

1.0 Performance Measure Title

WS-6 Comparison of Stage Differences of Water Levels in South Miami-Dade Agricultural Area

Last Date Revised: March 14, 2005

2.0 Justification

In preparing land to plant groves, farmers plow the top four-to-eight inches and dig trenches down to an average of 24 inches. The tree roots are found in the plow and trench layers. An occurrence of the water table within two feet of the ground surface for a duration of greater than 24 hours is considered a flood event with the potential for causing agricultural crop loss (Jonathan Crane, Institute of Food and Agricultural Sciences (IFAS), pers. comm.).

The property east of the L-31N and C-111 Canals, south of Richmond Drive, was provided a beneficial level of flood protection during the 1983 to 1993 period due to how the canals were operated. During that period, water levels were raised during the dry months without causing increased water levels during the wet periods. Under alternative canal management rules, farmers in the area have experienced a decreased ability to prevent water levels from rising into the root zones of their crops. In 2002, the South Florida Water Management District’s Governing Board directed staff, during negotiations with the United States Army Corps of Engineers (USACE) and Department of Interior regarding the Cape Sable Seaside Sparrow nesting season, to not accept anything less than "the current" flood protection/risk, which is defined in the Interim Structural Operation Plan (ISOP) 2001*. Under ISOP 2001, canal management is expected to be higher ("worse") than during the 1983-1993 period (target for WS-E3) and lower ("better") than during more recent historical periods.

*ISOP 2001 is based on the modeling assumptions used by the USACE during the development of the Draft Interim Operational Plan (IOP) Environmental Impact Statement (EIS) (Dial Cordy and Associates 2001). The modeling results were posted on the USACE website after the EIS document was prepared. ISOP 2001 is labeled “Alt1cur” on the USACE IOP modeling results web site.

3.0 Source of Performance Measure

Draft Interim Operational Plan (IOP) (Dial Cordy and Associates 2001)

4.0 Restoration Expectation

4.1 Predictive Metric and Target

The target is not to exceed the flood protection/risk that occurred during the ISOP 2001 operations.

4.2 Assessment Parameter and Target

5.0 Evaluation Application

5.1 Evaluation Protocol

The South Florida Water Management Model (SFWMM) is used to evaluate this performance measure. The percent of the time that wet season and dry season weekly average stage differences are at least 0.25 feet and 0.50 feet higher than the ISOP 2001 stages will be calculated. An alternative is considered unacceptable under current state criteria if any of the cells east of the L-31N canal indicate stages are higher than ISOP 2001.

The stage difference maps also indicate spatially where flood problems may occur.

Model output is processed to show the percent of time that stages are least 0.25 feet and 0.50 feet higher than stages from ISOP 2001. Stage differences are ignored for stages deeper than two feet below land surface elevation in the alternative/scenario runs. If the stage is deeper that -2.0 feet land surface elevation in the ISOP 2001 run, but above -2.0 feet land surface elevation in an alternative or scenario run, it is considered a negative impact. The maps are

intended to supplement existing performance indicators.

The SFWMM has no capability to directly measure flood control on individual fields or during relatively short events, but can be used as a coarse-scale tool that gives an indication of a potential change in flood risk. Stage difference maps can be used as a general indicator of subregions that may have a change in water levels.

5.2 Normalized Performance Output

5.3 Model Output (example attached)

5.4 Uncertainty

6.0 Monitoring and Assessment Approach

7.0 Future Tool Development Needed to Support Performance Measure

7.1 Evaluation Tools Needed

7.2 Assessment Tools Needed

8.0 Notes

9.0 Working Group Members

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10.0 Acceptance Status

WS Working Group March 14, 2005

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Public Review

Final Acceptance Date

11.0 References

Dial Cordy and Associates. 2001. Draft Environmental Impact Statement Interim Operational Plan (IOP) for the Protection of the Cape Sable Seaside Sparrow. Prepared for the United States Army Corps of Engineers, Jacksonville District, Jacksonville, Florida, February 2001