

## STRUCTURE 59

This structure is a reinforced concrete, gated spillway with discharge controlled by a cable operated, vertical lift gate. Operation of the gate is manually controlled in accordance with seasonal operational criteria. The structure is located on Canal 31 at the outlet of East Lake Tohopekaliga.

### PURPOSE

This structure maintains optimum upstream water control stages in Canal 31 and in East Lake Tohopekaliga; it passes the design flood (30% of the Standard Project Flood) without exceeding the upstream flood design stage, and restricts downstream flood stages and channel velocities to non-damaging levels; it prevents overtopping of the structure from East Lake Tohopekaliga during the design storm and wind tide; it prevents overtopping of the structure during the Standard Project Flood and hurricane wind tide; it will be overtopped by breaking waves under such conditions; and it passes sufficient discharge during low-flow periods to maintain downstream stages and irrigation demands.

### OPERATION

This structure is operated in accordance with the East Lake Tohopekaliga Regulation Schedule. This schedule, which ranges between elevations 54.5 and 58.0 indicates the desirable water level throughout the year. If the level is above the prescribed level, flood operation is followed; if the level is below the prescribed level, low water operation is followed. The operation is also dependent on hydraulic and structural limitations of the structure.

#### Flood Operation

When the lake level is within 0.5 foot of the prescribed level, a release schedule, based on forecasted inflow, will be established to return the lake to that level within 15 days. When the lake stage is over 0.5 foot from the prescribed level, maximum releases subject to hydraulic and structural limitations, will be made.

#### Low-water Operation

Whenever the lake level is below the prescribed level, minimum releases will be made to satisfy downstream irrigation demands.

#### Structural Limitations

The maximum water level drop across the structure will be 8 feet if the upstream water surface elevation is below 62.8. The water level drop will be less than 8 feet

if the upstream water surface elevation exceeds 62.8.

#### Hydraulic Limitations

To prevent damage from high velocity discharge, the gate opening will be limited in accordance with the "Maximum Allowable Gate Opening Curve". Moreover, the gate shall be opened gradually to allow tailwater stages to rise before large releases are made. There is a sheet pile weir downstream of the structure. The crest of the weir is 50.83.

### **FLOOD DISCHARGE CHARACTERISTICS**

	Design		Standard Project Flood
	Lower Profile*	Peak Stage*	
Discharge Rate	<u>590</u> cfs <u>30</u> %SPF	<u>820</u> cfs <u>30</u> %SPF	<u>1300</u> cfs <u>100</u> %SPF
Headwater Elevation			
Static	<u>55.8</u> feet	<u>57.5</u> feet	<u>62.8</u> feet
Wind Tide	<u>      </u> feet	<u>59.8</u> feet	<u>63.8</u> feet
Wind Tide plus Breaking Wave Height	<u>      </u> feet	<u>66.4</u> feet	<u>67.3</u> feet
Tailwater Elevation	<u>55.3</u> feet	<u>56.9</u> feet	<u>61.2</u> feet
Type Discharge	<u>      </u>	<u>      </u>	<u>      </u>

\*Peak Stage is based on lake operation for design flood which allows 2.0 feet of storage above historic average levels. Lower Profile is based on no rise in lake levels from historic average. Actual operation will probably be close to Lower Profile for the design flood.

### **DESCRIPTION OF STRUCTURE**

Type reinforced concrete, gated spillway

Weir Crest

Net Length 18.0 feet

Elevation 49.1 feet

Service Bridge Elevation 65.0 feet

Water Level which will by-pass structure 65.0 feet

Gates

Number 1

Size 8.9 ft. high by 18.0 ft. wide

Type vertical lift

Bottom elevation of gates, full open 63.1 feet maximum  
58.0 feet normal

Top elevation of gates, full closed 58.0 feet

Control manual

Lifting Mechanism

Normal power source commercial electricity

Emergency power source LP gas engine-driven generator

Type Hoist direct drive motor, gear connected to cables

**ACCESS:** from State Road 523 via paved access road on northwest side of C-31

**HYDRAULIC AND HYDROLOGIC MEASUREMENTS**

Water Level Remote digital upstream and downstream recorder

Gate Position Recorder Remote digital recorder

**DEWATERING FACILITIES**

Storage West Palm Beach Field Station

Type Stop Logs

Size and Number (per bay)

Upstream 10, 12" X 12" X 21' -0" long

Downstream 9, 12" X 12" X 21' -0" long