

STRUCTURE 331

This structure is a three unit pumping plant located in L-31N borrow canal about 9 miles north of Homestead, Florida. It consists of a reinforced concrete and concrete block masonry superstructure. The pumping station is equipped with three vertical axial flow pumps, each rated for 387 cfs at 3.0 foot static head. Each pump is driven by a 250 horsepower diesel engine.

PURPOSE

The original purpose of this structure was to function as a component of the South Dade Conveyance System to deliver a supplementary water supply to South Dade County and to provide a continuous supply to the Everglades National Park at Taylor Slough and to the Panhandle Area. This purpose was augmented by Iteration 7. Experimental Program of Water deliveries to Everglades National Park dated the 5th day of October, 1995, between the Corps of Engineers, the Everglades National Park and the District. The Iteration 7 commenced on November 1, 1995. This structure serves the purpose, according to Iteration 7, of controlling the level in L-31N north of S-331 as a function of the water levels in the Rocky Glades residential area. The present operation rules are based on Iteration 7.

OPERATION

The operation of this structure will be in either the water supply or the flood control mode, depending on which purpose is being pursued. In either of these modes, the discharge, depending on the quantity required, is accomplished by syphoning through the pumps, by operation of the adjacent culvert (S-173), or by use of pumping.

In the water supply mode, discharge through the structure is performed when the stage at any downstream, inland structure drops more than 1.5 feet below optimum. Optimum and critical levels of these structures are as follows:

CANAL	STRUCTURE	OPTIMUM	CRITICAL
		STAGE	STAGE
I-31N	S-174/176	5.5	4.0
C-111	S-177	4.5	3.0
L-31W	S-332	4.5	3.0
	S-175	4.5	3.0
C-103	S-196	5.5	4.0
	S-167	5.5	4.0
	S-179	3.5	2.0
C-102	S-194	5.5	4.0
	S-165	5.5	4.0

Flood Control Mode:

Angels well, located near the western boundary of the Rocky Glades residential area, will be monitored to indicate appropriate operations of the L-31N borrow canal system. Discharges through S-331 can be made if the S-331 tailwater stage is below 6.0 feet and the S-176 headwater stage is below 5.5 feet. If either of those water levels of S-331 and S-176 were exceeded, discharges at S-331 would be terminated until the S-176 headwater state recedes to 5.0 feet. S-331 discharges would be terminated when the S-176 headwater stage is between 5.0 and 5.5 feet if heavy rainfall is forecast. The goal of the pumping operations is to stay as close to the upper part of the range specified within the physical constraints of the system.

- a. If the level at Angels well is less than 5.5 ft. there will be complete flexibility in operating the L-31N borrow canal system within the design limits specified by the Corps.

- b. If the level at Angels well is between 5.5 and 6.0 ft. the average daily water level upstream of the S-331 will be maintained between 5.0 ft., and 4.5 ft. if permitted by downstream conditions.
- c. If the level at Angels well is above 6.0 ft., the average daily water level upstream of S-331 will be maintained between 4.5 ft. and 4.0 ft. until the water level at Angel's well recedes below 5.7 ft. if permitted by downstream conditions.

DISCHARGE CHARACTERISTICS

	PUMP DESIGN	(S-173) GRAVITY DESIGN
Discharge Rate	1160 cfs	100 cfs
Headwater Elevation	3.0 feet	5.0 feet
Tailwater Elevation	6.0 feet	4.5 feet

DESCRIPTION OF STRUCTURE

Three pumping units in a reinforced concrete and concrete block structure, with an adjacent CMP gated culvert (S-173).

Culvert (SEE S-173)

Pumping Station

Number of pumps:	<u>3</u>
Size & Type of Pumps:	<u>96' vertical propeller</u>
Design Rating	<u>387 cfs</u>
Impeller Speed:	<u>100 r.p.m.</u>
Pump Manufacturer:	<u>Allis Chalmers</u>
Engine Make & Type:	<u>Detroit Diesel 71-V12</u>
Engine Horsepower:	<u>255</u>
Engine Speed:	<u>1800 r.p.m.</u>

ACCESS

The structure is reached from Krome Avenue (SR27) by traveling 2 miles west on Eureka Drive (SW 184th Street) and 1 mile north on Grossman Drive (SW 197th Avenue).

HYDRAULIC AND HYDROLOGIC MEASUREMENTS

Water Level:	<u>On-site and remote digital upstream and downstream recorders</u>
Rain Gauge:	<u>On-site, recording gauge</u>
Engine Tachometer	<u>Remote digital recorder</u>