HIGGINS ENGINEERING, INC.

REVIEW OF DELIVERABLES

FOR THE UPDATE TO

THE SOUTH LEE COUNTY WATERSHED PLAN

Prepared for
the

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

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Water Resources - Environmental

REVIEW OF DELIVERABLES FOR THE UPDATE TO THE SOUTH LEE COUNTY WATERSHED PLAN May 29, 2009

On April 27, 2009, this firm was retained by the South Florida Water Management District (District) to perform an independent review of the deliverables resulting from the update to the South Lee County Watershed Plan (SLCWP). On June 24, 2008, a work order was issued to Boyle/AECOM to perform an update to the SLCWP which was originally completed in 1999. The updated plan had a final delivery date of May 14, 2009 which has been, essentially, completed.

The above referenced work order issued to Boyle/AECOM has the following components:

Task I-A Project Orientation
Task I-B Data Collection
Task I-C Survey Cross Sections and Model Update
Task II Ecologic Assessment Update
Task III Problem Identification and Plan Formulation Update
Task IV Update to Amendment I and II of the SLCWP

The scope of work for the Higgins Engineering, Inc. work order included "data evaluation; evaluate whether the draft final report meets the intended scope and objectives of the work order; provide any other recommendations; report preparation; and participation in meetings with District staff, other partner agencies, consultant teams."

Data Evaluation:

Based on the draft final report, it appears that a recommendation to do further study is being made based on the need to obtain updated and more reliable topographic information, especially in the area east of I-75 and in the south central area. The timing is very unfortunate now that there is more updated topographic information from Lee County, primarily consisting of LIDAR topography. Regardless, the topographic information available at the beginning of this study could have been adjusted based on the field survey spot elevation checks.

Draft Final Report Comments:

From an overall perspective, it appears that this study is more of an independent evaluation, as opposed to an update to the SLCWP and its associated models. By utilizing the MIKE SHE/MIKE 11 model there will be inherent problems with comparing current results with the previous results. This is made apparent by the comparison provided in Table 4-7 where the stage results between the two models vary in the range of -5.3 feet to 1.9 feet. The original work order for this study had a specific requirement to update the original plan model which was a combination of Sheet 2D and SWMM. It has not been made apparent as to why the new model was used versus the old. It may be appropriate to pick one of the original calibration runs and run the MIKE SHE/MIKE 11 model to compare results.

While it is true that the MIKE SHE/MIKE 11 model is more sophisticated by virtue of being able to analyze groundwater

systems and its relationship with surface water systems, this feature ultimately did not prove to be beneficial for this study. The analysis of groundwater becomes very minor when analyzing major flood events which was one of the purposes of this study and the prior study. However, use of the current model for analyzing wetland system hydroperiods is beneficial.

We are not certain that the model was sufficiently calibrated. For instance, the Spring Creek calibration run appears to be off by 50% at the peak. In addition, the Imperial River calibration is off by approximately a foot and the stream discharge is calculated to be 1,000 cfs versus the 1,400 cfs observed.

Tables 4-5, 4-6, and 4-7 all demonstrate the significant differences between the two models, SHEET 2D/SWMM versus MIKE SHE/MIKE 11. Expansion on the reasons for the differences in results may be appropriate.

In Section 3, the hydroecological assessment, it is stated that additional topographic information is needed and also that the modeling had not been completed. The study area identified in the report is correct in terms of its relationship with the proposed culvert crossing of I-75. However, recommendations need to be made on establishment of a control elevation for the culverts beneath I-75. Even an approximation as adjusted by field measurements would be appropriate.

The section (Section 4) on problem identification, as well as the whole report in general, appears to be focused more on problems throughout South Lee County as opposed to being focused on the redistribution of flows within the south branch of the Estero River and Halfway Creek. However, this information is

appropriate when considering this as a South Lee County Watershed Plan (SLCWP) update.

Recommended Plan Comments

From an overall perspective, we would expect to see a specific plan described in Section 6 as was outlined in the original SLCWP. In fact, it may be appropriate to go through the original plan and identify those components that are still appropriate, or completed, or no longer applicable. This would result in specific recommendations, as opposed to "considerations". An example of this is the plan component number 3, which is "consideration of construction of a collector system east of I-75".

One of the primary objectives identified in the Scope of Work was to determine the control level for the weir on the east side of I-75 upstream of the FDOT culverts. The conclusions in the report are requesting further study? Certainly some estimate of an appropriate control elevation could be derived from a combination of water table maps, ground elevations and the current modeling results.

Many of the recommendations are generic in the form of "improve conveyance" where the original study had specific design sections and improvements identified such that a comparison of existing versus future flood stages could be identified. This comment would apply to plan components 5, 7, 8 and 9.

It appears that an update to Amendments I and II of the SLCWP has not been fully addressed as required in the scope of work. This should be expanded upon in the final report.

A similar comment to the need to identify specific improvements also applies to the estimated cost. We would assume that a list of specific improvements have been identified to arrive at the recommended plan estimated cost of $10,300,000.

In summary, it appears that the components of the plan identified in the 1999 South Lee County Watershed Plan remain valid today. The two significant items that we would recommend be performed are: Running the new model using the same calibration data runs from the original study so that the accuracy of the current model can be assessed. The second recommendation would be to go through the specific recommendations of the original SLCWP and establish which ones are still valid, or not applicable, or need to be amended.