ATTACHMENT Q

An Alternative Water Source for the Northern Planning Area

SUBMITTED BY DAN HILLIARD

An Alternative Water Source for the Northern Planning Area

The 2010 Regional Water Supply Plan for the Northern Region outlines options to address anticipated demand by increasing supplies 92.5 MGD at a cost of $800M. We believe implementing these projects will result in additional reductions in flow to the lower segment of the Withlacoochee River (l-WR) which currently receives inadequate freshwater inflow from the system's watershed to maintain healthy wetland and estuarine ecosystems in the lower river.

The upper segment of the WR (u-WR) and Barge Canal (BC) currently shunt an annual average of 350 MGD of freshwater directly to the Gulf. If the cooling water intake system (CWIS) proposed by Progress Energy (PEF) for the Levy Co. nuclear facility is implemented as planned, this potential freshwater supply will be converted to steam and permanently lost. PEF has been advised by SWFWMD to seek alternative fresh water sources to replace on-site groundwater consumption at the proposed Levy generating facility.

We propose capturing freshwater inflows to the u-WR and BC that would otherwise be wasted by installing a saltwater barrier in the canal similar to the one evaluated in Option 2 in the 2004 URS Lower River Restoration Alternatives Feasibility Study (fig. 5). Moving the canal control structure and lock six miles below the Inglis Lock will allow an impoundment of 1.5 B gal +, assuming a 2 foot head is maintained above current average water. Option 2 also includes diverting the water volume from the spillway for discharge into the u-WR via the Inglis Dam control structure. Combined with the 350 MGD lost via the canal, an average total freshwater inflow of 1.2 BGD would be available to resupply the impoundment (equivalent to 67% of total capacity). We also note the total 2004 estimated construction costs for Option 2 (dams, control structures and lock) was approximately $26 M. The $ 770M+ difference between impoundment related construction costs relative to estimated cost of supply projects proposed in the 2010 "Study Plan" projects appear to be more than sufficient to cover treatment and distribution infrastructure costs necessary for addressing specific regional water demands.

A significant co-benefit of placing a saltwater barrier in the lower reach of the BC is groundwater remediation. Figures 1 and 2, from Faulkner's 1972 assessment of the Canal's impact, show a marked reduction of potential of the unconfined upper Floridan. This is the principal rationale for locating a control structure further west than proposed in the URS evaluation. Maximum drainage from canal construction (red contours on fig.2) is centered west of US19.

Figure 3 represents the additional drainage of the upper Floridan related to deep, limerock mining. This has resulted in inland migration of seawater and leakance of S04-rich water from deeper, semiconfined zones. Maintaining a stable higher stage in the impoundment will partially, but significantly, mitigate some of the degradation that has occurred in the last 40 years. A canal impoundment stage 2 to 3 ft. higher than existing tidal stage will flush contaminated shallow groundwater, documented on both sides of the canal, and improve wetlands drained by the canal and deep mining.

Figure 4 represents a conceptual model that attempts to approximate the degree of expected improvement in potential for the upper Floridan aquifer adjacent to the canal and left bank of the u-WR segment. Flushing seawater and mineralized contaminants from the aquifer would add 70-80 MG of fresh ground water to the system. When combined with increased retention of groundwater further inland on both sides of the canal, the total increase in fresh groundwater would conservatively exceed 200MG. These estimates assume an average 10% "effective" porosity in the upper 45 ft of the aquifer. Restoring 200 + MGD to the "thin" freshwater saturated zone of this coastal, karst aquifer would be a very significant driver for arresting and mitigating some of the widespread damaged to coastal wetlands along this segment of the coast.

