Attachment 5

Southwest Florida Water Management District STRUCTURE PROFILE Golf Course Revised 2012

# **Golf Course**



**Golf Course Revised 2012** 

**Purpose:** Golf Course water control structure regulates flow in the canal between the Floral City Pool and the Inverness Pool in order to maintain desirable water levels in Lake Tsala Apopka.

**Location:** The structure is located within a 100 foot county road right-of-way and within the 100 foot canal right-of-way just off of *E. Sandpiper Drive* on the east side of the *Inverness Golf and Country Club*, (just outside of the country club proper). Furthermore, the structure is situated  $\approx$ 4 miles southeast of the City of Inverness in Citrus County, in the Withlacoochee River Basin, in Section 26, Township 19 S, Range 20 E.

# 28° 48' 43.51" 82° 16' 40.02"

(From the D.C. Johnson & Associates, Inc. survey, October 2003)



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### **Directions from the Tampa Office**

- Take Interstate 75 north to State Road 50, exit 301
- Follow S.R. 50 left/west to U.S. Highway 41
- Take 41 right/north to Eden Drive, ≈1 mile south of downtown Inverness.
- Then right (at the traffic light) on *Eden* for a short distance to *Old Floral City Road*, the first crossroad.
- Follow Old Floral City Road right for 1.7 miles to E. Sandpiper Drive: the entrance to the Inverness Golf and Country Club.
- Follow *Sandpiper* for 1.1 miles to the structure.

### **Directions from the Brooksville Office**

- Take 41 right/north to Eden Drive, ≈1 mile south of downtown Inverness.
- Then right (at the traffic light) on *Eden* for a short distance to *Old Floral City Road*, the first crossroad.
- Follow Old Floral City Road right for 1.7 miles to E. Sandpiper Drive: the entrance to the Inverness Golf and Country Club.
- Follow *Sandpiper* for 1.1 miles to the structure.

<u>Access and Security</u>: Golf Course structure is accessed directly off of *E. Sandpiper Drive* along a 100 foot county right-of-way. The control box is secured with a special lockmarked "STR"; <u>note</u>, keys for such locks are not found on vehicle key rings. The breaker panel box lock combination is **7211**. Also, another special key is needed to access and to *manually* operate the structure at the actuators.





STRUCTURE PROFILE

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### **Directional Overview**



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**Physical Description:** The structure consists of four, 49" wide by 48" high, steel drop-crest sluice gates. The gates are operated via hoists consisting of gearheads and stems that are powered by motorized-actuator lift systems. There is an operating platform that is used to access the hoists and gates. The upstream and downstream conveyance channels are lined with rock rubble to control erosion. The structure is operated remotely via the control panel.



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### **Physical Description**



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# **Physical Description**



#### STRUCTURE PROFILE

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The Tsala Apopka Chain of Lakes System & Water Control Structures



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#### **Operational Protocol**

#### **General Information**

Normal Operations: Sluice gates are operated remotely (*i.e.*, from land) via a control panel.

**Golf Course:** The Tsala Apopka Chain-of-Lakes encompasses approximately 23,300 acres across three distinct pools: the Floral City Pool with 9,100 acres, the Inverness Pool with 8,000 acres, and the Hernando Pool with 6,200 acres. The water elevation for the Floral City Pool and the Inverness Pool are maintained within the range of adopted levels by raising or lowering the sluice gates at *Golf Course*. With the gates in the full closed position, the crest elevation is 42.0 feet msl (41.16 NAVD); the invert elevation of the structure is 38.0 msl (37.16 NAVD). Each sluice gate has an effective discharge width of 49".

**Conveyances**: The upstream canal runs south connecting Lakes Tussock, Hampton, and Floral City, all of which are part of the Floral City Pool. The downstream runs north through a small lake, then through Davis Lake to Spivey Lake, both of which are part of the Inverness Pool. Both upstream and downstream canal bottoms are at elevation 34 feet with a bottom width of 20 feet and side slopes of 1:2.

**The System**: Flows from the Withlacoochee River first enter the Floral City Pool through the *Leslie Heifner* structure via the Leslie Heifner Canal as well as through the *Floral City* structure via the Orange State Canal. During certain conditions, water may enter through the *Flying Eagle* structure located on Flying Eagle Preserve's north/south berm. Flows move from the Floral City Pool into the Inverness Pool via the *Golf Course* and *Moccasin Slough* structures. From the Inverness Pool, flows enter the Hernando Pool primarily through the *Brogden Bridge* structure, and, to a lesser extent, through the *Brogden Culvert* structure. Water in the Inverness Pool can be discharged back into the Withlacoochee River through the *Bryant Slough* structure. Water from the Hernando Pool can be discharged back to the Withlacoochee River through S-353 and, to a lesser extent, through *Van Ness* via *Two Mile Prairie* to the north.

### **Operations in a Commercial Power Failure**

- 1. The structure can be operated by connecting a generator to the power cord in the breaker box, then switching the main breaker to generator.
- 2. Also, the structure can be operated *manually* by engaging the manual lever on the actuator and then turning the attached wheel.



Safety Breaker—Main/Generator



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#### **Operational Protocol**

#### Normal Operating Range

During the filling process in the *Normal Operating Range*, river inflows are apportioned equally among the three pools. Near the end of the rainy season when the three pools are at or near their *Target Levels*, and flow is still being diverted from the river, flows are passed through the system without increasing pool stages. If this cannot be done without exceeding the *Target Levels*, the *Leslie Heifner* and *Floral City* structures are operated to restrict flow from the river, as necessary, to maintain pool water levels. At any time during the filling mode, if water elevations in the pools have clearly peaked and have started to recede due to diminished rainfall or river inflow, structures *Van Ness*, *S-353*, *Brogden Bridge*, *Brogden Culvert*, *Golf Course*, and *Moccasin Slough* are closed to conserve water in the three pools.



