

Barnhill Farm  
Buffer and Wetland Restoration  
Greene County, North Carolina

2003 Annual Monitoring Report

Prepared for: NCDEHNR/Ecosystem Enhancement Program  
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**NC STATE UNIVERSITY**

**Barnhill Farm Buffer and Wetland Restoration  
Fall 2003 Monitoring Summary**

A wetland restoration project was funded through the North Carolina Wetlands Restoration Program (NCWRP). The goals of the project are to:

- 1) Restore agricultural land to riparian buffer to increase removal of nutrients
- 2) Improve wildlife habitat.

This is the 1st year of the 5-year monitoring plan for the completed Barnhill Farm Site.

Table 1. Background Information

<b>Project Name</b>	Barnhill Farm Buffer and Wetland Restoration
<b>Designer's Name</b>	PBS&J 1616 East Millbrook Road, Suite 310 Raleigh, NC 27609-4968
<b>Contractor's Name</b>	Denton's Nursery
<b>Directions to Project Site</b>	Travel south on NC58 from Stantonsburg and turn left onto SR1225. The farm is located behind a group of houses after approximately 3 miles and on the right.
<b>Drainage Area</b>	Not applicable
<b>USGS Hydro Unit</b>	03020203
<b>NCDWQ Subbasin</b>	03-04-07
<b>Project Size</b>	19.62 acres conservation easement 5.8 acres buffer restoration 0.34 acres wetland restoration 195 feet streambank stabilization
<b>Restoration Approach</b>	Prepare and plant buffers. Prepare and plant wetland areas Construction and installation of brush mattresses for bank stabilization.
<b>Date of Completion</b>	December 2000
<b>Monitoring Dates</b>	November 2003

**Results Summary**

The site was found to be in good condition and vegetation healthy. Access to the site was restricted, due to transfer of land ownership and only a cursory investigation was performed. Conservation and buffer areas appeared to be intact and developing. Streambank stabilization areas did not appear to be effective. Wetland restoration areas were not investigated. Initial recommendations for the site include:

- 1) Development of success criteria for each of the different areas of the site.
- 2) Investigate and contact the new property owner. Secure a key and access to the site.
- 3) Vegetation plot set-up in wetland areas.
- 4) Vegetation plot set-up in buffer areas.
- 5) Continued monitoring and management of undesirable species as necessary.

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## **1.0 BACKGROUND DATA**

### **1.1 Introduction**

The project site is located on the grounds of the Barnhill farm southeast of Wilson, NC. The site was identified for its potential as a buffer site because of its farming proximity to several bordering streams, including Beaman's Run and Contentnea Creek. The site was brought to the attention of the NC Wetlands Restoration Program (WRP) because it had been cited for violations by the NC Division of the Environment and Natural Resources (NCDENR) due to the stockpiling of old tires which had been found in the nearby streams. The restoration of buffers and wetlands on the site was investigated partly as a method of protecting the streams and as mitigation for the previous impacts. The primary objective of the project was to protect and improve water quality by removing and transforming pollutants with buffers and wetlands.

The goals as listed in the WRP Project Summary are to:

1. Restore agricultural land to riparian buffer to increase removal of nutrients
2. Improve wildlife habitat

### **1.2 Design and Construction Background**

Site investigation and design services were provided by PBS&J, Inc. The final plan reported a planned 19.62 acres of conservation easement, 195 feet of streambank stabilization, buffer restoration of 5.8 acres and wetland restoration of 0.34 acres. The records that we were able to obtain indicated that construction and the bulk of the planting at the site occurred over the winter (December) of 2000.

### **1.3 Monitoring Background**

No monitoring plan was prepared for this site and no monitoring has been performed at this site since construction was completed. This is the first monitoring report for the site.

### **1.4 Current Monitoring**

NCSU staff made our initial monitoring visit on October 14, 2003. Our staff planned to implement a revised monitoring procedure developed based on the document "Draft Vegetation Monitoring Plan for NCWRP Riparian Buffer and Wetland Restoration Projects" provided by the North Carolina Wetlands Restoration Program. Photographs and observations will also be a part of the new monitoring agenda. The full monitoring plan is explained in detail in this report.

