/1/12 GA DNR Press Release). An irrigation auction in 2012 made little sense

because "there would be limited or no value in paying farmers to cease irrigation from nonexistent stream flow and groundwaters already too low to affect stream flows." FX-87 (Kennedy's 2012 Modifications).[26]

Although EPD did not invoke the FRDPA in 2012, it did take decisive action to restrict agricultural irrigation in the ACF Basin. EPD instituted a moratorium that "suspended the acceptance of [new] agricultural withdrawal permit applications from groundwater and surface water sources in [the ACF Basin], including the Floridan aquifer." Turner Direct, ¶ 96; Tr. 3058:6-11 (Turner); JX-73 (7/30/12 GA DNR Announcement). This "moratorium on new permits [is] still in place" today and protects existing resources because it has "essentially . . . capped acreage in the Basin." Tr. 3060:24-3061:7 (Turner); *see* Turner Direct, ¶ 97.

Georgia EPD also teamed up with the Georgia Environmental Finance Authority and a number of external consultants to study a series of potential options to enhance or protect streamflows in the Flint River Basin in drought that include (i) moving water users who withdraw from surface waters in the Flint River Basin or portions of the Floridan aquifer to deeper aquifers like the Clayton or Claiborne aquifers; (ii) supplementing streamflows or creating water reserves for dry periods using a technique called aquifer storage and recovery; or (iii) incentivizing agricultural water users to either voluntarily remove productive irrigated land from production. Turner Direct, ¶¶ 113-120; Cowie Direct, ¶ 59. These ongoing studies involve complex hydrological processes and a trial-and-error process to determine whether these sources

[26] Citing to a draft EPD press release, Florida argues that "[b]y early 2012, the massive levels of 2011 agricultural withdrawals combined with the ongoing drought so significantly reduced the levels of the Upper Floridan Aquifer that it ceased to feed the flow of the Flint River or Flint tributaries in certain portions of the Lower Flint River Basin." Fla. Post-Trial Br. at 70 (citing FX-87). But that document says the exact opposite: "EPD's evaluation of low conditions in some of the tributaries feeding the Flint River—***before irrigation***—indicates low stream flows and base flows. These streams may go dry because of a combination of ***extended lack of rainfall*** and already depleted aquifer levels, resulting in little or no contribution from the aquifer to stream base flow." FX-87, at 1 (Kennedy's 2012 Modifications) (emphases added).

can effectively, safely, and sustainably support increased demand. Cowie Direct, ¶ 62; Turner Direct, ¶ 112.

E. Florida Does Not Address Georgia's M&I Use

Noticeably absent from Florida's opening brief is any substantive discussion of Georgia's water consumption for M&I purposes. Florida has now abandoned nearly every aspect of its case against Georgia's M&I water use—except to say that Georgia should continue to implement the conservation measures Georgia already requires by law. Fla. Post-Trial Br. at 83. This is stunning. After spending literally decades complaining of harms allegedly caused by Georgia's M&I water use—and after convincing this Court to accept jurisdiction based, in part, on claims of harm resulting from Georgia's purportedly "ever increasing" M&I consumption—Florida now sits silent, making essentially no effort to substantiate its allegations.

But in an original action such as this where Florida has asked this Court to balance the equities, Florida cannot simply walk away from the fact that Georgia has taken extraordinary measures to conserve water for M&I purposes that have impacted the more than five million people that reside in ACF Georgia. Nor can Florida escape the fact that water utilities in the Georgia ACF "have spent billions of dollars in recent years to return water to the [ACF] system." Tr. 3530:5-11 (Mayer). Because of those efforts, M&I per capita water usage in Georgia has dropped dramatically since 2000, and total M&I consumptive water use has remained flat or declined even as ACF Georgia's population grew by more than one million people. *See* Ga. Post-Trial Brief at Section IV.B.1.

