

STRUCTURE 20

This structure is a reinforced concrete, gated spillway, with discharge controlled by a cable operated, vertical lift gate. Operation of the gate is automatically controlled so that the gate hydraulic operating system opens or closes the gate in accordance with the seasonal operational criteria. The structure is located on Levee 31E about 3 miles from the shore of Biscayne Bay.

PURPOSE

This structure together with S-20A maintains optimum water control stages in the upstream agricultural area; 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 period of high flood tides.

OPERATION

This structure will be operated to maintain an optimum headwater elevation. The automatic controls on the main gates function as follows:

Low Range

When the headwater elevation rises to 1.4 feet, the gates will open at six inches per minute;
When the headwater elevation rises or falls to 1.2 feet, the gates will become stationary;
When the headwater elevation falls to 1.0 feet, the gates will close at six inches per minute.

High Range

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 2.1 feet, the gates will become stationary;
When the headwater elevation falls to 1.8 feet, the gates will close at six inches per minute.

Do not use low setting unless under emergency condition because (per Tom MacVicar - 1/29/87):

- (1) Florida Power & Light Co. cooling pond nearby will be drained.
- (2) It is illegal to drain the wetlands.
- (3) The nearest farm is away from the structure. It will not benefit the farmer.

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 over-riding 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 elevation reaches 0.3 feet.

Structural Limitation

The differential head in the structure shall not be allowed to exceed 5.0 feet for stability purposes.

FLOOD DISCHARGE CHARACTERISTICS

	Design	Standard Project Flood
Discharge Rate	<u>450</u> cfs	<u>750</u> cfs
	<u>40</u> % SPF	<u>100</u> %
Headwater Elevation	<u>1.5</u> feet	<u>1.8</u> feet
Tailwater Elevation	<u>1.0</u> feet	<u>1.3</u> feet
Type Discharge	uncontrolled	uncontrolled
	<u>submerged</u>	<u>submerged</u>
Estimated Maximum Hurricane Tide	<u>10.0</u> ft. m.s.l.	

DESCRIPTION OF STRUCTURE

Type Fixed crest, reinforced concrete gated spillway

Weir Crest

Net Length 16.0 feet

Elevation -7.4 feet

Service bridge elevation 7.0 feet

Water level elevation which will by-pass structure 7.0 feet

Gates

Number 1

Size 11.4 ft high X 16.75 ft wide

Type vertical lift

Bottom elevation of gates full open 4.9 feet

Top elevation of gates full closed 4.0 feet

Control Automatic, on-site upstream control with over-ride

differential water surface control sensed by bubbler
system

Lifting mechanism

Normal power source commercial electricity

Emergency Power source L.P. gas driven generator

Type Hoist hydraulic cylinder actuated by electric motor driven
pump, with emergency hand pump; connected to gate by
steel cables.

Date of Transfer: February 9, 1968

ACCESS: from Old Dixie Highway via Seadade Road and Levee 31E

HYDRAULIC AND HYDROLOGIC MEASUREMENTS

Water Level On-site, dual recorder

Gate Position Recorder On-site - type PAV

DEWATERING FACILITIES

Storage Homestead Field Station

Type timber stop logs

Size & number (per bay)

Upstream & Downstream

Number 31 total

Size 12" X 12" X 17'-8" long