

WatershEDITORIAL:

On returning headwater flows to Belle Meade

The “On returning headwater flows to Belle Meade” is a product of the Big Cypress Watershed Team. Watershed editorials are intended to shed light on watershed related issues of historic, technical, and societal complexity that otherwise tend to fall between cracks of political and public discourse – and/or remain unresolved or subject to misunderstanding. Watershed editorials come in a variety of formats, but usually contain a brief introduction, a consensus opinion, discussion points brought before a quarterly meeting(s), and a minority viewpoint.

Introduction

In the early 1980s the Big Cypress Basin developed a blue-print for water management and hydrologic restoration of the Belle Meade- Royal Palm Hammock area to make room for the eastward expansion of Naples into the county’s inland interior. Fast forward a quarter century later to where we are today in 2007: the restoration of its neighbor, the Southern Golden Gate Estates (SGGE), is on its way for completion in 2009, but Belle Meade still stands at the starting gate. The good news is that there is a new plan in hand for replumbing water flows through Belle Meade – just recently completed by the Big Cypress Basin (in affiliation with Parsons) in 2006.

Consensus Opinion

With the new plan in hand, what can we do to move forward on this new roadmap to prevent it, like its predecessor plan in 1980, from collecting dust and losing opportunities to burgeoning development that surrounds it? Let’s get the ball rolling by answering a few questions.

First, what is meant when we say hydrologic restoration of Belle Meade?

The goal of this Generation X master plan of the Belle Meade area is to bring right amount and timing of water to Rookery Bay and adjacent estuarine water bodies – in part by restoring the remnant historic flowways and also by retrofitting existing canals. The study is a storm-water plan and environmental assessment that considered a range of alternative strategies. The study recommends seven strategic plan elements (Figure 1).

- Diversion of Golden Gate Canal flows into APAC Lake
- Diversion of Golden Gate Canal flows to Henderson Creek via the I-75 culvert near the toll booth,
- Enhanced conveyance of sheetflow across Sabal Palm Road
- 66 Acre STA near US41
- Manatee Road Area improvements
- Fiddler’s Creek Spreader channels

- Flowways through future 6L area developments
- Tomato Road Diversion and Enhanced conveyance under SR92

The diversion at APAC Lakes will serve as a valuable overflow valve for reducing point discharges of freshwater to Golden Gate Canal's tailwater confluence with Naples Bay. Freshwater diversions into Belle Meade will also recharge aquifers, lengthen hydroperiods to water-starved wetland communities in the western Picayune forest, and help re-establish distributed freshwater discharge to downstream Ten Thousand Islands.

Second, what makes Belle Meade different from the Southern Golden Gate Estates project?

Rebuilding a natural watershed in the defunct Southern Golden Gate Estates area has benefited by being included as part of the nationally-sponsored Everglades Restoration Plan. By that merit, land-ownership for SGGE was acquired by a complex, and at times controversial, eminent domain process. For the SGGE area, the restoration emphasis has been largely focused on returning the area to its natural pre-drainage state – with important, but relatively minor, considerations to upstream and downstream urban infrastructure.

In comparison, rebuilding Belle Meade's watershed is constrained to a much greater degree by water management needs of upstream, adjacent, and downstream urban areas. At its headwater source, APAC Lake has been designed to handle an order of magnitude less of water (~400 cfs) than adjacent Southern Golden Gates project (~4000 cfs). At its tailwaters, watershed flows in Belle Meade will be weaved through a fairly dense cluster of urban development. Importantly, land is being acquired through a willing-seller process in the Belle Meade plan.

Third, how do we move forward on hydrologic restoration of Belle Meade?

To summarize, (1) a new plan is complete – a quarter century after the original, (2) it delineates a roadmap for a socially-responsible re-plumbing of flows in the Belle Meade geographic expanse, and (3) the plans specifically calls for completion of seven project elements.

Noticeably missing from the plan are organizational assignments and time tables for who and when the plans various components will be completed. The sum result of the recommended plan is envisioned to be larger than its individual parts – but the prospect of sequentially and faithfully adding these parts to equate into its intended sum will require a spirit of cooperation and collaboration between its funders and builders; most notably the Big Cypress Basin, Collier County, and the large-land developers in the project area's footprint.

Plans are roadmaps for the future, but also have a shelf life of relevancy. Let's bring relevant members of our community together in ensuring that this important watershed rebuilding and replumbing project located at the critical dividing line between our urban and wild areas lives up to its full societal potential.

Team Discussion Points

If models exist, let's make sure they are useful. We should not lose sight of the fact that the updated plan for Belle Mead is essentially a storm-water plan. That means that the study did not employ a regional-scale hydrologic flow model to evaluate flow regimes entering into, through, or downstream of Belle Meade. Hydrologic inputs from an existing Mike She model were used as inputs for storm-water planning purposes, but alternatives of flow regimes, and evaluation of their effects on the Belle Meade area and downstream estuaries were not evaluated.

Rookery Bay is currently working with the University of South Florida to develop an estuary mixing model for downstream estuaries in Rookery Bay. This model may eventually help planners optimize freshwater flow releases to downstream estuaries, but we should not anticipate project-design guidance from such a model in the near future.

