

**Northern Tampa Bay Phase II Local Technical Peer Review Group (LTPRG)  
SWFWMD Tampa Service Office, Hwy 301N, Tampa**

**Meeting 41**

**February 13, 2008 - 9:30AM**

## **Summary**

The following were in attendance: Patty Fesmire, Tampa Bay Water; Doug Keesecker, Tampa Bay Water; Chris Shea, Tampa Bay Water; Bob Tyson, Tampa Bay Water; Dan Schmutz, GPI Southeast, Inc.; Diane Willis, GPI Southeast, Inc.; **Scott Emery**, EHI/Hillsborough County; David Watson, Hillsborough County EPC; **Gordon A. Leslie Jr.**, Hillsborough County EPC; Mario Cabana, Hillsborough County WRS; Cynthia Wheeler, Reynolds, Smith & Hills; **Dave Slonena**, Pinellas County Utilities; Brian Lane, Jones Edmunds; **Michael Hancock**, SWFWMD; Maya Burke, SWFWMD; John Emery, SWFWMD; Don Ellison, SWFWMD; David Carr, SWFWMD; Mark Barcelo, SWFWMD; Lisa Henningsen, SWFWMD; Jill Hood, SWFWMD; Jessica Sutton, SWFWMD and **Doug Leeper**, SWFWMD. Names in bold are designated representatives for the LTPRG.

Doug Leeper provided an update on the status of minimum flows and levels development for northern Tampa Bay and other priority water bodies. With regard to minimum flows for river/spring systems in the Tampa Bay area, Mr. Leeper noted that at their December 18, 2007, the Governing Board approved Initiation of rulemaking to amend Rule 40D-8.041, Florida Administrative Code., to establish minimum flows for the Braden River, the upper Hillsborough River and Crystal Springs. He further noted that no challenges to the rule amendments pertaining to these minimum flows were received following publication of the amendments in the Florida Administrative Weekly, and the flows would soon be incorporated into District rules. He also noted that the peer-review report on proposed minimum flows for the lower Alafia River estuary was expected to be submitted to the District this week and would, hopefully, be presented to the Governing Board at their February 26, 2008 meeting. With regard to the Alafia River, Mr. Leeper noted that the public hearing that was requested for proposed minimum flows for the fresh water segment of the Alafia River was continued at the December and January Governing Board meetings and would also be continued at the Board's February meeting. Mr. Leeper indicated that staff anticipate that the hearing may be held at the March 2008 Board meeting, based on the current availability of the draft report on proposed minimum flows for Alafia River estuary, and the upcoming availability of the peer-review report on the proposed minimum flows. Finally, Mr. Leeper stated that a peer-review report on the proposed minimum flows for the lower Peace River and Shell Creek is expected to be submitted to the District later this month and staff expects that the report will be presented to the Governing Board at their March 25, 2008 meeting.

With regard to the development of minimum and guidance levels for lakes in the northern Tampa Bay area, Mr. Leeper noted that the Governing Board approved rule

amendments for Lakes King, King (East) and Linda in Pasco County on December 18, 2007 and that the proposed levels were not challenged within the twenty-one day period following publication of the rule amendments in the Florida Administrative Weekly, so the levels would soon be incorporated into District rules (Rule 40D-8.624), Florida Administrative Code. He also noted that at the December meeting, the Board approved minimum and guidance levels for several priority lakes located outside of the northern Tampa Bay area, including Lakes Angelo, Denton, Placid, Tulane and Verona in Highlands County and Crooked Lake in Polk County. Mr. Leeper also stated that at their January 29, 2008 meeting, the Governing Board authorized staff to complete rulemaking regarding previously approved rule amendments pertaining to minimum and guidance levels for Lakes Lola, Jessamine, Pasco, Pierce and Unnamed Number 22 (Loyce) in Pasco County, and to remove Crews Lake from the amendments. He noted that staff expects to ask the Board to restart the rulemaking process for levels proposed for Crews Lake later this year.

