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April 17, 2019

Dr. Ann Hodgson
U.S. Army Corps of Engineers Jacksonville District
P.O. Box 4970
Jacksonville, FL 32232-0019

Dear Dr. Hodgson,

Broward County is pleased to provide agency review of the United States Army Corps of Engineers (USACE) Lake Okeechobee System Operating Manual (LOSOM) scoping process. We thank USACE staff for hosting a LOSOM public meeting in Fort Lauderdale on February 26, 2019 and for the opportunity to provide additional comment as USACE commences its anticipated two-year review process.

Broward County's review is organized according to priorities identified during internal preparatory meetings between the Environmental Planning and Community Resilience Division and the Water and Wastewater Services Division. Our key recommendations are summarized below, followed by more detailed comments.

Key Recommendations for LOSOM:

- The review process needs to fully weigh Lake Okeechobee's (Lake O's) importance to the regional system, including the Water Conservations Areas.
- Performance measures should be adopted to ensure consistency with the Comprehensive Everglades Restoration Plan (CERP), including the Central Everglades Planning Project (CEPP).
- Sustaining safe and reliable public water supplies should be among the USACE's highest priorities, with appropriate integration of environmental needs.
- The review process needs to fully weigh regional aquifer recharge to maintain water suppliers' "base condition water use" to meet critical public water supply demands.
- Performance measures need to incorporate the "1-in-10" level of drought protection for public water supplies.
- Lake O's base-flow sub-band operational levels should not be lowered to a level that would generate higher risk for water supply during critical dry season periods.
- Recovery of lost storage should be explored in the review process, reflective of increased storage capacity under higher water levels allowed by the improved dike, and sensitive to the ecological conditions of the lake under potentially higher water levels.

- Modeling should be consistent with other regional modeling efforts, and the integration of scenario-based, future conditions hydrologic data, employing robust downscaling techniques and methodologies for representation of variable future conditions.
- The study should provide operational flexibility to cope with a higher frequency of intense or extreme events and flexibility in operations to respond to sea level rise impacts, including saltwater intrusion.

Water Conservations Areas and Regional System Connectivity

Nearly two-thirds of Broward County is characterized by its Water Conservation Areas (WCA). These important regional features provide significant aquifer recharge benefits to eastern Broward County via the regional Central and South Florida Flood Control Project (C&SF) and groundwater recharge systems. In addition, the WCAs provide important Everglades habitat and connectivity from the Lake Okeechobee watershed south to Everglades National Park. The WCAs are dependent on consistent recharge from both local rainfall events and flows from the northern regional system to sustain a healthy Everglades ecology and urban water supply.

As the liquid heart of South Florida's watershed, Lake Okeechobee is critical to regional hydrological and ecological connectivity with the WCAs, and the LOSOM review process needs to fully weigh Lake O's importance to the WCAs. LOSOM performance measures should be adopted to ensure consistency with the Comprehensive Everglades Restoration Plan (CERP), including the Central Everglades Planning Project (CEPP).

CEPP, as stated by the USACE, "will set the foundation for restoring the central portion of the Everglades ecosystem and sending additional water south" (USACE January 2019). CEPP is expected to send 210,000 acre-feet water south from Lake O. Optimized regional storage, including within Lake O, will be necessary to reach this goal.

Broward County's Urban Water Supply

Broward County is the nation's 18th largest county. Within our borders, 26 public water suppliers provide safe and reliable drinking water to nearly two million residents and over 10 million visitors a year. The USACE LOSOM Fact Sheet (USACE February 2019) lists water supply as an additional "authorized project purpose." However, sustaining safe and reliable drinking water is a basic societal need, thus public water supply should be among the USACE LOSOM's highest priorities, with appropriate integration of environmental needs.

Local public water supply utilities are intricately linked to the regional C&SF system. Preservation of regional aquifer recharge is needed to maintain "base condition water use" as referenced in the SFWMD's 2007 Regional Water Availability Rule. This rule restricts water supply withdrawals from the Biscayne Aquifer to "base condition water use," determined by the maximum withdrawal quantity during any five years preceding April 2006. The rule's intent was to limit increasing dependence on the Everglades system and protect the aquifer, while maintaining the urban core's water supplies. The base condition water use is the foundation for water supply planning throughout the SFWMD's service area, it is thus vital that the LOSOM review process fully weigh regional aquifer

recharge to maintain water suppliers' "base condition water use" to meet critical public water supply demands. Within CERP and the USACE's 2000 Water Supply and Environment (WSE) Regulation Schedule, public water suppliers are provided a "1-in-10" level of drought protection. In addition, Florida law directs the Water Management District's water supply plans to use the conditions of the 1-in-10-year drought event as their level of certainty planning goal (Section 373.709, Florida Statutes). LOSOM process needs to also incorporate the "1-in-10" level of drought protection for public water suppliers in its performance measures setting and decision-making, vital to ensuring consistency across water resource planning and water supply regulations.

Lost Storage from 2000 USACE Water Supply and Environment Schedule

The USACE's 2008 Lake Okeechobee Regulation Schedule (LORS 2008) objective is to keep Lake O levels between 12.5 and 15.5 feet, due to the Herbert Hoover Dike rehabilitation (Havens 2018). LORS 2008 is maintained at 1.25 feet lower than the WSE Regulation Schedule, which equates to an average storage capacity loss of 500,000 acre-feet (Havens 2018). According to the author, this is "nearly a third of the missing water" needed for CERP's restoration objectives.

