

Partnering for Environmental Enhancement and Education

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Introduction

The City of Jacksonville, North Carolina (City) required wetland mitigation for unavoidable impacts associated with their Wastewater Land Treatment System Upgrade and Expansion Project. As part of a compensatory mitigation package, the City made a considerable payment into North Carolina Environmental Enhancement Program and established two preservation areas totaling 728 acres.



The largest of the two preservation areas is the Ben Williams Pocosin Preservation Area (BWPPA). Recognizing the potential of the 640-acre preservation area, the City in consultation with Malcolm Pirnie, Inc (MPI) and the U.S. Army Corps of Engineers reserved environmental restoration and enhancement rights in a conservation easement held by Sturgeon City, Inc. (SCI), a local non-profit 501(c)(3) organization.



The City in cooperation with SCI and MPI began to formulate a number of approaches to enhance the BWPPA. Partnering was quickly identified as the most promising alternative given existing financial conditions.



Background Information

In December 1989, the City evaluated alternatives available to upgrade and expand the City's aging Wilson Bay Wastewater Treatment Plant and to address water quality concerns relative to continuing to discharge treated wastewater to the water quality impaired New River. Seven wastewater treatment alternatives were considered including continued discharge to the New River, a land treatment system, ocean discharge, and several combinations of these alternatives. Land treatment was the selected alternative based upon having the least number environmental impacts.



The City's Public Utilities Department has been operating a 6.0 million gallon per day (mgd) slow rate Land Treatment System (LTS), since 1998. The LTS is situated on a 6,300-acre site in Onslow County eight miles outside the City limits.

The land treatment concept involves the application of wastewater to the land at a controlled rate to achieve final treatment through natural biological, physical, and chemical reactions in the soil. Slow rate land treatment, which involves the application of wastewater through a sprinkler at a rate compatible with the soil permeability. A properly designed and operated slow rate system can ensure surface water and groundwater quality based on the high degree of treatment provided by the soil.

The 6.0 mgd rated capacity of the LTS was intended to meet the wastewater treatment needs of the City for approximately 10 years. In addition, higher residential growth rates than originally projected, coupled with higher wet weather flows and reduced spray irrigation capacity from above normal annual rainfall over the past several years has resulted in need to expand the LTS.



Partnering

Staff from SCI, MPI, U.S. Fish and Wildlife Service (FWS) and North Carolina Department of Forestry (NCDOF) met onsite to discuss their shared goals and partnering opportunities. As a result of this meeting the Phase I BWPPA Enhancement and Restoration Project (Project) began to take shape. Also the FWS' Partners for Fish and Wildlife Program was identified as a potential funding source.



The Partners Program provides technical and financial assistance to landowners who are willing to work with FWS and other partners on a voluntary basis to help meet the habitat needs of federal trust resources, including migratory birds and threatened and endangered species.



In North Carolina, the Partners Program commonly assists with projects that restore native vegetation and natural hydrology associated with ecosystems including but not limited to mountain bogs, spring seeps, rivers, streams, flood plains, bottomland hardwoods, Carolina bays and pocosins (like those found in the Ben Williams Preservation Area). In addition, other non-wetland habitat types in North Carolina are important to trust resources such as longleaf pine, upland hardwoods, and native grasslands. Some Partners projects are educational in nature, providing the necessary materials and opportunities for children and adults to learn the significance of the State's natural resources.



Project Details

The Project includes approximately 120 acres of lowland longleaf and pond pine enhancement and Atlantic white cedar (AWC) (*Chamaecyparis thyoides*) restoration.



The lowland longleaf and pond pine enhancement will be accomplished by the reestablishment of a burn regime within approximately 100 acres. A three to four year burn rotation will be introduced to reduce the thick shrub understory that has become established. The NCDOF has conducted site visits and are planning to conduct three in-stand non-growing season burns (2010, 2013, and 2017) during the 10 year agreement period.



The AWC restoration includes the reestablishment of approximately 20 acres of cedar within the Pond pine dominated pocosin. Site preparation for this portion of the project includes drum chopping followed by an in-season site preparation burn. AWC seedlings will be planted in late winter or early spring of the following year (2011). It is expected that one or two herbicide applications will be needed to release the cedar from the thick shrub layer. The applications have been tentatively scheduled during the fourth and ninth year of the project (2013 and 2018), but may be adjusted based on site conditions.



Estimated cost of the Project is \$50,000. The cost estimate was generated in consultation with the NCDOF and several private contractors.



Educational Component

The Project also includes a significant educational component. SCI anticipates conducting 8 programs per year, with at least 10 school children participating in each of the approximate 3 hour programs.



Students will learn general principles of ecology, including the relationships between the flora and fauna of Longleaf pine, Atlantic white cedar and pond pine dominated communities. In addition the role of fire in each of these systems will be stressed. Students will have the opportunity to participate in individual and group projects.



The incorporation of the BWPPA into SCI educational programs allows the opportunity for students to experience a wide variety of ecosystems from the headwater wetlands in the BWPPA to the estuarine systems along the New River and at the SCI campus.

Conclusion

By partnering, the City, SCI, MPI, NCDOF and FWS will accomplish their shared goals. In addition, an environmental and educational asset for the residents of the City of Jacksonville and Onslow County will be created.

