

STRUCTURE 123

This structure is a reinforced concrete, gated spillway, with discharge controlled by two cable operated, vertical lift gates. Operation of the gates is automatically controlled so that the gate hydraulic operating system opens or closes the gates in accordance with the seasonal operational criteria. The structure is located near the mouth of Canal C-100 below the junction of C-100, C-100A and C-100B and about 600 feet from the shore of Biscayne Bay.

PURPOSE

This structure maintains optimum water control stages upstream in Canals C-100, C-100A, and C-100B; it passes the design flood (40 percent of the Standard Project Flood) without exceeding upstream flood design stage, and restricts downstream flood stages and discharge velocities to non-damaging levels; and it prevents saline intrusion during periods of high flood tides.

OPERATION

This structure will be operated to maintain an optimum headwater elevation which varies seasonally from a low of 2.0 feet during the flood condition to a maximum of 3.5 feet during the dry condition, when sufficient water is available to maintain this level. Manually operated gates on overflow slots in the main gates have been welded shut. The automatic controls function as follows:

Dry Condition

When the headwater elevation rises to 3.5 feet, the gates will open at six inches per minute;

When the headwater elevation rises or falls to 3.0 feet, the gates will become stationary;

When the headwater elevation falls to 2.5 feet, the gates will close at six inches per minute.

Flood Condition

When the headwater elevation rises to 2.4 feet, the gates will open at six inches per minute;

When the headwater elevation rises or falls to 2.0 feet, the gates will become

stationary; when the headwater elevation falls to 1.6 feet, the gates will close at six inches per minute.

Salinity Regulation

In addition to maintaining optimum upstream fresh water control, as described above under Flood Control Regulation, the automatic controls on this structure have an overriding control which closes the gates, regardless of the upstream water level in the rare event of a high flood tide, whenever the differential between the head and tailwater pool elevations reaches 0.3 feet.

A special timing device has been installed at this site to protect manatees during automatic gate operation. This device causes alternate gate operation. During this operation, when the upstream float sensor indicates that the gate should open, one gate opens a minimum of two and one-half feet. If this opening results in a headwater stage below the gate close level, as it often does, this gate will close. Whenever the headwater stage again rises to the gate open level, the other gate will open in a similar manner.

FLOOD DISCHARGE CHARACTERISTICS

	Design	Standard Project Flood
Discharge Rate	<u>2300</u> cfs	<u>5000</u> cfs
	<u>40</u> % SPF	<u>100</u> % SPF
Headwater Elevation	<u>2.0</u> feet	<u>3.8</u> feet
Tailwater Elevation	<u>1.5</u> feet	<u>1.7</u> feet
	uncontrolled	uncontrolled
Type Discharge	<u>submerged</u>	<u>submerged</u>
Estimated Max. Hurricane Tide	15.0 feet m.s.l.	

DESCRIPTION OF STRUCTURE

Type Fixed crest, reinforced concrete gated spillway

Weir Crest

Net Length 50.0 feet

Elevation -7.3 feet

Service Bridge Elevation 10.0 feet

Water Level which will by-pass structure 10.0 feet

Gates

Number 2

Size 12.7 ft. high X 25.0 ft. wide

Type vertical lift

Bottom elevation of gates full open 8.0 feet

Top elevation of gates full closed 5.0 feet

Control Automatic, on-site upstream control with override
differential water surface control senses by bubbler
and remote computer control

Lifting Mechanism

Normal power source commercial electricity

Emergency power source LP gas driven generator

Type hoist hydraulic cylinder actuated by electric motor
driven pump, with emergency hand pump; connected
to gate by 1" steel cables

Date of Transfer: February 10, 1966

ACCESS: from Old Cutler Road via access road on left bank C-100

HYDRAULIC AND HYDROLOGIC MEASUREMENTS

Water Level: Remote digital headwater and tailwater recorders

Gate Position Recorder: Remote digital recorders on all gates

Rain Gauge: Remote, digital recorder

DEWATERING FACILITIES

Storage needles at Miami Field Station, beams at West Palm Beach Field

Station

Type needle beams and vertical aluminum needles

Size & number (per bay) _____

Upstream

Number 1 beam; needles, 5 @ 4', 1 @ 3', 1 @ 2' wide

Size beam 33WF200 with 24" flange end sections, length
26' -11", needles 20' long

Downstream

Number 1 beam; needles, 5 @ 4', 1 @ 3', 1 @ 2' wide

Size beam 33WF200 with 24" flange end sections, length
26' -11', needles 20' long