Our group recommendation is to utilize both Mike She and estuary mixing models as needed to help steer and refine project design and operation. However, we should not let lack or deficiency of any one model get in the way of common-sense, innovative, and timely decision making. It is also essential for modelers to be brought up to date on how their models can be better customized. Models can be great tools. But so often they aren't "sharp enough" to address site specific needs of concern or lag behind the management curve. Let's make sure that's not the case with Belle Meade.

Unresolved flow issues that need more attention. To use a plumbing term, Belle Meade is the upstream "junction box" to a number of downstream water and wetland bodies. Waters currently short-circuiting to tide now stand a chance of being intercepted and redirected more beneficially. The question still lingers to what magnitude this is possible. Here's some issues related to redirection of flows through Belle Meade.

(1) Estuarine outfalls: The Plan doesn't alleviate extreme pulses or droughts to downstream estuaries. The Belle Meade storm-water plan shows APAC lake as being capable of intercepting 400 cfs of this flow. Another 200 cfs can be diverted down Collier Blvd canal. These diversions will help attenuate flow flows to Henderson Creek and alleviate some flooding to downstream Naples Bay, but it definitely doesn't solve the problem for very large flows and drought conditions.

(2) Source of Belle Meade: APAC Lakes? At first glance APAC Lake appears to be the source of the Nile – but a couple of roadblocks may stymie its downstream passage. (1) Will flows cross under the I75 canal into southern Belle Meade (or sideways), and will the canal need to be modified? Our group noted that modifications to I75 canal were not a part of the Belle Meade plan. (2) What will be the impact of flow releases on flora and faunal populations, and human inholders?

(3) Using new flows through Belle Meade to recharge the shallow aquifer. Can flows be routed to the east down the I75 canal to recharge the shallow aquifer? Currently this is not possible, but could become a possibility with infrastructure improvements to that canal. Not only would this provide additional water storage, it also coincides with a need to maintain aquifer levels for water supply to public and private wells in that area. The recent drought has already increased community enthusiasm for adding groundwater monitoring wells in that area. Providing a way to recharge water to that area would be a next step.

(4) Using new flows through Belle Meade to recharge the deep aquifer (ASR). What is the possibility of increasing capacity into Aquifer Storage and Recovery? Currently, the City of Marco uses a cluster of reservoirs at the NW intersection of US41 and Collier Blvd to stage water into and out of its ASR wells. To what degree can additional waters be added here, and what is the potential for ASR to absorb more surface flows in other parts of Belle Meade.

Inholder questions remain. The question was raised about how many and where inholders in Belle Meade were located. That's an important number, as easements or acquisition of these properties would be required, but it is also somewhat of a mute point. Even if there's only one landowner that means it can't be flooded. This raised concern among our team regarding to what degree, if any, water could really be introduced into the Belle Meade area. For example, there is a relatively large community at the eastern outskirts of Belle Meade that was not acquired as part of the Picayune Strand Restoration. This community is undergoing some relatively minor drainage improvements to mitigate flooding concerns. How does introduction of new flows from Belle Meade effect this community and other inholders?

However, Belle Meade's majority of inholders are large land owners, the area is already zoned as low density by the county, and the area contains favorable incentives for conservation and flow easements – all of which may simplify resolution on this issue.

Funding sources need to be coordinated. There are a number of funding sources and studies that include Belle Meade components in them. They include the following:

Comprehensive Everglades Restoration Plan (CERP). This project has \$6 million earmarked for restoring attenuated flows to Henderson Creek. Where can this money be spent most effectively for Henderson Creek, and also in complement with the rest of the big picture prescribed for Belle Meade in the master plan? As it currently stands, Rookery Bay National Estuarine Research Reserve will be replacing Florida Department of Environmental Planning (DEP) as the state lead on this project.

Southwest Florida Feasibility Study. Currently on-going, this CERP-authorized study is looking across the entire Southwest Florida area to

identify restorations needs for that area. It includes all major components of the Belle Meade storm-water plan.

Mitigation funds. The Belle Meade area is currently undergoing fairly rapid development. Part of the mitigation for these projects, and other nearby projects in which Belle Meade could serve as a sending area, should be tapped immediately and intelligently.

Minority Opinion

Is it unrealistic to expect all the pieces and potential of Belle Meade's land conversion, replumbing, and restoration to fall together in a way that makes the sum larger than its parts? That's not an outlandish question. Yes, flows can be diverted into APAC Lakes, but where do they go from there, how will they affect woodpecker populations and other wildlife, will inholders be impacted, and is it even possible, politically and hydrologically, to coax flow of water south of I75? These are issues that can be resolved for sure, but in whose favor – and will they openly and fairly be discussed in a way that brings out their full societal value, not just an “easy out” for the present day. A spirit of trial and error may be required over time to tweak flows down their optimal paths.

The plan is great, but it's a very general blueprint. Many questions and details remain – if not fully unresolved – then not yet in sharp focus. We need a Belle Meade Czar who can navigate outside and inside the box – brokering deals, cultivating community consensus, and working through all the details on innovative ideas and thorny unresolved issues – in order to make Belle Meade the success after so many years of seeing status quo of future promises and lost opportunities for this area.