Withlacoochee Area Residents, Inc. (501.C3)
7/14/2010

Attachments: Figures 1-5

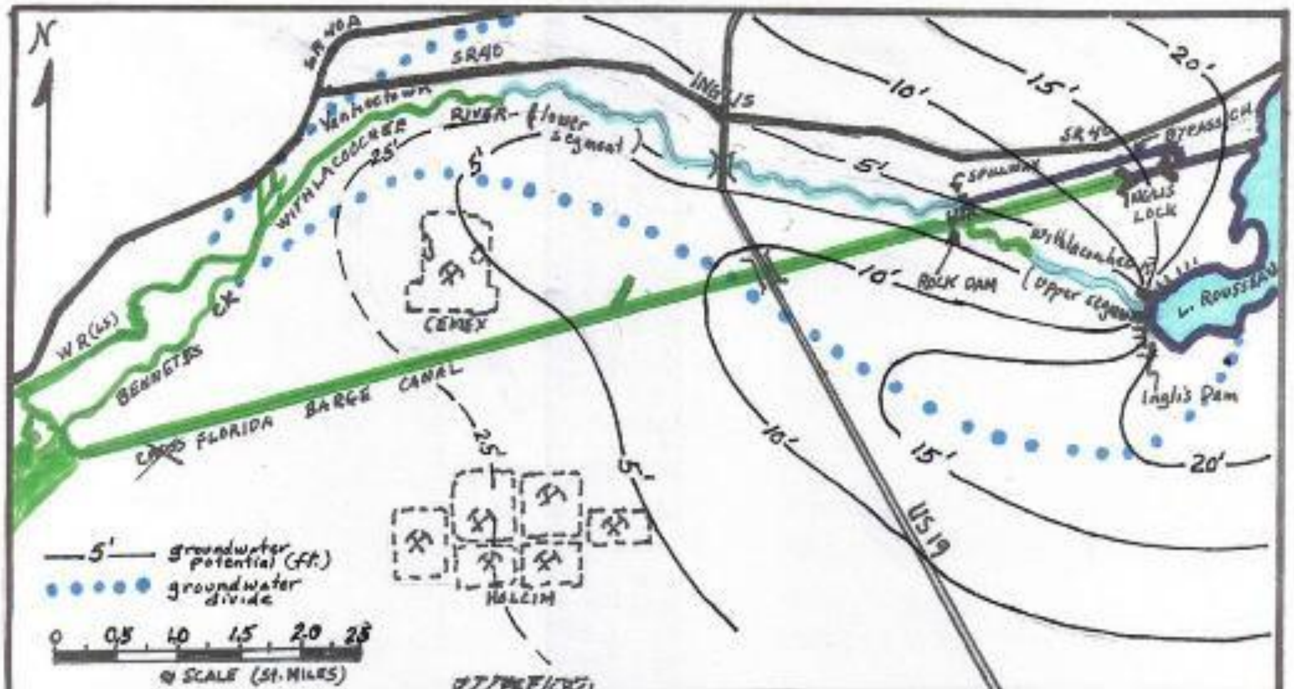

Fig. 1 (draft) – Conceptual model of Potentiometric-surface of upper part of Floridian aquifer (low water condition), had the canal not been constructed (after Faulkner, 1972, Fig. 6).

