



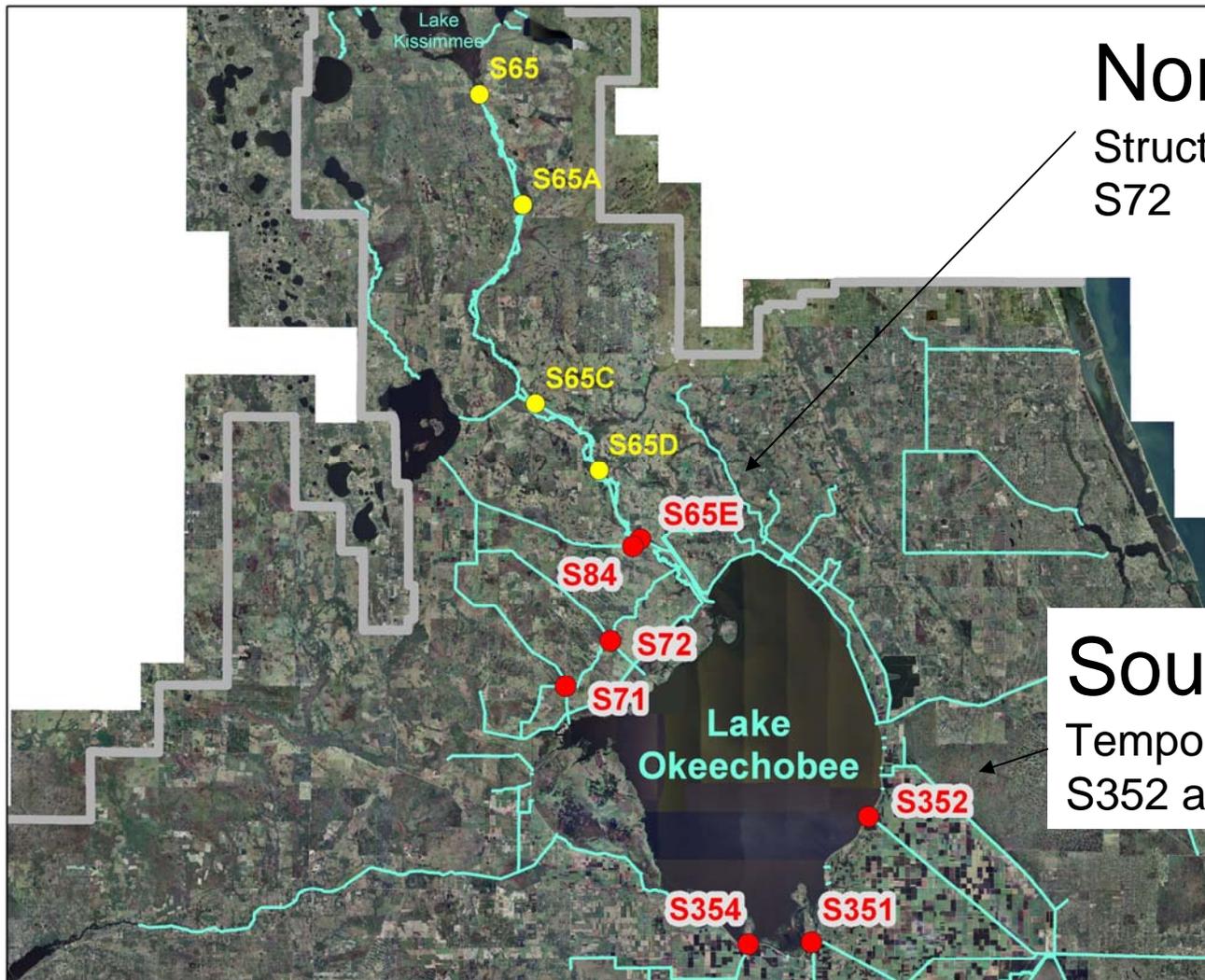
Temporary Pump Alternatives & Structure Stability Concerns

Larry Carter, P.E.

Assistant Deputy Executive Director, O & M

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Structures Location



North of the Lake
Structures S65E, S84, S71 and S72

South of the Lake
Temporary Pumps at S351, S352 and S354

South of the Lake :

Temporary Pumps for the Everglades Agriculture Area

- **Existing Canal Side Pumps at S351, S352 and S354**
 - **14 Units - 100 Cubic Feet per Second/unit**
 - **Lake Elevation of ~ 7.5 feet**



South of the Lake :

Temporary Pumps for the Everglades Agriculture Area

- **Options for Lower Lake Elevations**
 - **Bonnets to Lower Intake Elevation $\frac{1}{2}$ to 1 foot**
 - **Lakeside Floating Pumps**
 - ◆ Existing pumps on pontoons
 - ◆ Pump to elevation 5 feet
 - ◆ \$3 million and 8 months
 - ◆ Out of Service for one month



