

CRYSTAL LAKE

AN OPPORTUNITY TO BUILD HEALTHY COMMUNITY

by

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Synopsis:

The author outlines the unique opportunity to develop centralized storm water management and recreational facilities incorporating the existing pond and wetland areas of Crystal Lake on Lady's Island. The effects on adjacent wetlands, appearance, community benefits, land value, and conformance to community and county visions are addressed. The foundation for this notion is the Lady's Island Village Plan (the Village Plan) developed in 1999 by Beaufort County through the appointed Lady's Island Preservation Committee.



Crystal Lake

An Opportunity to Build Healthy Community

A unique opportunity exists in the Lady's Island Village Center area (the Village) to develop centralized stormwater management and recreational facilities incorporating the existing pond and wetland areas of Crystal Lake. The foundation for this notion is the Lady's Island Village Plan (the Village Plan) developed in 1999 by Beaufort County through the appointed Lady's Island Preservation Committee.

The Lay of the Land

Crystal Lake is an existing pond of approximately 6 acres adjacent to additional wetland areas; all located east of the new Beaufort High School sports fields. The site is bordered by St. Peter's Catholic Church properties to the north and by properties along SC Hwy 802 and Rue du Bois to the south and east, in addition to the school site to the west. Crystal Lake is contained on property under single ownership, and the adjacent wetland areas are contained on additional private property parcels.

Totaling approximately 20 acres, the pond and wetland areas are approximately 2,500 ft from the core of the Village Center commercial area at the intersection of SC Highways 21 and 802. These areas are largely undeveloped at this time. The Village is a largely commercial area developed as a series of individual parcels. The Village Plan encourages development under a vision for higher density with pedestrian and community character. *(See GIS map below)*



GIS map illustrating the central location of Crystal Lake on Lady's Island, Beaufort, SC

The Imperative of Stormwater Management

Based on the imperative to manage both the quantity and quality of stormwater runoff from developed areas, Beaufort County has adopted regulations requiring that both issues be considered. Typically, this management is accomplished by incorporation of detention ponds on individual development sites. Most Beaufort County residents and commercial property owners are familiar with the sight of small ponds dotting the landscape of newly developed properties.

What would it look like?

Conversion of Crystal Lake into a centralized stormwater management and recreational facility would form a crucial element in the Village Plan. Under this idea, stormwater would be collected on individual sites in the Village Center and conveyed through a master-planned system of culvert pipes and/or ditches directly to the facility. Because stormwater treatment would be occurring downstream in the Lake system, new commercial developments would not be required to install and maintain ponds, and existing developments could eliminate ponds and convert real estate to uses more appropriate to the higher property values in the commercial area. Elimination of onsite ponds would facilitate commercial density and a more pedestrian friendly environment, like that of downtown Beaufort.

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Crystal Lake and adjacent wetland areas would be enhanced with native plantings in over-bank areas and with water control structures to provide additional treatment for water quality protection prior to release of stormwater to the Beaufort River. The natural hydrology of the adjacent wetlands has been disrupted by road construction and nearby development over the years. These improvements would allow a healing of those conditions. The native landscapes would encourage re-habitation by native waterfowl, plant species, and animals.

The Lake itself currently is a beautiful setting. Enhancement by restoration of natural hydrology and reestablishing the surrounding native landscape would create a natural park environment. Additional access to these areas via boardwalks and foot trails would open nearly 20 acres to community recreational use.

Community Benefits

The power in this opportunity lies in the potential to leverage better stormwater management into other community benefits, including community aesthetics, enhanced property values, public education, recreation, and natural resources protection.

- *Support of Community Vision*

The Village Plan emphasizes the importance of the Village as a commercial center for Lady's Island, similar to downtown Beaufort. Pedestrian transportation is favored by allowing the natural clustering of related land uses that was inherent in human community development prior to the dominance of the automobile. By eliminating the need for individual ponds, centralization of stormwater management facilities offsite will allow clustering of commercial buildings and civic space in much higher density to facilitate this natural vision for human social activity.