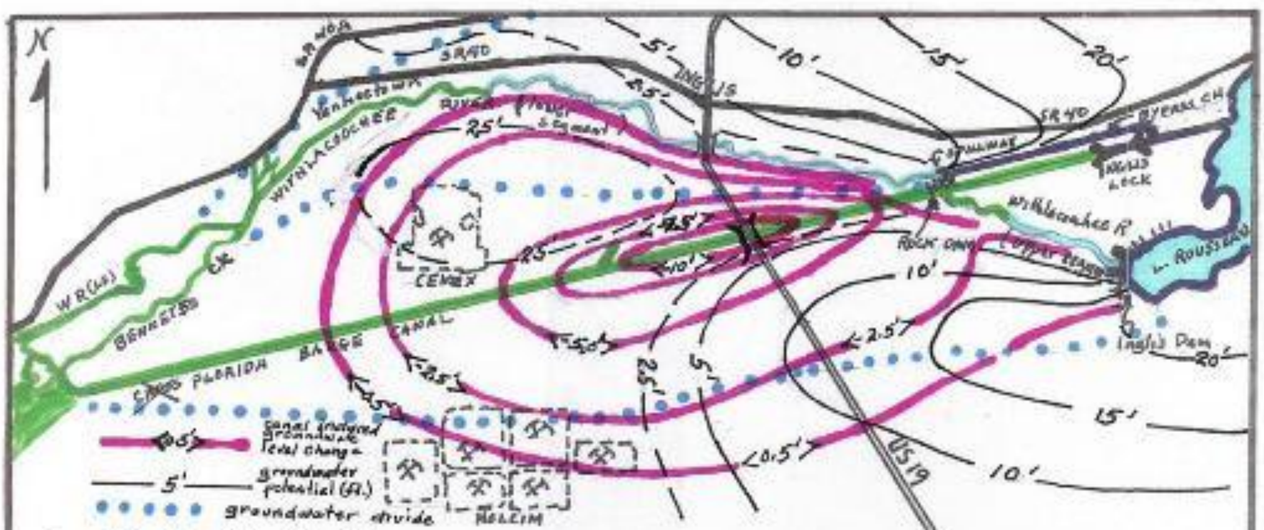

Fig. 2 (draft) - Potentiometric-surface map of upper part of Floridian aquifer (07/16/71) - low water condition (Faulkner, 1972, Fig. 4). Groundwater level changes due to Canal construction are approximated by the "red" contours.