## **2.0 MONITORING PLAN AND RESULTS**

### **2.1 Monitoring Visit**

The monitoring plan for this site could not be well developed prior to visiting the area due to the lack of prior monitoring and information about the site. WRP Staff had not visited the site in several years and the accessibility and condition of the site were largely unknown. The plan was to visit the site and assess the potential for monitoring and credit prior to developing the monitoring agenda. No success criteria were presented for the various areas in the site planning document, therefore, the WRP will have to determine the extent of monitoring to be performed.

NCSU staff visited the site on October 14, 2003. They spoke with a neighbor to inquire about recent activities, possible hunting, and access to the site. He informed them that the site had been sold to a new owner whom he did not know. He was unsure about recent activity on the site besides hunting and also informed us that trespassing had been a problem. His opinion was that the trees that had been planted had not survived. He also granted permission to drive through his property to the main entrance to the site, as there seems to be several different property owners, with apparently varying levels of friendliness, adjacent to the site.

Upon reaching the property boundary, our staff found a securely locked wire gate. They were unable to unlock the gate to access the site with our vehicle and equipment. It was determined to make a walk through of the site to observe the current condition and assess the current credit/monitoring potential. Due to the potential of hunters, examination of the site was limited mainly to the roads on the site. The entire area along Beaman's Run creek was investigated, however, none of the area adjacent to Contentnea creek was investigated.

### **2.2 Vegetation Monitoring Set up**

Due to the limited access to the site, our staff was unable to get the required equipment into position to set up any vegetation plots. Vegetation plots will be set up during the spring visit upon direction by the WRP and if access to the site has been secured.

### **2.3 Conservation Easement**

Based on our initial walk through of the site, it appears that all of the areas on the site plans have been constructed and planted. It also appears that the majority of these areas have not been encroached upon or converted to other uses by the current landowner. Each of the areas had significant populations of weeds, especially dog fennel growing. However, a large number of healthy trees could be seen growing as well. It is recommended to limit monitoring in areas that will only count as conservation areas to observation only.

### **2.4 Buffer Areas**

Areas designated as buffers seemed to be maintained as indicated on the plans. It is unclear what the exact extent of the buffer areas is and will not be able to be determined without an as built survey. Trees planted in the buffer areas seemed to be surviving well, even with competition from a significant weed population. Although it appears that the vegetative development is substantive, it is not known

whether the success criteria will be met in the buffer areas. It is recommended that vegetative plots be set up in these areas.

## **2.5 Wetland Restoration**

The area that was proposed as wetland restoration was not investigated during the first monitoring trip. The area will be assessed during the spring visit. Sufficient vegetative plots will be set up for recording data and a determination will be made whether a groundwater gage is necessary.

## **2.6 Streambank Stabilization**

Streambank stabilization areas were found along Beaman's Run. It appeared that the measures installed were having minimal effect in stabilizing the streambanks. Much of the planted vegetation had not survived nor propagated. Stabilization areas along Contentnea creek will be investigated during the spring visit.

## **2.7 Results Discussion**

It appears that, depending on the success criteria, that a fair amount of mitigation credit may be achieved at this site. Based on observations, we feel that the maximum amount of credit may be approved for the conservation and buffer areas of the site. However, it will be unclear whether wetland restoration credits might be achieved until the area can be assessed. Streambank stabilization credit should not be approved for the areas along Beaman's Run. It is unknown whether credits may be approved for stabilization areas along Contentnea creek.

Recommendations for this site include:

- 1) Development of success criteria for each of the different areas of the site.
- 2) Investigate and contact the new property owner. Secure a key and access to the site.
- 3) Vegetation plot set-up in wetland areas.
- 4) Vegetation plot set-up in buffer areas.
- 5) Continued monitoring and management of undesirable species as necessary.