South of the Lake :

Temporary Pumps for the Everglades Agriculture Area

- **Additional options for Lower Lake Elevations**
 - **Lakeside Fixed Pumps**
 - ◆ **Standard 30-inch, diesel powered**
 - ◆ **Pump to elevation below 7 feet**
 - ◆ **\$1.4 million and 2 months**
 - ◆ **Out of Service for one day**
 - ◆ **Wet season applications**
 - ◆ **Testing this week**



North of the Lake :

Temporary Pumps for the Brighton Reservation

- **Existing Pumps G207 & G208**
 - **On Canals C41 and C40**
 - **At Gated Structures S71 and S72**
 - **Lake Elevation of ~10 feet**



North of the Lake :

Temporary Pumps for the Brighton Reservation

- **Options for Lower Lake Elevations**
 - **Barge Mounted Pumps**
 - **Two 30-inch, 16-mile floating pipelines**
 - **Booster pumps every three miles**
 - **Pump to elevation 6.5 feet**
 - **\$50 million and 18 months**



North of the Lake :

Temporary Pumps for the Brighton Reservation

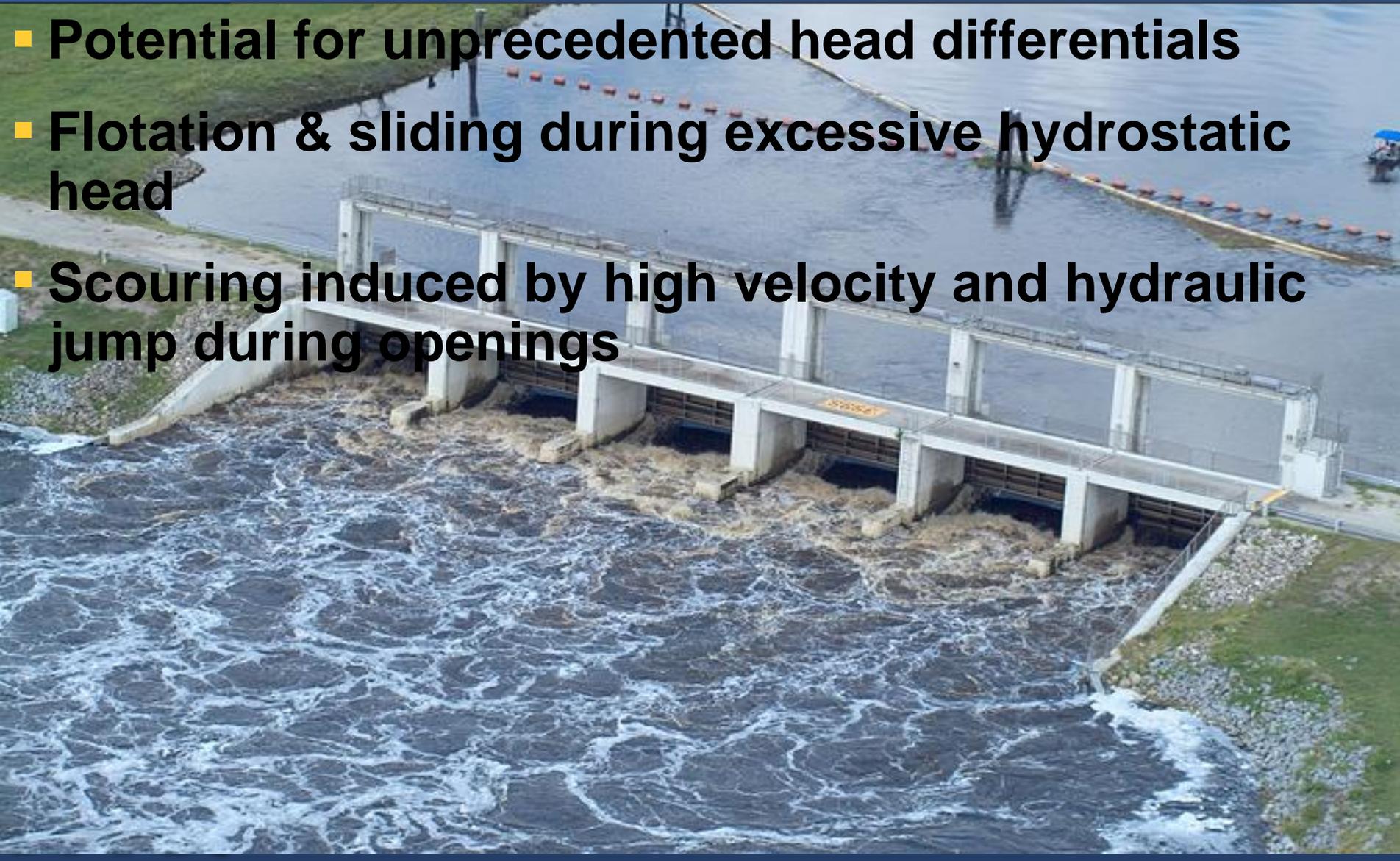
- **Additional Options for Lower Lake Elevations**
 - **Downstream weir plug & Pumps**
 - ◆ **Plug C40 on Lakeside of S72**
 - ◆ **Standard 30-inch pumps over plug to maintain pool elevation**
 - ◆ **Pump to elevation of ~8 feet**
 - ◆ **\$1.5 million and 60 to 75 days**



