STRUCTURE 68

This structure is a reinforced concrete, gated spillway with discharge controlled by a cable operated, vertical lift gate. Operation of the gate is controlled in accordance with seasonal operational criteria. The structure is located on Canal 41A at the outlet of Lake Istokpoga.

PURPOSE

The structure, together with G-85, maintains the optimum upstream water control stage in Lake Istokpoga; during the design flood downstream of the structure (30% of the Standard Project Flood) it passes 3,000 cfs without exceeding the upstream flood design stage, and restricts downstream flood stage and channel velocities to non-damaging levels; it passes additional flow when the downstream channel capacity of 5,900 cfs will not be exceeded; it prevents overtopping of the structure by breaking waves from Lake Istokpoga during the design storm and hurricane wind tide, but it will be bypassed during this or a more severe flood; it will not be overtopped during the Standard Project Flood by the static headwater, though a hurricane wind tide will overtop it; and it passes sufficient discharge during low-flow periods to maintain downstream stages and irrigation demands.

OPERATION

This structure is operated in either the flood operation or the low-water operation mode. Operation in the flood operation mode is controlled by the headwater elevation. Operation in the low-water operation mode is controlled by the tailwater elevation. Each is described below.

Flood Operation

The three gates are operated simultaneously to maintain an optimum water level within 0.2 foot above or below a variable water control elevation as shown on the Regulation Schedule.

When downstream capacity is available, the discharge can be increased to maximum downstream capacity. The availability of downstream capacity is measured by the tailwater elevation which should not be allowed to exceed 34.2 ft. during such discharge. During any operation, the Maximum Allowable Gate Openings curve must also be followed in order to protect the structure from turbulence induced damage.

Low-water Operation

As long as the Lake Istokpoga level is within its water supply release zone, S-68 will make water supply releases according to the demands downstream of S-68.

FLOOD DISCHARGE CHARACTERISTICS

	Design		Standard Project Flood
	Condition A*	Condition B*	
Discharge Rate	3000 cfs	5900 cfs	3000 cfs
	30 %SPF	30 %SPF	100 %SPF
Headwater Elevation			
Static	40.0 feet	40.0 feet	46.7 feet
Wind Tide	42.7 feet	42.7 feet	48.9 feet
Wind Tide plus Breaking Wave Height	47.3 feet	47.3 feet	56.2 feet
Tailwater Elevation	33.1 feet	34.2 feet	40.0 feet
Type Discharge	controlled free	controlled free	controlled free

Design stage based on one-foot rise in level of Lake Istokpoga.
*Condition A obtains when design inflow occurs downstream from S-68 in C-41A.
*Condition B provides maximum discharge from S-68, but no inflow between S-68 and S-83 in C-41A. Due to design problems, S-68 was not able to pass more than 3000 cfs without erosion problems. Tailwater weirs downstream of S-68 and S-83 were completed in 1996 and 1997 which improved energy dissipation dramatically. A high flow test was conducted for a limited time period on 8/29/97 in which 5200 cfs was released without apparent damage.

DESCRIPTION OF STRUCTURE

Type reinforced concrete, gated spillway

Weir Crest

Net Length 63.0 feet

Elevation 31.2 feet

Service Bridge Elevation 47.2 feet

Water Level which will by-pass structure 41.0 feet

Gates

Number 3

Size 10.2 ft. high by 21.8 ft. wide

Type vertical lift

Bottom elevation of gates, full open 41.3 feet Normal

42.3 feet Maximum

Top Elevation of gates, full closed 41.4 feet

Control remote computer control

Lifting Mechanism

Normal power source commercial electricity

Emergency power source LP engine driven generator

Type Hoist direct drive electric motor, gear connected to lifting cables.

Date of Transfer: December 14, 1965

ACCESS: structure located on State Road 64

HYDRAULIC AND HYDROLOGIC MEASUREMENTS

Water Level Remote digital headwater and tailwater recorder

Gate Position Recorder Remote digital recorder on all gates

Other _____

DEWATERING FACILITIES

Storage Okeechobee Field Station

Type needle beams and aluminum needles

Size and Number (per bay) _____

Upstream

beam 27 WF 145, 22'-9" long 1 @ 2' wide

needles 4 @ 4' wide, 1 @ 3' wide, 1 @ 2' wide

Downstream - Same