

STRUCTURE G-404

Pumping station G-404 is located in Broward County on the Miami Canal at the confluence with the L-4 borrow canal. The station is located adjacent to structure G-357, just north of the S-8 pump station, and adjacent to the southeastern corner of the Rotenberger Wildlife Management Area

PURPOSE

There are two operational objectives for G-404 identified in the design documents (Burns & McDonnell 1997):

1. To supply the northwest corner of WCA-3A with treated discharges from STA-5, and
2. To provide supplemental irrigation water supply to the Big Cypress Seminole Indian Reservation and US Sugar Southern Division's Unit 2 farm.

Although not explicit project objectives, there is another ancillary benefits of G-404 - during storm events, G-404 may supplement the capacity of S-8 to remove runoff from the Miami Canal basin.

OPERATION

During periods when STA-5 is treating water from the C-139 basin, G-404 shall operate to supply STA-5 discharges to the northwest corner of WCA-3A. Prior to the completion of STA-3/4, STA-5 discharges will be mixed with Miami Canal basin runoff that may have higher phosphorus levels, and also discharges from the Rotenberger Wildlife Management Area that may have lower or comparable levels. The composite phosphorus levels should be well below levels that historically entered WCA-3A from the C-139 Basin (~260 ppb). In this interim period before STA-3/4 is complete, the resulting phosphorus may be above the long-term Everglades phosphorus target, and it

was decided to postpone the complete L-4 levee degradation until discharges met the long-term target. In the interim, a 100-foot gap was cut in the south L-4 levee at a location directly adjacent to the point that the L-3 Extension Canal bends to the south. A short connector canal was excavated between the L-4 Canal and the L-3 Extension Canal at this point.

The pump station has three (3) 60-inch diameter vertical axial flow pumps with diesel engines and each pump has a discharge capacity of 190 cfs at a total dynamic head of 10.3 ft. The factory test report, including performance curves, for these pumps are contained in the project files. The hydraulic design was based on the analysis prepared by Burns & McDonnell dated October 13, 1997.

DISCHARGE CHARACTERISTICS

Discharge capacity (each):

Start-up: 190 cfs at a total developed head of 10.3 ft, and a static head of 8.0 ft
(HW=8.0 ft; pipe crest elevation = 16.0 ft)

Flood condition: 207 cfs at 5.5 ft static head (HW=11.0 ft; TW=16.5 ft)

Siphon-assisted: 209 cfs at 4.45 ft static head (HW=8.0 ft; TW=12.45 ft)

DESCRIPTION OF STRUCTURE

Number of pumps:	Three (3)
Design headwater elevation:	9.0 ft
Design low water shut off elevation:	8.0 ft
Design flood headwater:	12.0 ft
Design tailwater elevation (estimate):	12.45 ft
Design maximum tailwater elevation:	16.5 ft
Design head loss across trash rack:	1.0 ft
Nominal pump operating speed:	275 rpm
Normal "on elevation":	Subject to STA-5 operations and Miami Canal conditions
Normal "off elevation":	Subject to STA-5 operations and Miami Canal conditions
Motor size:	375 Hp
Motor speed:	1800 rpm
Centerline discharge connection:	13.5 ft
Pump station floor elevation:	20.1 ft
Intake floor elevation:	-7.75 ft

Discharge bay floor elevation: 2.0 ft

POWER SOURCE Diesel

STATION POWER Commercial electric

HYDRAULIC AND HYDROLOGIC MEASUREMENTS

Staff gauges: Stage recorders at upstream and downstream of structure

Telemetry system: Three diesel pumps on telemetry control, pumps monitored for rpm

ACCESS: From Broward and Palm Beach County line, take L-5 Levee West 15 miles to G-404. The pump station is located next to S-8.