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### **Operational Protocol**

Normal Operational Ranges				
FLORAL CITY POOL				
Operating Level	Elevation			
Minimum High Level	41.20			
Minimum Level	39.80			
Low Guidance Level	39.60			
INVERNESS POOL				
Operating Level	Elevation			
Minimum High Level	40.10			
Minimum Level	38.70			
Low Guidance Level	37.80			
HERNANDO POOL				
Operating Level	Elevation			
High Guide Level	38.70			
Minimum High Level	38.70			
Minimum Level	37.30			
Low Guidance Level	35.90			
Two Mile Prairie (maximum)	35.00			

# ormal Operational Panges

From the 2010 Operational Guidelines for the Tsala-Apopka Chain Of Lakes, M. Holtkamp



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# **Operational Protocol**

![](_page_11_Picture_3.jpeg)

![](_page_11_Picture_4.jpeg)

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# **Operational Protocol**

![](_page_12_Picture_3.jpeg)

![](_page_12_Picture_4.jpeg)

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### **STRUCTURE PROFILE**

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<u>History</u>: The Gregg, Gibson, and Gregg Construction Company built a timber flashboard type structure for the District in 1965. The design required a crane to add and remove the very large timbers in order to set a desired crest elevation. In June 1975, District personnel modified the structure so that the top three timbers could be operated as a single lift gate. The structure's current form and operating mode was preceded by manually-operated gate hoists. A subsequent modification altered the structure to its present configuration. The structure lies within the county road right of way known as E. Sandpiper Drive. Citrus County owns fee title to the land where the structure is located. The District has no ownership interests in the subject land.

STRUCTURE	ACQUIRED	TYPE	INVERT	POOL	CANAL
CONSUELLA	1969	STOP LOG	39.50	CONSUELLA	ORANGE STATE
FLORAL CITY	1962	1-GATE	38.00	FLORAL CITY	ORANGE STATE
LESLIE HEIFNER	1967	1-GATE	35.00	FLORAL CITY	LESLIE HEIFNER
GOLF COURSE	1965	MODIFIED STOP LOGS	38.00	INVERNESS	GOLF COURSE
BRYANT SLOUGH	1963	2-GATES	33.00	INVERNESS	MOCCASIN SLOUGH
BROGDEN BRIDGE	1972	2-GATES	34.25	INVERNESS	BROGDEN CANAL
VAN NESS	1962	1-GATE	34.50	HERNANDO	TWO MILE PRAIRIE
s-253 +	1968	4-GATES	36.50	HERNANDO	CANAL-331
BRADLEY	SEPT. 27 1990	1-GRTE MOD. MAR. 1991	N/A	BRADLEY	ORANGE STATE
* ARMY CORP ENGINEERS					

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# History: March 2000, Dewatered for maintenance

![](_page_15_Picture_3.jpeg)

Upstream Views

![](_page_15_Picture_5.jpeg)

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History: July 2000, Post-maintenance

![](_page_16_Picture_3.jpeg)

![](_page_16_Picture_4.jpeg)

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# Additional Photographs

![](_page_17_Picture_3.jpeg)

County Bridge #024046

![](_page_17_Picture_5.jpeg)

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# **Additional Photographs**

![](_page_18_Picture_3.jpeg)

One of the Sluice Gate's Manual Operators

![](_page_18_Picture_5.jpeg)

### **STRUCTURE PROFILE**

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# Additional Photographs

![](_page_20_Picture_3.jpeg)

#### **STRUCTURE PROFILE**

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### Additional Photographs

CAT. NO. 12 1260.00 MODEL U145C17NZ1 R.P.M. 1725 1425 HZ. H.P.2 - 1.5 KW DUT FR. J 100L SER MAX. 40 °C. DESIGN CODE INS. U.3 ALLET O THERMALLY O	AUMA Actuators. Inc. JSA Pittsburgh. Pennsvivania 15205 C PART NO MOC 60/50 V. 100-120 Y15 MI-N FL.A. 24/2 1.0 S.F.A. E PH. 1 VOLTAGE, PHA LINE MUST AG	ENCL P65 0.396 PML D08E 0.V. 200-240 6 FLA.12/13 S.F.A. SE AND FREQUENCY OF BREE WITH VALUES GIVEN			
AMB. 4-0 C. DESIGN CODE PH. 1 VOLTAGE, PHASE AND FREQUENCY OF LINE MUST AGREE WITH VALUES GIVEN ON THIS PLATE. CONNECT PER WIRING DIAGRAM SUPPLIED WITH ACTUATOR.   NEMA NOM. EFF. EFF. 75% FL. P.F. DIAGRAM SUPPLIED WITH ACTUATOR.   080623 MOTOR DESIGNED & MANUFACTURED BY LEESON ELECTRIC CORPORATION DEAFON WESCHEN SUP24-024 MADE A USA   080623 MOTOR DESIGNED & MANUFACTURED BY LEESON ELECTRIC CORPORATION DEAFON WESCHEN SUP24-024 MADE A USA   080623 MOTOR DESIGNED & MANUFACTURED BY LEESON ELECTRIC CORPORATION DEAFON WESCHEN SUP24-024 MADE A USA   080623 MOTOR DESIGNED & MANUFACTURED BY LEESON SUP24-024 MADE A USA   080623 MOTOR DESIGNED & MANUFACTURED BY LEESON SUPPLIED WITH ACTUATOR.   080624 MOD: AMO2.1 P: 7.5 KW COM: A0817640201 MOD: SA10.1 ENCL: NEMA 4X/6 TOROUF: 30-88   1000000000000000000000000000000000000					
ENCL: NEMA 4X/6	EOKMS: 96T	640401 P104/231			