Dan Schmutz gave a presentation entitled A Distance-Based Linear Model Analysis of Groundwater Production Effects on Water Levels in Isolated Wetlands at the J.B. Starkey and North Pasco Regional Wellfields. Mr. Schmutz stated that the development of a statistical tool for predicting changes in wetland water levels in response to groundwater production would have broad applications in water supply planning and permit compliance assessments. He presented a simple Production Weighted by Distance (PWD) index capable of characterizing the spatial and temporal patterns present in wetland water levels under different levels of groundwater production and rainfall. Mr. Schmutz identified two types of edaphic settings for isolated wetlands ("xeric-associated" and "mesic-associated") in the Starkey wellfield study area distinguished by the proportion of xeric habitat-supporting soils surrounding them. Thirteen years of water level data from 78 isolated cypress and marsh wetlands were converted to Normal Pool Offsets to provide an ecologically meaningful standardization. The PWD index was calculated using data from each of the 17 area production wells for each wetland site-year combination. Wetlands occurring in areas of xeric and mesic soils showed profoundly different relationships with respect to this simple index of groundwater production. Xeric-associated wetlands showed linear relationships with respect to the log-distance weighted PWD, while the responses of mesic sites were variable. Mr. Schmutz felt that the study clearly documented a significant log-distance based, linear, additive production effect on surface water features, a finding consistent with groundwater hydrologic theory. Significant pumpage effects were identified in each year studied. In lower rainfall years, the same magnitude of the PWD index was associated with lower wetland water levels, indicating a greater water production effect. Also, in wetter years, the regression equations had less explanatory power, suggesting that pumpage is a better predictor of wetland water levels in drier years. Specific multivariate models for annual, dry, and wet season conditions were developed for xeric-associated wetlands. The annual model provided relatively narrow prediction intervals for wetland water levels under median rainfall and starting water level conditions. Mr. Schmutz explained that multiple linear regression models for xeric-associated wetlands, using the PWD index, show great promise for predicting the effects of different scenarios of rainfall, pumpage, and starting water levels on this vulnerable subset of wetlands.

Several questions were asked by the group. Mr. Hancock felt that the xeric soils were likely indicative of areas of little to no confinement, where a more linear relationship between the Floridan and surficial aquifer, and hence wetlands, would be expected. However, he warned that the lack of a simple linear relationship between the wetlands and Floridan aquifer drawdown should not be misinterpreted as the lack of a relationship. In the areas of semi-confinement (likely represented by the mesic soils), a more complex, more nonlinear relationship can exist. The existence of a relationship in the more mesic areas has been demonstrated over the years through data assessments, model analysis, and biologic monitoring. Dr. Scott Emery asked if Mr. Schmutz felt that the relationship identified in the presented graphics represented all of the cause and effect relationships. Mr. Schmutz and others agreed that there were likely more complex factors involved, and the relationships presented represented only the part of the relationship assessed through the soils analysis.

Don Ellison gave the second in a series of three presentations the assessment of long-term lake fluctuations for the minimum levels analysis. Mr. Ellison reviewed the content of his last presentation, including the definitions of several of the terms used in the District's minimum flows and levels rules (40D-8), as well as the importance of the use of long-term lake percentiles when developing minimum levels. The understanding of long-term water levels at individual lakes enables the District to account for natural rainfall variability when comparing shorter-term data to minimum levels. Because most lakes don't have long-term periods of water level data collection (defined as 60 years or more of record), it is often necessary to use models to produce simulated water levels, based on best available information. Mr. Ellison presented some of the modeling techniques that District staff has developed to estimate long-term lake level percentiles. The current modeling techniques involve the use of Line of Organic Correlation. This technique has been applied to model lake levels using water levels from other lakes and wells, and, more recently, using rainfall data. Mr. Ellison explained that the next presentation will include information on how the modeling results will be interpreted, and applied to assessment of MFL compliance. A PDF file of Mr. Ellison's presentation is posted on the NTB II website.

The next regular LTPRG meeting is scheduled for 9:30 AM on April 9, 2008 at SWFWMD's Tampa Service Office.

# **AGENDA**

## **Northern Tampa Bay Phase II Local Technical Peer Review Group**

### **Meeting 41 SWFWMD Tampa Service Office, Hwy 301N, Tampa**

**February 13, 2007 - 9:30AM**

1. December meeting follow-up
2. Miscellaneous updates
  - Lake MFL Update
3. Groundwater Production Effects on Water Levels in Isolated Wetlands at the J.B. Starkey and North Pasco Regional Wellfields: a Distance-Based Linear Model Analysis (Dan Schmutz, GPI Southeast, Inc.)
4. Methods for Estimating Long-term Lake Percentiles (Don Ellison, SWFWMD)
5. Issues for next Meeting – April 2008