To be sure, Florida does devote a paragraph of its brief to discussing Georgia's M&I water use, but only in the context of the Water Contingency Planning Task Force ("Task Force"). Florida claims that "Katie Kirkpatrick admitted that several of the ['no regrets'] recommendations that the Task Force suggested Georgia undertake . . . still have not been

implemented today." Fla. Post-Trial Br. at 76. But that is wrong. The water systems in the District (which collectively reach 4.1 million people in the Metro Atlanta region) have implemented ***all*** of those no regrets recommendations. Tr. 3446:7-14 (Kirkpatrick) ("[Q:] And of the no regrets options, how many of the no regrets options have been implemented by the Metro Water District? [A:] ***100 percent***. [Q:] And, again, what's the population of the Metro Water District that's served by -- that relies on ACF waters for its water supply source? [A:] 4.1 million people.")(emphasis added).[27] Moreover, the Task Force did not recommend that Georgia adopt the aptly named ***contingency*** options. Rather, the Task Force concluded that those options—which required up-front capital investments of several billion dollars, were difficult to implement and would have taken (in some cases) decades to develop, and carried potentially significant environmental impacts that had not been studied—only made sense "in the event Lake Lanier was not available for [future] water supply" and thus only in the context of the significant supply shortfall created by the judicial ruling. Tr. 3398:16-21 (Kirkpatrick). Put differently, the contingency options were identified for the purpose of ***replacing access*** to water directly from storage in Lanier that stood to be lost, not to ***increase the supply*** of water available in the ACF system. Kirkpatrick Direct, ¶ 67.

F. Georgia Participated In The ACF Compact Negotiations In Good Faith

Finally, contrary to Florida's claims, Georgia is not to blame for the failure of the ACF Compact. Despite Florida's current attempts to argue that Georgia "refused to negotiate in good faith," Florida representatives at the time of the Compact repeatedly praised Georgia for its good faith efforts to reach an agreement on an allocation formula. *See, e.g.*, GX-1267 (January 15,

[27] The no regrets options include measures like enhanced efficiency programs that applied to residential and commercial customers ("including programs for replacing inefficient plumbing fixtures and washing machines, spray rinse valves, and cooling towers"); permanent outdoor water usage restrictions; multi-family sub-metering; water loss reduction programs; more aggressive conservation pricing; and water conservation education. Kirkpatrick Direct, ¶ 65.

2002 Florida press release stating that agreement-in-principle "***represents the good faith efforts*** of the three states to develop a fair solution") (emphasis added); GX-1282, at FL-ACF-02428711 (January 6, 2003 agreement signed by Florida stipulating that "the State of Alabama, Florida, and Georgia ***have been negotiating in good faith***") (emphasis added); GX-1268 (July 22, 2003 Florida press release quoting Florida Governor Jeb Bush: "I thank Governors Perdue and Riley for their ***good faith efforts*** to reach this milestone.") (emphasis added).[28] Similarly, Florida's complaint that Georgia refused to agree to "caps" or "limits" on its water consumption is directly contrary to what Florida's lead negotiator told Georgia (and the other parties to the Compact) in 2002: "nobody expected to place any limits on [Georgia's] water consumption." FX-199, at 2, 4 (Primary Statements of ACF River Basin Comm'n Meeting (2002)); Tr. 319:12-321:13 (Struhs).

Nor did Georgia force Florida to use data and estimates that were different from those developed during the Comprehensive Study. Fla Post-Trial Br. at 3, 75. During the Compact negotiations, Georgia proposed updated consumptive use numbers because Georgia believed those numbers to be "the best information available at the time." Reheis Direct, ¶ 67; Tr. 711:8-18 (Reheis) ("I wanted to put the best information on the table that we could."). Nothing required Florida to accept Georgia's updated data; Florida was free to (and did) reject Georgia's numbers, or propose its own alternative ones. As Director Reheis explained, "that was just part of negotiation. We . . . expected to get comments from Alabama and Florida; and we did. And we negotiated back and forth beginning in summer of '98 until late summer of '03 when the Compact dissolved." Tr. 711:20-712:9 (Reheis). Nor was there anything unusual about the parties changing positions or making new proposals as additional information became available during the course of negotiations. As Florida's chief negotiator, David Struhs, testified at trial:

[28] Florida's lead negotiator, David Struhs, confirmed the accuracy of these statements at trial. Tr. 313:11-315:5, 315:12-316:21, 317:17-218:14) (Struhs).