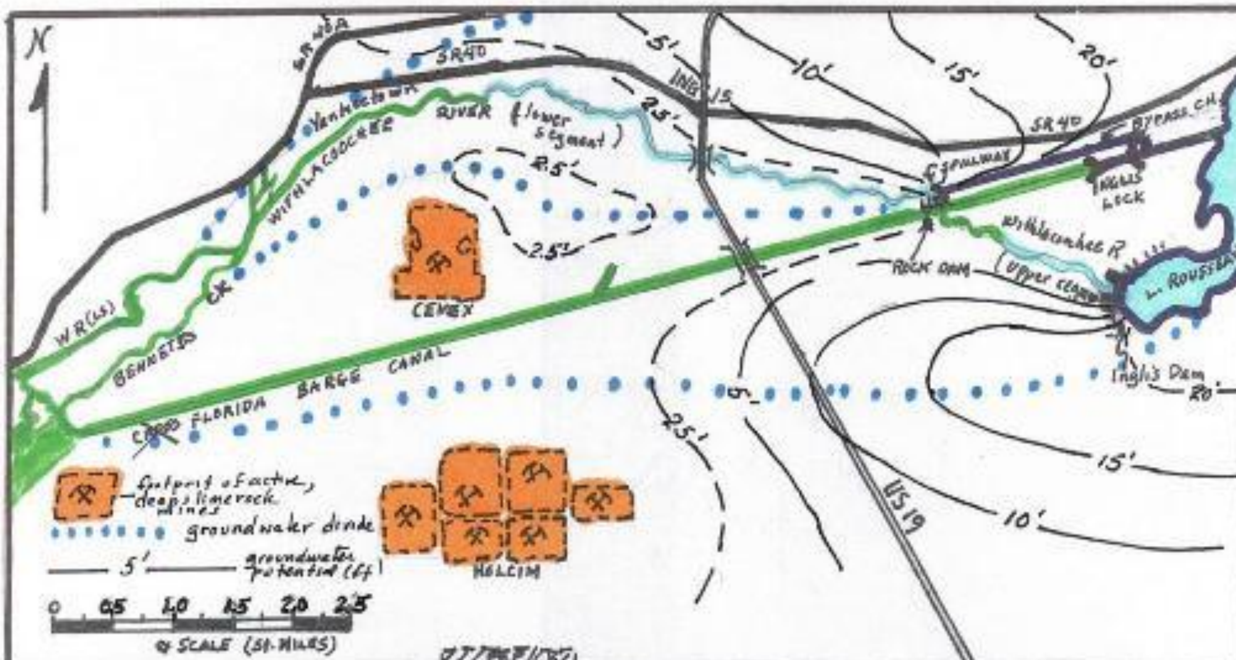

Fig. 3 (draft) - Conceptual model of Potentiometric-surface of upper part of Floridian aquifer in 2008 based on Faulkner's (1972, Fig.4) low water condition modified to conform with 10/13-17/07 data from a dense array of shallow monitoring wells at the Cemex Inglis Mine. The potentiometric surface east of the Holcim pits, south of the Canal, has been modified to replicate impacts observed in: Hydrological Investigative Report, Cemex Inglis Quarry, CES (Dec. '08)

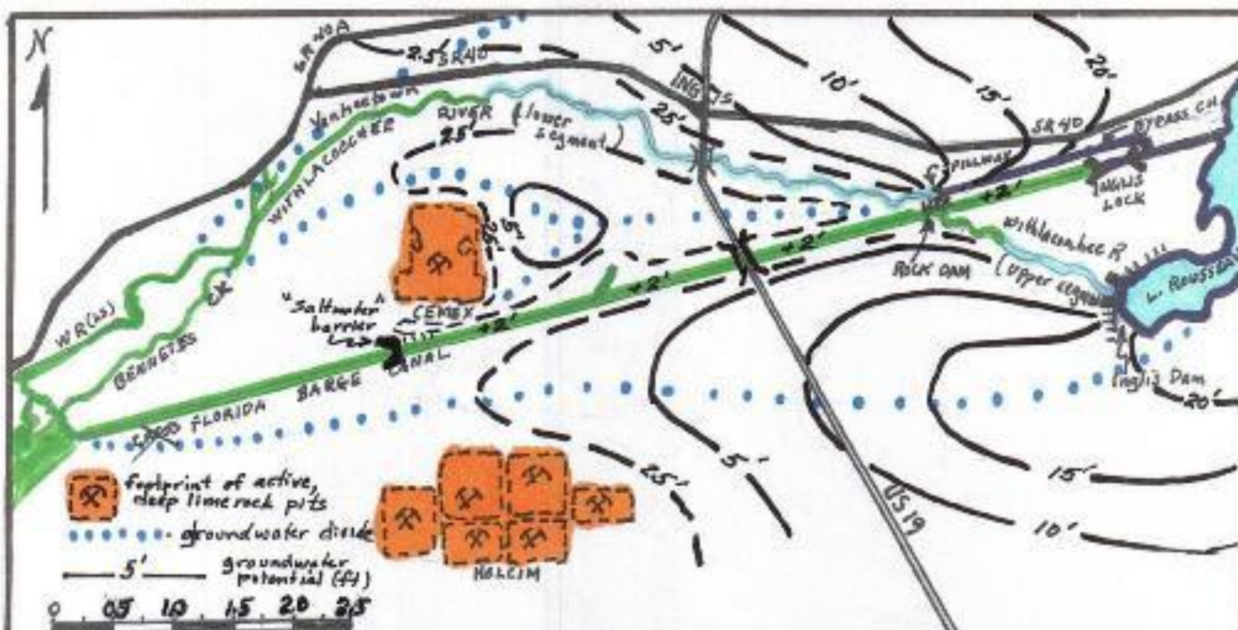

Fig. 4 (draft) - Conceptual model of Potentiometric-surface of upper part of Floridian aquifer, if a "saltwater" barrier was installed in the canal 6 miles below the Inglis lock. Changes in potential assume maintaining average stage in the canal impoundment 2 feet higher than current average water level.