North of the Lake :

Structure Stability Concerns at S65E, S71, S72, and S84

- Potential for unprecedented head differentials
- Flotation & sliding during excessive hydrostatic head
- Scouring induced by high velocity and hydraulic jump during openings



North of the Lake :

Structure Stability Concerns at S72

Design Discharge - Existing Conditions
 Excessive velocities downstream of the apron

supercritical transition flow

81

76

43

52

Velocity (m/s)



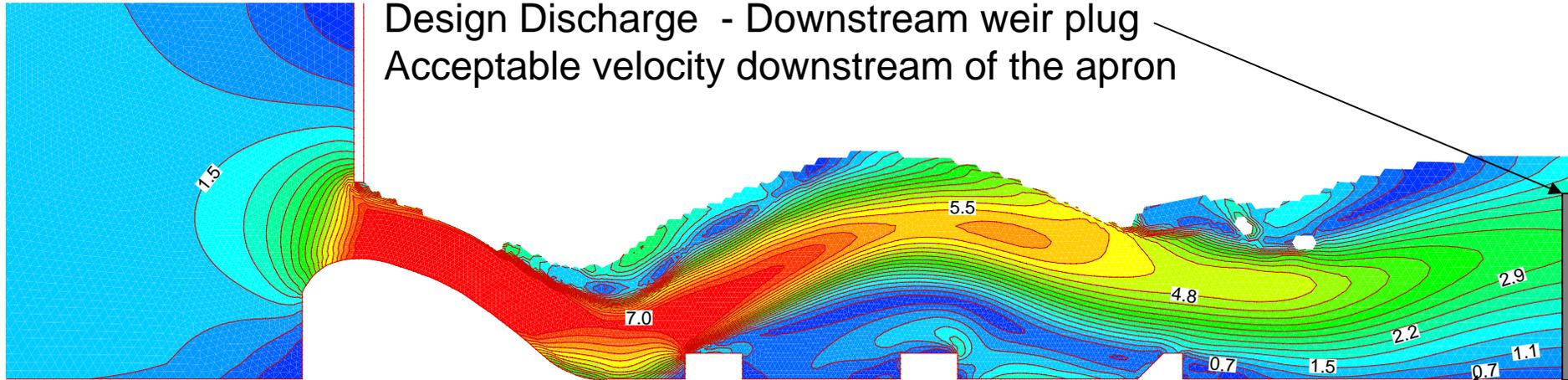
0.0 0.5 0.9 1.4 1.9 2.4 2.8 3.3 3.8 4.3 4.7 5.2 5.7 6.2 6.6 7.1 7.6 8.1 8.5 9.0

17 ft/s !



North of the Lake : Structure Stability Concerns at S72

Design Discharge - Downstream weir plug
Acceptable velocity downstream of the apron



Velocity (m/s)



2.3 ft/s

North of the Lake :

Proposed solutions to Structure Stability Concerns at S71, S72, and S84

- Scour preventive measures using downstream temporary weirs and canal armoring (rock riprap) at S71, S72 and S84



North of the Lake :