"[e]very party changed all their positions frequently over the course of six years." Tr. 331:17-20 (Struhs).

The truth is that "[t]he Compact dissolved because Florida walked away from it." Tr. 720:13-22 (Reheis). In July of 2003, following six years of negotiations, the Governors of Georgia, Alabama, and Florida finally reached an agreement in principle to develop and finalize an allocation formula. Tr. 721:13-24 (Reheis); GX-1268 (agreement in principle and accompanying press release). But one month later, on August 26, 2003, Georgia received a "surprise" from Florida: a draft allocation formula which contained many provisions that Georgia "had never seen or considered before." Tr. 721:13-723:13 (Reheis); Reheis Direct, ¶ 71. Though the Compact was set to expire five days later, on August 31, 2003, Florida told the parties this was a "take it or leave it document." Tr. 721:13-722:9 (Reheis).

Governor Riley of Alabama immediately sent Governor Bush of Florida a letter protesting that Florida's eleventh-hour proposal "discards much of [the] progress" the parties had made and "sets the negotiations back." GX-50, at 1. Governor Riley told Florida that its proposal "simply does not meet the relatively few requirements that we have consistently identified for this process," and urged Florida to "continue the good faith discussions from the document on which we have already agreed." *Id.* Alabama and Georgia even sent a signed Compact extension agreement to Governor Bush in a good-faith effort to keep negotiations alive. Tr. 722:10-723:13 (Reheis). But the night the Compact was set to expire, Georgia received word that Governor Bush refused to sign the extension. Tr. 722:10-723:13 (Reheis). As a result of Florida's refusal to negotiate, the Compact expired that evening. Tr. 722:10-723:13 (Reheis).

V. FLORIDA FAILED TO PROVE THAT ITS PROPOSED REMEDIES WOULD REDRESS ITS ALLEGED HARMS OR WOULD GENERATE BENEFITS SUBSTANTIALLY IN EXCESS OF COSTS

Even if Florida had met its burden of proof on all of the elements discussed above, Florida's request for an equitable apportionment would fail for yet another reason: Florida has not proven that its requested remedy would either meaningfully redress its alleged injuries or that the benefits would "substantially outweigh" the harm it would inflict on Georgia. *Colorado I*, 459 U.S. at 190. Georgia is hard-pressed to know what remedy Florida is even asking for in this case, given that Florida's requested "remedy" has changed with every new filing. In its complaint, Florida requested an order "capping Georgia's overall depletive water uses at the level then existing on January 3, 1992." Compl., at 21 (Prayer for Relief). Then Dr. Sunding issued a series of expert reports identifying various remedy "scenarios" that at first were designed to generate 1,000 cfs in streamflow during peak summer months, which later doubled to suggest savings of up to 2,000 cfs. FX-784, at 9 (1,000 cfs scenario from initial report); FX-801, at 2 (2,000 cfs scenario from second report); Tr. 2762:6-2765:4 (Sunding). In its pre-trial brief, Florida then switched to asking for (1) a reduction on Georgia's "annual average consumptive use and streamflow depletions" in normal years (for the first time in this case); and (2) a more stringent cap in drought years "so that depletions . . . are reduced in further key months, including by 1,500 to over 2,000 cfs in peak drought year summer months." Fla. Pre-Trial Br. at 37. Now Florida requests, for the first time, an order requiring Georgia to (1) "cap its consumption at ***existing levels***" in normal years; and (2) "reduce its consumption by ***up to 2,000 cfs*** in peak summer months of a drought year like 2011." Fla. Post-Trial Br. at 78 (emphases added).[29]

[29] As Georgia explained in its opening brief, Florida failed to put forth any evidence that would even begin to justify a non-drought year remedy at trial. *See* Ga. Post-Trial Br. at 80-81. Nothing in Florida's opening brief alters

