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October 26, 2016

By E-mail

The Honorable Ralph I. Lancaster Jr.
Special Master
PIERCE ATWOOD LLP
Merrill's Wharf
254 Commercial Street
Portland, ME 04101

Re: *Florida v. Georgia*, No. 142, Original

Dear Special Master Lancaster:

Concurrently with this letter, Georgia is filing its written direct testimony in this matter. Below, I briefly identify each of Georgia's witnesses and summarize the testimony that each witness presents. Georgia recommends that the Special Master review the testimony in the order identified in this letter.

Florida has stated that it will call two of Georgia's witnesses as adverse witnesses during its case-in-chief. I suggest that Your Honor should therefore begin by reviewing the testimony of these two witnesses, since they will testify before Georgia begins its case. Florida has stated that it will call Director Reheis during the first week of trial and that it will call Dr. Cowie during the second or third week of trial.

- Harold Reheis, P.E.: Director Reheis served as Director of the Georgia Environmental Protection Division ("EPD") from 1992 to 2003. His testimony describes his activities at EPD, the water resource challenges that arose during his tenure, and the various steps the State took to address those challenges. In particular, Director Reheis explains the steps he initiated to study and manage agricultural water use in the Flint River Basin. He will also testify about Georgia's interactions with Florida, Alabama and the Army Corps during the period of the Comprehensive Study and ACF Compact.
- Gail Cowie, Ph.D.: Dr. Cowie is the Assistant Branch Chief of the Watershed Protection Branch at Georgia EPD. She has worked for EPD since 2005. Her

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testimony explains various initiatives taken by the State to manage water resources, including the 2006 Flint River Basin Regional Water Development and Conservation Plan, the State Water Plan, and the 2015 amendments to the Flint River Drought Protection Act. Dr. Cowie also describes additional potential management tools EPD has continued to study to further strengthen and improve Georgia's management of water use and stream flows in the Flint River Basin.

Following Florida's case in chief, Georgia will present testimony from the following witnesses. Their testimony can generally be categorized as follows:

I. Georgia's Efforts to Regulate Water Use

- Judson Turner: Director Turner served as Director of Georgia EPD from 2012 to 2016. He testifies to Georgia's regulation of municipal, industrial, and agricultural water use in the ACF Basin, as well as the various water conservation and efficiency policies Georgia has implemented. He also testifies about Georgia's water supply requests to the Army Corps of Engineers, and Georgia's response to the severe drought that struck the region in 2011 to 2012.
- Wei Zeng, Ph.D.: Dr. Zeng is the Program Manager of the Hydrology Unit at Georgia EPD and chief hydrologist for the State of Georgia. Dr. Zeng testifies to Georgia's collection and analysis of data on total consumptive use in Georgia's ACF Basin, the Corps' reservoir operations in the ACF Basin, and EPD's prior analysis of natural hydrologic changes in the ACF Basin.

II. Municipal & Industrial Water Use and Regulation in ACF Georgia

- Anna Kathryn Kirkpatrick, P.E.: Ms. Kirkpatrick is the Vice Chair of the Metropolitan North Georgia Water Planning District, and the Chief Policy Officer for the Metro Atlanta Chamber of Commerce. The focus of her testimony concerns Georgia's water planning, conservation, and efficiency policies, particularly in the Metro Water District which serves the metropolitan Atlanta region. Ms. Kirkpatrick's testimony discusses the District's aggressive and award-winning conservation practices and other measures that have driven down demand and consumptive use in the municipal and industrial sector.
- Peter Mayer, P.E.: Mr. Mayer is a professional civil engineer and municipal and industrial water use expert. Mr. Mayer testifies that total municipal and industrial water use in ACF Georgia has declined overall since 1994 and by more than 50% since 2000; that per capita water use in the Metro Water District declined from

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155 gpcd in 2000 to 98 gpcd in 2013; that Georgia has adopted comprehensive and forward-thinking water conservation and efficiency measures; and that Florida's experts have made critical errors in their analyses of Georgia's municipal and industrial water use.

III. Agricultural Water Use and Regulation in ACF Georgia

- Carol Couch, Ph.D.: Dr. Couch served as Director of Georgia EPD from 2003 to 2009. Dr. Couch describes a number of conservation measures implemented by EPD during her tenure, including the promulgation of the 2006 Flint River Conservation Plan and other efforts to regulate and conserve water use in Georgia.
- Suat Irmak, Ph.D.: Dr. Irmak is a professor at the University of Nebraska and an expert in evapotranspiration, irrigation, and agricultural water management. He explains how the climate and soil conditions in Georgia affect agricultural water use and make irrigation necessary as a practical matter to ensure reliable yields. He also testifies that Georgia has reasonable agricultural water management policies and programs in place and that its methodology for calculating total agricultural withdrawals for water planning purposes is reliable. Dr. Irmak testifies that farmers in ACF Georgia, in the aggregate, use water efficiently.
- Mark Masters: Mr. Masters is the Director of the Georgia Water Planning & Policy Center, which contracts with the State to support mapping and water planning efforts in Georgia and conducts educational outreach to farmers in the ACF Basin. He testifies regarding Georgia's substantial investments from 2006-2016 in gathering improved data on irrigated acreage in the ACF Basin. He also testifies regarding improvements that have been made to irrigation efficiency in the Basin and other conservation initiatives undertaken by the State and by the Water Policy Center.