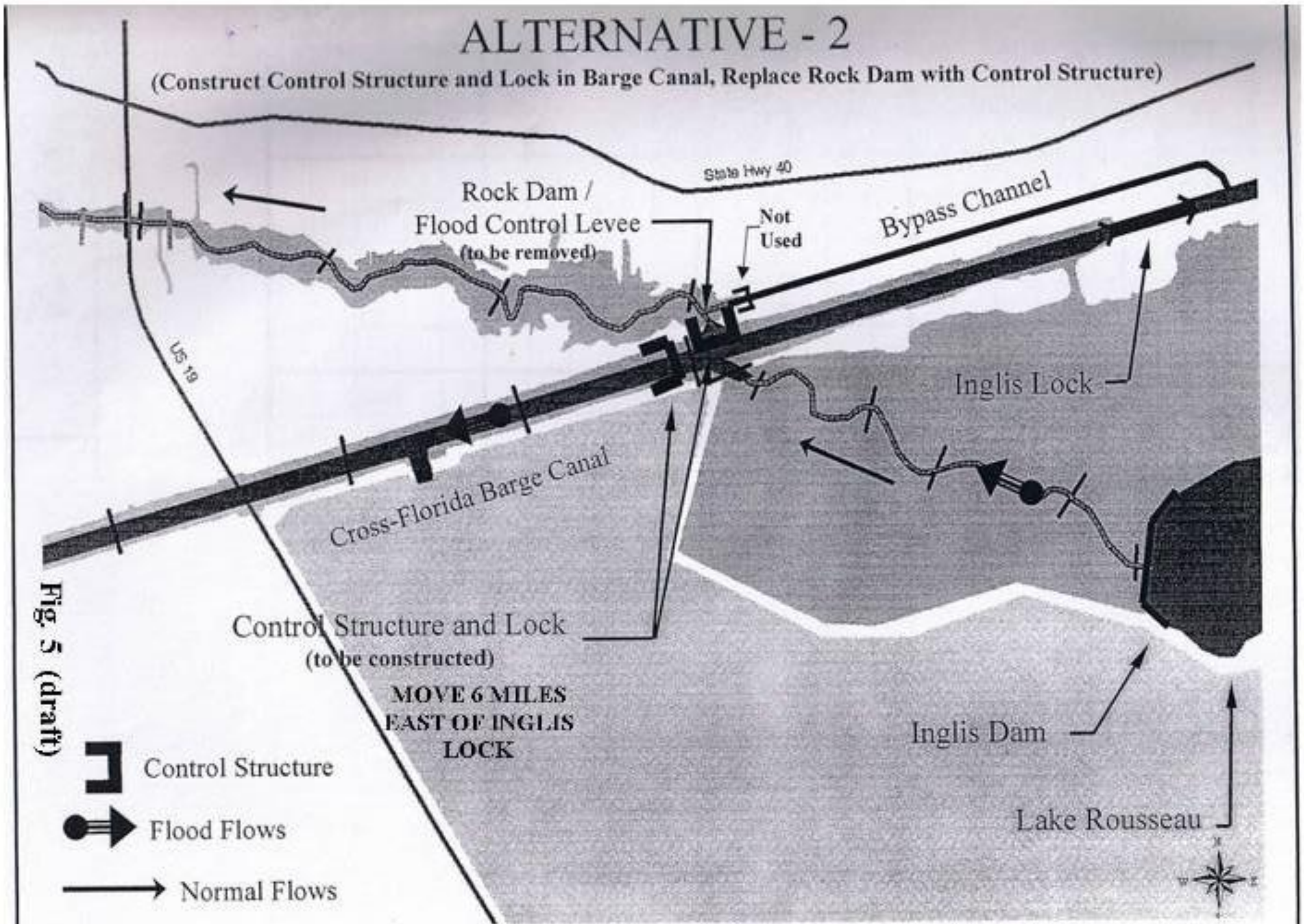

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FIGURE 7
ALTERNATIVE 2
CONCEPTUAL PLAN