Florida's ever-changing remedies, and Florida's failure to justify them (or even explain why they changed), are alone sufficient to deny Florida relief. In deciding whether to equitably apportion interstate waters, the Court must "weigh the harms and benefits to competing states." *Colorado I*, 459 U.S. at 186. But Florida, by repeatedly changing its requested relief, has made it clear that it has no idea what remedy (if any) will actually redress its alleged injuries and thus will actually result in measurable "benefits" to the ecology of the Apalachicola Region. Further, since Florida has changed its requested remedy again after trial, there is no evidence in the record to support any claim that this new remedy would redress any alleged injury. Instead of articulating a remedy that would redress its alleged harms, Florida asks this Court to pick some—indeed, any—amount of streamflow "up to 2,000 cfs," Fla. Pre-Trial Br. at 78, and order Georgia to deliver that amount through Georgia's choice of "any number of combinations of . . . measures to reduce its consumption." *Id.* at 10; *see also id.* at 81-84 (listing various measures).

Florida is asking this Court to order Georgia to deliver more water to Florida without specifying how much water, when it is needed, for what duration, or whether any amount of water would actually alleviate Florida's claimed harms. Florida has not and cannot point to a single equitable apportionment case endorsing such a remedy. In fact, the Supreme Court rejected precisely this sort of bare request for "more water" over 80 years ago. *See Washington*, 297 U.S. at 523 (rejecting proposed remedy that would "materially injure Oregon users without a compensating benefit to Washington users" and would serve "no other or better purpose than to vindicate a barren right"). Even if the Court were to take Florida's newly requested remedy at face value, Florida has failed to meet its burden of demonstrating that such a remedy would even

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this conclusion. In fact, by requesting a cap at "existing levels" in non-drought years, Florida implicitly concedes that it has not suffered and is not suffering any injury in those years. *See* Fla. Pre-Trial Br. at 37. Florida's request for a consumption cap in non-drought years should be denied on that basis alone.

redress Florida's alleged harms or that the benefits of such a remedy would "***substantially*** outweigh" the heavy costs that remedy would impose on Georgia. *Colorado I*, 459 U.S. at 190 (emphasis added).

A. Florida Confirms That It Has No Evidence That Its Proposed Remedy Would Alleviate Its Alleged Harms

Florid has failed entirely to present evidence showing the extent to which its proposed remedy would actually redress its alleged ecological harms. Florida's opening brief devotes a total of ***one page*** to discussing whether additional flows would provide measurable "benefits." Fla. Post-Trial Br. at 79. That single page contains no actual evidence that Florida's proposed remedy would have any meaningful benefit to the ecology of the Apalachicola River or Bay. Instead, Florida cites to general assertions from written direct testimony to the effect that "more water is better than less water." *See* Fla. Post-Trial Br. at 79 (citing Allan Direct, ¶ 65 (additional flows will "allow the ecosystem to stabilize"), White Direct, ¶ 164 ("In general, if Georgia withdraws less water, particularly during drought periods, the Apalachicola Bay oyster population will benefit"), Greenblatt Direct, ¶ 42 ("Future reductions [in consumptive use] will lead to decreases in salinity -- and with those decreases, improvement to and potential recovery of the Bay ecosystem")).

The reason Florida's opening brief does not cite evidence on this remedial issue is because there is none. Florida's own expert modeling shows that even drastic reductions in Georgia's water use would have little, if any, impact on the ecology of the Bay, River, or floodplain. For example, Florida's salinity modeler, Dr. Marcia Greenblatt, modeled the effect of Florida's proposed cuts to Georgia's water use on salinity levels in the Bay. She found that a "50% Cut Remedy" scenario—which eliminated 50% of irrigation and evaporation from small impoundments in Georgia, and all interbasin transfers—would result in changes in salinity of

less than 1 part per thousand (ppt) at almost all locations in the Bay in 2012, including the major oyster-producing bars. Greenblatt Direct, Attach. 2 at 37; Tr. 1775:7-1776:7, 1778:21-1779:2 (Greenblatt).