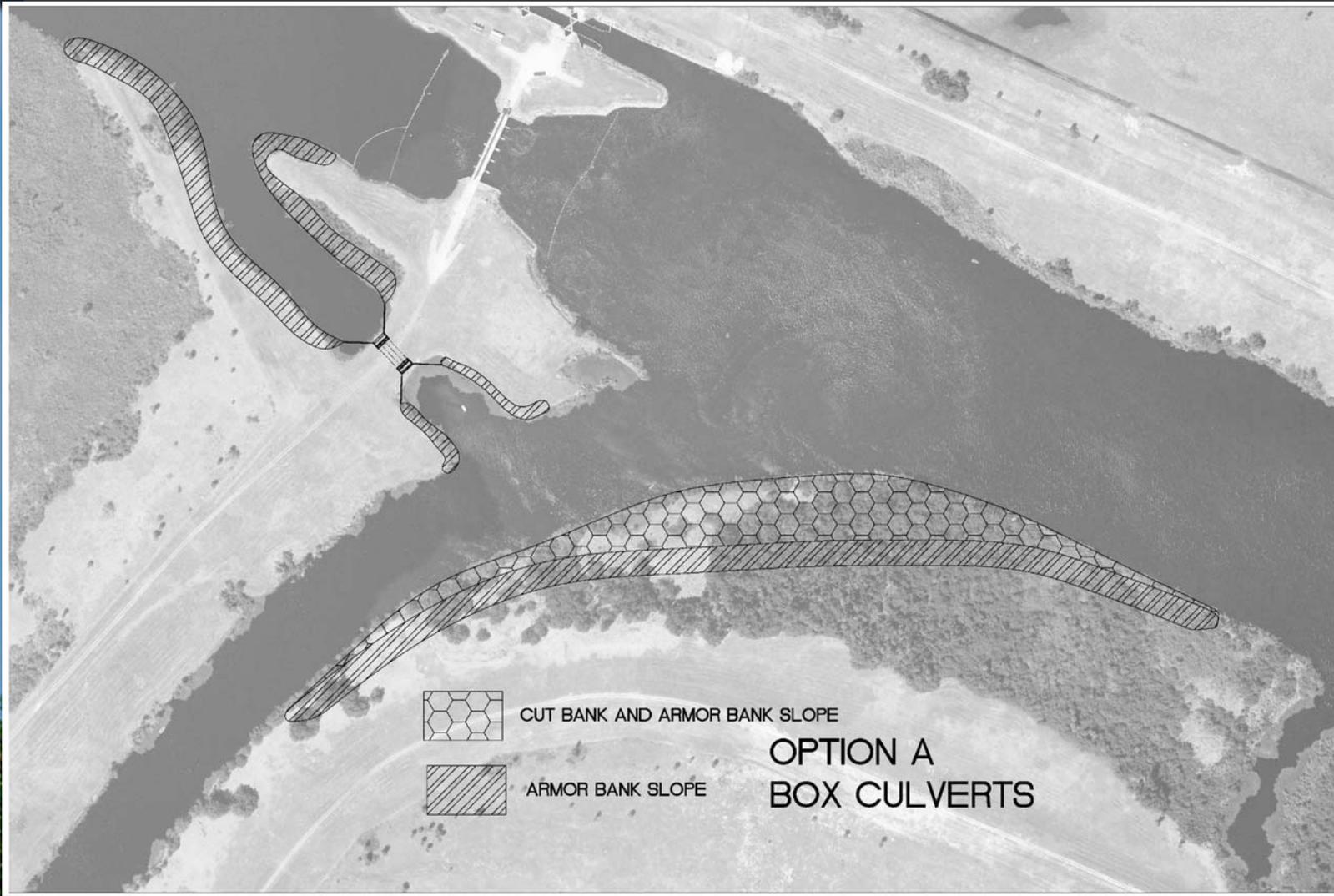
Proposed solutions to Structure Stability Concerns at S65E

- **Structural modifications and canal armoring (rock riprap) at S65E**



North of the Lake :

Proposed Options to Structure Stability Concerns at S65E



North of the Lake :

Proposed Options to Structure Stability Concerns at S65E



North of the Lake :

Proposed Options to Structure Stability Concerns at S65E



Recommendations

■ South of the Lake

- Bonnets for the existing pumps
- Additional testing this week – Lakeside Fixed Pumps seem to be the most promising option for Lake elevation below 7.0 ft

■ North of the Lake

- Downstream weir plug and pumps at S72
- Temporary downstream weirs and canal armoring at S71 and S84
- Sheet Pile Weir and Canal armoring (Option C) at S65E



- A RESOLUTION OF THE GOVERNING BOARD OF THE SOUTH FLORIDA WATER MANAGEMENT DISTRICT AUTHORIZING THE EXECUTIVE DIRECTOR PURSUANT TO SEC. 155-6(5)(A), SOUTH FLORIDA WATER MANAGEMENT DISTRICT POLICIES AND PROCEDURES FOR THE PURPOSE OF PROCEEDING WITH PROCUREMENT OF THE EQUIPMENT, SERVICES, AND COMMODITIES NECESSITATED BY EMERGENCY CONDITIONS THAT CURRENTLY EXIST AS A RESULT OF UNPRECEDENTED HEAD WATER DIFFERENTIAL AT THE FOLLOWING DISTRICT STRUCTURES; S-65E, S-71, S-72 AND S-84 AND AUTHORIZED UP TO \$25,000,000.00 IN BUDGET TRANSFERS AND SUBSTITUTIONS FROM OPERATIONS & MAINTENANCE AND FUTURE PROJECT RESERVES AND WITHIN OPERATIONS & MAINTENANCE CURRENT CAPITAL REFURBISHMENT BUDGET; PROVIDING AN EFFECTIVE DATE.

