

STRUCTURE OPERATIONS
Southwest Florida Water Management District

Title: **OPERATIONAL GUIDELINES FOR THE TSALA-APOPKA CHAIN OF LAKES**

Department: **OPERATIONS**

Number: 19-1

Page: 1 of 4

Approved By:  Michael L. Holtkamp, P.E., Operations Director /  Bruce C. Wirth, P.E., Deputy Executive Director

Effective Date: 6/15/10

Supersedes: 19-1 dated 1/01/10

PURPOSE: To establish operational guidelines for the operation of the water control structures on the Tsala-Apopka Chain of Lakes in Citrus County, Florida. These guidelines are intended to serve as general guidelines for the routine operation of structures, and may be modified, as necessary, to ensure the environmental health of the lake system or in response to a specific weather event(s).

General Statement of Intent

During non-flooding conditions, the Leslie Heifner and Floral City water control structures, and the Flying Eagle Culverts, will be operated to maximize the diversion of Withlacoochee River flows into the Tsala Apopka Chain of Lakes consistent with any applicable minimum flows established for the Withlacoochee River, or other environmental protection requirements. Once opened the Leslie Heifner and Floral City water control structures will typically remain in the full open position for navigation until such time flow reversal is imminent, at which time the structures will be closed until positive flow conditions return. The Flying Eagle Culverts will typically remain open, but will be closed to prevent the loss of water from Floral City Pool to the river.

Low Water Conditions - Water Levels Below Low Guidance Levels (filling mode)

The historic natural control elevation in Moccasin Slough between the Floral City and Inverness Pools is 40.0 NGVD. When the water level elevation in the Floral City Pool recedes below elevation 40.0 NGVD, the Moccasin Slough Structure will be opened and remain in the full open position to allow for the normal movement of water in the immediate vicinity of the structure. Absent inflow from the river, the Golf Course Structure, Brogden Bridge Structure and Brogden Culverts will remain closed to conserve water remaining in each of the pools. Should the water level in the Floral City Pool raise above elevation 40.0 NGVD, and there is no flow being diverted from the river, the Moccasin Slough structure will be closed to prevent movement of water from the Floral City Pool into the Inverness Pool.

Once conditions are such that the Leslie Heifner and Floral City Structures can be opened to divert flow from the Withlacoochee River into the Tsala-Apopka Chain, the flow being diverted from the river will be apportioned equally between the three pools regardless of a particular pool's elevation, and will typically continue to be apportioned equally for the duration of flow diversion from the river. The Golf Course and/or Moccasin Slough structures will be operated in concert with one another to allow two-thirds (2/3) of the diverted river water to pass into the Inverness Pool, and one-third (1/3) of the diverted river water will be allowed to pass through the Brogden Bridge Structure into the Hernando Pool. Structure gate settings will be adjusted, as needed, to maintain the equal 1/3 - 1/3 - 1/3 apportionment of river inflows between the three pools. During extreme low water conditions, it may not be physically possible to immediately divert the prorated river flow from one pool to the downstream pool based on the water levels in the two pools (i.e., head differential across a structure), the invert(s) of the structures, and/or the physical configuration of the structure's gates. Under these circumstances, the water level in the upstream pool will have to increase to the point where there is sufficient head to drive the prorated river flow to the downstream pool, at which time the apportioned flow will be discharged.

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Normal Operating Range - Water Levels Between Low Guidance Levels and Target Water Conservation Levels (filling mode/conservation mode)

On October 4, 2006 the District adopted Minimum and Guidance Levels for the Tsala-Apopka Chain of Lakes as required under the Minimum Flows and Levels statutory criteria. The new Minimum and Guidance Levels are regulatory and guidance levels necessary to ensure the extent and duration of water levels in the three pools are met in order to maintain the environmental health of the three pools. Prior to the adoption of the new Minimum and Guidance Levels, there were earlier guidance levels the District had established for the chain of lakes which included a guidance level referred to as the Minimum Flood Level. The Minimum Flood Level was a high water warning level that was the **Target Water Conservation Level** near the end of the rainy season when the probability of significant rainfall was reduced. Under this guideline, the Normal Operating Range is defined as being between the Low Guidance Level and the Target Water Conservation Level. Table 1 provides the Normal Operating Ranges for the three pools along with their adopted Minimum Levels.