Florida's oyster expert, Dr. J. Wilson White, modeled the same "50% Cut Remedy" and found that implementing such a drastic remedy would increase oyster biomass at the Cat Point oyster bar by ***at most 1.2%*** from 2007 through 2013. Tr. 1724:24-1725:4 (White). Dr. Allan reached similar conclusions for the Apalachicola River. He found that the "50% Cut Remedy" would either result in minor changes to the ecosystem in the Apalachicola River that were either not "biologically significant," Tr. 409:9-410:3 (Allan), or would actually result in ***more modeled harm*** than if there had been no remedy at all. Tr. 407:23-408:8 (Allan).[30]

Florida has never presented ***any*** evidence showing that a 2,000 cfs streamflow increase in dry times would result in meaningful ecological benefits to the Apalachicola River or Bay. Nor has Florida presented any evidence of the specific benefits that would result from its new request for a cap on Georgia's consumption at existing levels. Since Florida has no evidence that its 2,000 cfs remedy would result in any meaningful benefit, however, it follows that a cap at existing levels would also be meaningless. In such circumstances, Florida's request for an equitable apportionment must be denied. *See, e.g.*, *Colorado v. Kansas*, 320 U.S. at 385-386 (denying relief, in part, because "[b]efore the developments in Colorado consequent upon

[30] Florida's ecological experts report very small changes from imposing a 50% Cut Remedy, but even those results are exaggerated. To analyze Florida's proposed remedy, Florida's ecological experts relied on modeled flows generated by Dr. Hornberger's flawed Lake Seminole Model. Greenblatt Direct, ¶ 29; Tr. 1763:23-1767:1 (Greenblatt) (explaining that her analysis used Dr. Hornberger's 50% reduction scenario); Tr. 1859:8-1861:1 (Glibert) (same); White Direct, ¶ 152; Tr. 1724:1-1725:4 (White) (same); Allan Direct, ¶ 73; Tr. 406:16-407:22 (same). That model erroneously forces any increased flows on the Flint River to always and immediately pass through to Florida. Ga. Post-Trial Br. at 9-10; Tr. 1947:3-21 (Hornberger). This does not faithfully reflect actual operations—in reality, any water savings during drought operations or when basin inflow is below 5,000 cfs ***will not immediately pass through to Florida*** because they will be offset by reduced releases from upstream reservoirs. U.S. Post-Trial Br. at 17. Thus, the actual impact on the ecology that could be expected from the 50% Cut Remedy is ***even less*** than the already small impact reported by Florida's ecological experts.

irrigation were to be destroyed or materially affected, Kansas must show not merely some technical right but one which carried corresponding benefits."); *Washington*, 297 U.S. at 523 (denying Washington's requested relief, in part, because "[t]o limit the long established use in Oregon would materially injure Oregon users without a compensating benefit to Washington users").

B. Florida Vastly Understates The Costs Of Its Proposed Remedy, Which Would Be Devastating To Georgia

Notwithstanding Florida's failure to articulate any specific benefits from its remedy, Florida recites a laundry list of "conservation measures," and claims that "Georgia can implement any number of combinations" of these measures to achieve "a reduction of 2,000 cfs peak streamflow" in the dry months of drought years. Fla. Post-Trial Br. at 10, 84. But, as Georgia showed in its opening brief, generating an additional 2,000 cfs in streamflow to Florida during the dry months of drought years is a factual impossibility. *See* Ga. Post-Trial Br. at 81-84. It "cannot be physically accomplished because that number is more than [Georgia's] total consumptive use." Tr. 3310:13-19 (Zeng). Indeed, Florida ignores that its ***own expert hydrologists*** previously calculated that the cuts contemplated by Dr. Sunding's 2,000 cfs scenario would exceed Georgia's total consumptive use. *See* Ga. Post-Trial Br. at 81-82. Though Florida's experts changed their opinions to allow Dr. Sunding to claim a larger benefit to streamflow, their new analysis still shows that Dr. Sunding's 2,000 cfs scenario would require extraordinary reductions in Georgia's water use—including eliminating 73 percent of all irrigation water use and 60 percent of Georgia's total M&I consumptive use. *See* Ga. Post-Trial Br. at 82-83.

