

# **WORKSHOP ON WATERSHED RESERVOIRS: LOCATIONS, EFFECTS AND SOLUTIONS**

**APRIL 13-15, 2009  
PUNTA GORDA, FLORIDA**

**CHARLOTTE HARBOR NATIONAL ESTUARY PROGRAM**



## **WORKSHOP SUMMARY REPORT**



*Harns Marsh, Lee County. Photograph provided by the East (Lee) County Water Control District*

The *CHARLOTTE HARBOR NATIONAL ESTUARY PROGRAM* is a partnership of citizens, elected officials, resource managers and commercial and recreational resource users working to protect the ecological integrity of the greater Charlotte Harbor watershed. A cooperative decision-making process is used within the Program to address diverse resource management concerns in the 4,700-square-mile study area.

**THE CHNEP WISHES TO THANK THE FOLLOWING PEOPLE FOR THEIR GENEROUS CONTRIBUTIONS TOWARD MAKING THIS WORKSHOP POSSIBLE:**

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**THE USE OF OFF-STREAM RESERVOIRS  
COMBINED WITH PERCENT FLOW WITHDRAWAL SCHEDULES  
TO REDUCE DOWNSTREAM ESTUARINE IMPACTS.**

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Historically, larger public drinking water supplies in southwest Florida relied on groundwater well fields or the construction of typical in-stream reservoirs (Hillsborough River, Lake Manatee, Shell Creek). However, by the late 1970s the lack of suitable locations and an increasing concern relative to the environmental impacts posed by in-stream structures began to lead both utilities and regulators to seek potential alternatives. In 1976, the Southwest Florida Water Management District granted a permit to construct a surface water treatment facility on the lower Peace River with the condition that adequate off-stream wet-season raw water storage be constructed to limit withdrawals during seasonally drier periods. In 1988, the Peace River Facility's water use permit was modified to include a year round low flow cutoff, combined with a ten percent diversion schedule and a maximum cap on withdrawals. These changes to the Facility's permitted freshwater withdrawal schedule were designed to allow withdrawals to track actual natural variations in flows above the permitted threshold. An integral, critical component of such a variable schedule that matches withdrawals with actual changes in river flows has been the Facility's off-stream reservoir storage. An additional 6 billion gallon off-stream reservoir is scheduled for completion in mid-2009 to meet increasing regional demands.

While the annual average hydrographs of stream flows in southwest Florida generally follow distinct patterns based on characteristically dry and wet seasonal rainfall patterns, the actual seasonal patterns and variability of flows within any given year can be extremely variable. This is clearly evident in comparisons of Peace River flows over the past 5-year (2004-2008) time interval. Within estuarine systems such as the lower Peace River/upper Charlotte Harbor, the overall relationships between such variability in freshwater inflows and the spatial and temporal dynamics of both physical habitat characteristics and the resulting structure of biological communities are complex and mediated through a number of intermediary processes.

Research by the Nature Conservancy has recently addressed the necessity of balancing the needs for surface water withdrawals for public supply with maintaining the magnitude and timing of ecological flows to protect estuarine biological communities. Key components of their recommendations center on maintaining periods of both maximum as well as minimum base flows, as well as protecting flows during periods identified as critical to specific estuarine biological resources.

Since 1976 the permit for the Peace River Water Treatment Facility has required the implementation of a hydrobiological monitoring program (HBMP) to both assess the overall "health of the harbor" by tracking the long-term changes in physical and biological characteristics, and evaluate the magnitude of potential changes due to Facility withdrawals relative to natural seasonal and longer term variations in freshwater inflows. The results of over 30-years of HBMP monitoring have clearly identified critical periods relative to estuarine production when the estuary has greater sensitivity to withdrawals, and conversely extended intervals when the potential impacts of withdrawals are greatly reduced. The use of off-stream reservoirs provides the Facility with the opportunity to harvest water from the river at the appropriate time and the appropriate quantities to reduce potential estuarine impacts.