The current USACE LOSOM web site (https://www.saj.usace.army.mil/LOSOM/) states "The purpose of this effort is to reevaluate and define operations for the Lake Okeechobee regulation schedule that take into account additional infrastructure that will soon be operational." "Additional infrastructure" includes a completed Herbert Hoover Dike rehabilitation and CERP. With this acknowledgement, recovery of lost storage should be explored in the LOSOM review process, reflective of increased storage capacity under higher water levels allowed by the improved dike, and also sensitive to the ecological conditions of the lake under potentially higher water levels. The additional storage capacity could also accommodate a reduction in water deliveries to the east and west estuaries, as appropriate.

Of particular concern is the preservation of the existing base-flow sub-band operational levels as part of the LOSOM. This is vital to protecting water supplies and reducing the risk of water shortage during critical dry season periods, a condition that is predicted to increase in frequency and severity with changing climate conditions. Sustainable water resources management in South Florida depends on minimizing drought risks through the Lake O operation schedule by targeting higher minimum Lake O water levels, protection of both natural systems and public water supplies.

Broward County, through its SFWMD diversion and impoundment water use permit, manages secondary canal levels to recharge the aquifer supporting North County water supply wellfields and natural resource areas. This practice also assists coastal saltwater intrusion abatement. Broward County is authorized to perform this management strategy only when the C+SF's Hillsboro Canal is at a sustainable stage. Extreme drought conditions, accentuated by the operation of lower Lake O levels, could cause Broward County to cease beneficial Hillsboro Canal withdrawals, resulting in lost beneficial aquifer recharge and saltwater intrusion protection.

Model Selection and Applicability

Broward County encourages the LOSOM review process to achieve consistency with the concurrent regional planning and modeling projects and multiple operational objectives. The Southeast Florida Regional Climate Compact (Compact) Regional Climate Action Plan 2.0 reinforces, in its recommendation WS-12, the need to "coordinate across regional, state, and federal agencies to develop and apply appropriate hydrologic and hydraulic models to further evaluate the efficacy of existing water management systems and flood control and drainage infrastructure under variable climate conditions."

Although the Lake O schedule is determined according to current rainfall and streamflow conditions, there are several ongoing regional efforts that are taking into account future climate change impacts. Broward County has been assessing future conditions in its saltwater intrusion and inundation modeling efforts, utilizing the Compact's uniform sea level rise projections and accounting for other climate impacts.

Harmonized modeling standards across the region support more integrated assessments and more robust and advanced results, giving the general public better confidence. To minimize conflicts and promote better understanding, hydrologic and hydraulic assumptions, as part of regional and local modeling efforts, need to be established based on uniform criteria and validated by the multiple stakeholders, as exemplified by the Compact's uniform sea level rise projection process. Broward County, among key regional stakeholders, seeks access to the project data, assumptions, and defined criteria as part of the LOSOM process, and incorporation of additional CERP/CEPP projects operational considerations to better inform current modeling projects.

Therefore, the LOSOM modeling should be consistent with other regional modeling efforts including SFWMD's Flood Protection Level of Service Program; Broward County Future Conditions Modeling; Broward County Variable Density Model; U.S. Geological Survey inundation modeling efforts and others, and the integration of scenario-based, future conditions hydrologic data, employing robust downscaling techniques and methodologies for representation of variable future conditions (e.g., Florida International University Sea Level Rise data center, U.S. Department of Energy-funded Hyperion Project, and U.S. Geological Survey /University of Florida-supported regional hydrologic models).

Climate Change and Sea Level Rise

Regarding climate change impacts and sea level rise more specifically, there is a need to increase the reliable availability of acceptable quantity and quality of water for human and environmental needs, Broward County and communities across the region are expected to rely more heavily on regional water deliveries under conditions of variable rainfall and drought, especially to augment aquifer recharge to abate encroachment of saltwater as groundwater tables drop in response to rainfall deficits. The LOSOM should provide operational flexibility to cope with more intense extreme events, more active management of recharge operations under such conditions, and increasing challenge of maintain aquifer recharge necessary to counter accelerated saltwater intrusion under the combined conditions of sea level rise and reduced precipitation.

Conclusion

We appreciate the USACE efforts to ensure broad consideration of the diverse stakeholder perspectives and needs as part of the LOSOM process.

Should you have any questions regarding our comments or data inquiries where we can be of assistance, please do not hesitate to contact Dr. Jennifer L. Jurado, Chief Resilience Officer and Director, Environmental Planning and Community Resilience Division, 954-519-1464, jjurado@broward.org, or Kevin Carter, Assistant to the Director, Water and Wastewater Services, 954-831-0718, kcarter@broward.org.

Thank you again for the opportunity to contribute comments to the LOSOM scoping process, and we look forward to continued engagement with this project.

Yours sincerely,

Bertha W. Henry
County Administrator

Cc: Monica Cepero, Deputy County Administrator
Dr. Jennifer Jurado, Chief Resilience Officer and Director, Environmental Planning and Community Resilience Division
Alan Garcia, Director, Water and Wastewater Services
Marty Cassini, Intergovernmental Affairs Manager

References:

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