Unsurprisingly, the "conservation measures" Florida proposes to implement these reductions are extraordinarily costly. For example, Florida proposes dramatically reducing

irrigation on row crops in drought years. *See* Fla. Post-Trial Br. at 82; Sunding Direct, ¶¶ 80-85. Georgia's expert economist, Dr. Stavins, concluded that this measure would cost Georgia ***$335 million*** in lost crop yields every single year the reductions are implemented. Stavins Direct, ¶¶ 65-66; Tr. 4513:2-4513:1 (Stavins). Permanently eliminating irrigation on 20% of irrigated acreage, as Florida suggests, would also be extremely costly. Fla. Post-Trial Br. at 81-82; Sunding Direct, ¶¶ 59-66. Using Dr. Sunding's own model, the one-time cost (in lost-crop yields) from such an irrigation ban would total up to ***$809 million***. Stavins Direct, ¶ 110.

The costs of the M&I measures proposed by Florida are just as staggering. *See* Fla. Post-Trial Br. at 83-84; Sunding Direct, ¶¶ 42-45. Dr. Stavins calculated the cost of Florida's proposed "leak abatement" measure at $34 million annually; the 50% cut to outdoor water use proposed by Florida would cost Georgia $445 million each time it is implemented; and eliminating inter-basin transfers, as Florida proposes, would result in "***hundreds of millions if not billions*** of dollars" of costs to Georgia, even if it were technically feasible. Stavins Direct, ¶¶ 82, 85, 137; Tr. 4513:2-4514:1 (Stavins); Tr. 3545:10-15 (Mayer) (emphasis added). Moreover, capping Georgia's M&I usage at "existing levels," would cost Georgia ***$350 million*** per year, with a present value of ***$11.7 billion***. Stavins Direct, ¶ 100.

Florida points to cost estimates from its own economic expert, Dr. Sunding, Fla. Pre-Trial Br. at 84, but even he conceded that his remedy scenarios would cost Georgia hundreds of millions of dollars, *see* Tr. 2787:10-13, 2786:12-2787:9 (Sunding). In his expert report, Dr. Sunding estimated that Georgia could achieve 1,000 cfs in streamflow savings at a cost of approximately $190 million. Tr. 2787:10-13 (Sunding) ("Q. [Y]ou do agree that as you initially analyzed it, it would have cost $190 million in a single year to get 1,000 cfs. Right? A. Yes."). Dr. Sunding now claims that Georgia could deliver twice the streamflow savings at half the cost:

2,000 cfs in streamflow savings for a cost of less than $105 million. Sunding Direct, at p. 44, Table 4; Tr. 2786:12-2787:9 (Sunding). At trial, Dr. Sunding admitted the reason his cost estimates dropped so dramatically: he simply ***removed*** millions of dollars in costs from the total estimates he presented to the Court. For example, Dr. Sunding admitted that he estimated that a 20% cut in outdoor water use would cost Georgia $66 million, and a 30% cut would cost $120 million. Tr. 2788:11-16 ("[Y]ou would estimate that the cost would be $66 million for a 20 percent reduction in municipal outdoor water use, and 120 million to get it up to a 30 percent reduction. Correct? A. Yes.") (Sunding); FX-784, at 76, Table 13 (Sunding Report). Yet when presenting the costs of his 2,000 cfs scenario, Dr. Sunding estimated that a 50% cut in outdoor water use would cost Georgia nothing. Sunding Direct, at p. 44, Table 4; Tr. 2788:21-2789:4 (Sunding). Likewise, though Dr. Sunding estimated that municipal leak abatement would cost Georgia "approximately $16 million per year," Sunding Direct, ¶ 44, he assumed zero costs for the same leak abatement measure in his 2,000 cfs scenario, *id.* at p. 44, Table 4.