During the filling process in the Normal Operating Range, river inflow will continue to be apportioned equally between the three pools. The local runoff a pool receives from its contributing watershed will be retained within the pool, and not discharged to the downstream pool until such time the pool has reached its adopted Minimum Level (P50). At the time, water in excess of the Minimum Level may be discharged to the downstream pool(s) if the downstream pool(s) is below its Minimum Level. Once all three pools have reached their respective Minimum Levels, the operational goal for the system is to attempt to bring up the elevations in the three pools equally, while continuing to apportion river inflow equally between the pools. This approach may be modified to allow the lower pools (Hernando and Inverness, in that order) to be raised more rapidly if it is determined the projected flow conditions of the river are such that maintaining a greater head differential between the river and Floral City Pool would allow for a greater cumulative amount of water being transferred from the river in a shorter period of time.

Near the end of the rainy season when the Floral City, Inverness, and Hernando Pools are at or near their Target Water Conservation Levels, and flow is still being diverted from the river, the operational goal is to continue to pass river flows through the system without increasing pool stages. If this cannot be done without exceeding the Target Water Conservation Levels, the Leslie Heifner and Floral City structures will be operated to restrict flow from the river, as necessary, to maintain pool water levels. At any time during the filling mode water level elevations in the pools have clearly peaked and have started to recede due to diminished rainfall or river inflow, Van Ness, S-353, Brogden Bridge, Brogden Culverts, Golf Course and Moccasin Slough structures will be closed to conserve water in the three pools.

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High Water Conditions – Water Levels Greater than Target Water Conservation Levels (flood control mode)

During high water or flooding conditions, or if it becomes necessary to create flood storage in the three pools in anticipation of tropical storm or hurricane landfall, the Leslie Heifner and Floral City structures will be closed and water from the three pools will be discharged to create flood storage and minimize flooding as follows.

Hernando Pool: The preferential discharge course from the Hernando Pool is to Two Mile Prairie via the Van Ness Structure provided the elevation in Two Mile Prairie is below elevation 35.0 NGVD. Once Two Mile Prairie reaches elevation 35.0 NGVD the Van Ness Structure will be closed until the water level elevation in Two Mile Prairie recedes below 35.0 NGVD, and Structure S-353 will be operated, as needed, to create flood storage or minimize flooding on the Hernando and upstream pools. Structure S-353 will be operated up to its design capacity to minimize flooding the three pools regardless of downstream conditions.

Inverness Pool: Excess water will initially be discharged from the Inverness Pool directly to the river through the Bryant Slough Structure if there is a positive head toward the river. Once Structure S-353 begins discharging, excess water may also be discharged into the Hernando Pool through the Brogden Bridge and Brogden Culverts structures.

Floral City Pool: Excess water will initially be discharged from the Floral City Pool directly to the river through the Flying Eagle Berm culverts if there is a positive head toward the river. Once Structure S-353 begins discharging, excess water may also be discharged into the Inverness Pool through the Golf Course and Moccasin Slough structures.

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Table 1 - Normal Operational Ranges

FLORAL CITY POOL	
Operating Level	Elevation
Target Water Conservation Level ¹	42.50
Minimum High Level (P10) ²	41.20
Minimum Level (P50) ²	39.80
Low Guidance Level (P90) ²	39.60

INVERNESS POOL	
Operating Level	Elevation
Target Water Conservation Level ¹	40.50
Minimum High Level (P10) ²	40.10
Minimum Level (P50) ²	38.70
Low Guidance Level (P90) ²	37.80

HERNANDO POOL	
Operating Level	Elevation
Target Water Conservation Level ¹	39.00
Minimum High Level (P10) ²	38.70
Minimum Level (P50) ²	37.30
Low Guidance Level (P90) ²	35.90

¹ Old Minimum Flood Guidance Level

² New Minimum and Guidance Levels