The properties surrounding Crystal Lake would provide a critical mass of real estate to generate other uses such as parks, wildlife habitat, buffers, and view sheds, which could not be achieved with decentralized stormwater management. The Lake is located near a community school and existing residential neighborhoods. The park would provide a transitional linkage within walking distance between the school and residential areas and the more intense activities of the commercial and civic core areas of the Village. Finally, the park would provide a defined, visible entryway along SC Hwy 802 into the core of the Village area,

setting the tone for the Village and confirming the community's link to the natural environment.

Finally, since the County will be faced with similar opportunities in other priority investment areas, this project would serve as an educational model for the larger community.

- *Effective Use of Land*

Design requirements in Beaufort County typically will dictate that up to 10% of the acreage of a developed commercial site be committed to stormwater management. With commercial property values in the Village at \$250,000 per acre, the real estate value committed to this management function translates to as much as \$25,000 per acre. Accordingly, a 100-acre commercial watershed must contribute \$2,500,000 in real estate value to the function of stormwater management. If this function can be accomplished off-site on property of lower value to the commercial real estate marketplace, significant shared value is realized.

Most (although not all) of the land surrounding Crystal Lake would be characterized as jurisdictional wetlands, meaning development of these areas would be impractical, expensive, and fraught with regulatory hurdles. Relative to properties along US Highways 21 and 802, the commercial value of Crystal Lake and surrounding properties is low. Accordingly, the highest value for these properties lies in the benefit they can provide to the commercial area of the Village through stormwater management and open space.

- *Improved Storm Water Management*

Compared to the current practice of piecemeal, single-site stormwater management, centralized stormwater management in the

Crystal Lake system would be more cost-effective and result in better treatment performance.

Construction costs to the overall community over the life cycle of the facility will be lower for centralized treatment due to economies of scale and better planning and management. Pond volume requirements will be lower. Certain infrastructure elements required for all pond systems, such as outfall structures, can be shared in a centralized system. Construction of properly planned conveyance systems will result in lower replacement and maintenance costs. Additionally, maintenance of centralized treatment facilities can be accomplished at lower overall cost due to economies of scale and the ability to employ professional management to design facilities where maintenance is easier.

As development density increases, the piecemeal approach to stormwater management on individual sites can become problematic. In low-lying areas like Beaufort County, natural drainage courses are poorly defined to begin with. Management of stormwater in units of a few acres can exacerbate the problem and further disrupt the natural course of the watershed by reducing its connectivity.

The Crystal Lake system would take advantage of sufficient land area for treatment in an area of the Village that currently is not hemmed in by existing development. There is sufficient area for ditching, construction of control structures, maintenance easements, and creation of over-bank areas or littoral shelves for enhanced water-quality treatment by constructed wetlands. Furthermore, the property owner has indicated willingness for the property to be utilized in this manner.

Beaufort County's Storm Water Utility was created to provide a vehicle to plan, construct, and maintain stormwater management infrastructure. Now that the utility is in existence, an entity exists to maintain the centralized facilities.

Timing is Critical

As development continues in the commercial area, infrastructure investments will erode the benefits of centralized treatment and will complicate construction of additional stormwater infrastructure. As the Village develops, retrofitting the watershed with costly drainage infrastructure to reestablish the natural drainage course will be necessary. Retrofit projects will be more expensive and problematic than those completed, or at least planned, in advance.

Next steps

The next step should be to identify a stakeholder group(s) to fund master planning and feasibility studies. The studies would include development and review of field data and preparation of design concepts. Design, permitting, and construction would proceed for each phase of the project, as defined thereafter.

Healthy Communities embrace timeless elements that foster human growth and fulfillment. There are many intangible characteristics difficult to measure by typical business criteria to cultivate a culture that is healthy and creative. Humanity's relationship to and stewardship of our natural environment is essential to Healthy Communities through innovative land use, transportation, landscape, wildlife habitat, waste management, and infrastructure design elements entrusted to our care.

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Conclusion

A cursory review of the pertinent factors, the many potential benefits, and the significant attributes of the system dictates that the opportunity to utilize Crystal Lake for centralized stormwater management should be explored in earnest. Time is of the essence as development continues. Certainly, there are issues of property ownership, engineering feasibility, construction cost, and funding sources that must be considered, but the potential enhancement for a broad range of stakeholders is undeniable.

About the Author



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