Florida seeks to minimize the costs of these measures by claiming that its proposed remedy would affect "a very, very small portion (a fraction of 1%) of the Georgia ACF economy." Fla. Post-Trial Br. at 86. But Dr. Sunding provides "no analysis of the long-term economic consequences of a permanent cap on water consumption in metropolitan Atlanta." Mayer Direct, ¶ 92. As noted by Ms. Kirkpatrick, "Any cap on water consumption in metro Atlanta—whether at the extreme 1992 levels Florida describes in its complaint or at higher amounts—would threaten the existing population and future population growth in metro Atlanta and the region's ability to grow economically . . . a cap on Georgia's consumption would present grave challenges for future business and economic growth in the metro Atlanta area and could have a ripple effect on the economies of the southeastern United States that are connected by and

rely on commerce with Atlanta." Kirkpatrick Direct, ¶ 72; Tr. 3426:3 (Kirkpatrick) (testifying that "an artificial cap" on consumptive use in Atlanta and Georgia "would be devastating.").

Further, Florida ignores that the agricultural sector accounts for ***5 percent*** of the total economic activity in the Lower Flint River Basin, an amount as large as the wholesale or retail sectors, and nearly twice the size of the construction industry. Stavins Direct, ¶ 19. Florida also ignores that the cuts Dr. Sunding proposes would flow through the region's and state's economy and cause long-term, structural damage. Indeed, Dr. Stavins calculated that Florida's proposed cuts to row crop irrigation alone would reduce statewide economic activity by ***$322 million*** and eliminate over ***4,000 jobs***. Stavins Direct, ¶ 90. Again, Dr. Sunding calculated similar costs in his expert report, and then removed those costs from his direct testimony. Tr. 2798:10-13 (Sunding) (admitting that indirect economic costs "weren't included in my direct testimony. They were in my expert report."). Specifically, in his expert report, Dr. Sunding estimated that a 50% reduction in agricultural water use would result in $69 million in losses to Georgia's statewide economic output. FX-784, at 54-55 (Sunding Report); Tr. 2801:8-11 (Sunding). He also estimated that such a cut would eliminate nearly 2,000 jobs in Georgia—an amount that exceeds the ***total*** number of licensed oyster harvesters in Apalachicola Bay. Tr. 2802:9-15 (Sunding); JX-77 (Oyster Assessment Report listing 1,687 harvesting licenses in 2012).

Florida is required to demonstrate "by clear and convincing evidence" that the benefits of its proposed remedy "substantially outweigh" these drastic costs. *Colorado I*, 459 U.S. at 187. But Florida has never even tried to carry that burden. None of Florida's witnesses attempted to compare the costs of its proposed remedy to any benefits to Florida, nor did Florida make such a comparison in any of its briefing. Dr. Stavins, the former Chair of EPA's Environmental Economics Advisory Committee, testified that this was a significant error: "when evaluating a

proposed action or policy, a basic and necessary economic test is to compare the overall benefits of the policy to its overall costs." Stavins Direct, ¶ 38; *see also* Tr. 4510:4-4511:18 (describing extensive academic and governmental literature supporting the use of benefit-cost analyses in evaluating environmental policies or proposals) (Stavins). He was "very surprised" that none of Florida's experts did so because "[t]he first thing I thought I would see from Florida would be a comparison of benefits and costs." Tr. 4512:15-19 (Stavins).

Dr. Stavins did perform such a cost-benefit analysis, based on his review of the analyses submitted by both Florida's and Georgia's experts. *See* Stavins Direct, ¶¶ 131, 135-139. He found "the inescapable conclusion [is] that it's not even close . . . the annual cost of [Florida's] proposed remedy [is] over $800 million . . . and [the] benefits that, I think it's fair to say are *de minimis*." Tr. 4515:21-4516:9 (Stavins). Florida has no evidence to contradict this determination, and, as set forth above, its own ecological and economic analyses corroborate it.

CONCLUSION

For the reasons discussed above, Georgia respectfully submits that this action should be dismissed for failure to join a necessary party under Rules 12(b)(7) and 19, or, in the alternative, that judgment be entered in Georgia's favor due to Florida's failure to meet its burden of proof for the Court to order an equitable apportionment.

Respectfully submitted,

/s/ Craig S. Primis

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

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