IV. Hydrological Experts

- Sorab Panday, Ph.D.: Dr. Panday is an expert in hydrogeology, groundwater modeling, and the interaction between groundwater and surface water. Dr. Panday relies on independent modeling simulations using a model designed by the United States Geological Survey to analyze the impact of groundwater pumping on stream flow. He finds that Georgia's use of groundwater results in minimal impacts to stream flows in the ACF Basin. Dr. Panday describes how groundwater pumping has a delayed impact to stream flow, so much of the impact from groundwater use occurs during the wet winter months. Dr. Panday also explains why groundwater pumping

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has not impacted long-term groundwater levels. Additionally, he critiques Florida's testimony related to groundwater and shows why that analysis is flawed.

- Philip Bedient, Ph.D., P.E.: Dr. Bedient is a professor at Rice University and has over 40 years of experience in hydrology and hydrologic modeling, as well as experience working on federal and non-federal reservoir projects. He explains that the Army Corps is necessary to guarantee any particular flow regime at the Georgia-Florida state line. He discusses how Georgia's total consumptive use has not had a significant impact on state-line flows and how Florida's proposed consumption caps on Georgia would not materially increase state-line flows, especially under low-flow conditions.

V. **Lack of Substantial Injury to the Apalachicola Region**

- William H. McAnally, Ph.D.: Dr. McAnally is a water resource engineer with specialized expertise in modeling estuaries. Dr. McAnally describes the many factors that impact salinity in the Apalachicola Bay and will quantify the small impact that Georgia's consumptive use has on salinity in the Bay. Dr. McAnally also describes how sea level rise has already impacted salinity in the Bay and how it is likely to impact Apalachicola Bay in the future.
- Robin Cantor, Ph.D.: Dr. Cantor is an experienced applied economist with specific expertise in environmental economics and the application of surveys. Dr. Cantor shows that neither Dr. Scyphers nor Dr. Sunding have offered reliable survey evidence to support any of Florida's claims concerning the economic and non-economic impacts of upstream water use by Georgia.
- Charles A. Menzie, Ph.D.: Dr. Menzie is an expert in environmental causal analysis and risk assessment, with more than 30 years of experience with the ecology of riverine and coastal ecosystems. Dr. Menzie shows that the Apalachicola Bay and River Floodplain is an ecosystem that has historically been sustained, and in fact has thrived, through multiple periods of natural variability, including periods of drought, changes in flow, and extreme conditions. With respect to Apalachicola Bay, Dr. Menzie's analysis shows that Georgia's incremental consumption of freshwater has had a minor incremental influence on salinity in the Bay, and that Georgia's water use has not caused harm to oysters, invertebrates, fish, and other estuarine organisms. With respect to the Apalachicola River, Dr. Menzie's analysis shows that water consumption by Georgia has had only a minor effect on freshwater flows and thus a minor influence on inundation patterns. Consequently, water consumption by Georgia has, at most, a minor incremental influence on floodplain habitats.

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- Romuald N. Lipcius, Ph.D.: Dr. Lipcius is a professor at the Virginia Institute of Marine Science, College of William & Mary. For more than 35 years, Dr. Lipcius has studied the biology of the eastern oyster and other marine species, as well as marine fisheries and their management. Dr. Lipcius testifies that the 2012-2013 oyster fishery collapse in the Apalachicola Bay was not caused by low river flows from Georgia, but from unsustainable levels of harvesting and lack of oyster habitat restoration. He also explains how there has been no generalized decrease in the Bay's ecosystem productivity.

VI. Economic and Cost/Benefit Analyses

- Robert Stavins, Ph.D.: Dr. Stavins is a Ph.D economist and a professor of business and government at Harvard University and the Director of the Harvard Environmental Economics Program. He formerly served as the Chairman of the U.S. EPA's Environmental Economics Advisory Committee. Dr. Stavins testifies about how ACF Georgia uses water to generate substantial economic activity, how ACF Georgia's water use is disproportionately small relative to the size of its land area, population, and economy, and how Dr. Sunding's proposed restrictions on Georgia's water use would generate costs far in excess of any benefits that would be derived from them.

Respectfully submitted,

/s/ Craig S. Primis, P.C.

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cc: Counsel on Service List