

# ANNUAL REPORT for 1997

## **Pea Island Mititgation Site**

Dare County

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## **1.0 INTRODUCTION**

### **1.1 Project Description**

The Pea Island Mitigation Site is located in Dare County approximately 3.5 miles south of Pea Island Refuge maintenance facility, immediately west of NC 12 (Figure 1). The site consists of approximately 37.6 acres of wetland establishment.

### **1.2 Purpose**

Monitoring of the Pea Island site is required to demonstrate successful mitigation. Monitoring of wetlands for success criteria falls under two categories: hydrology and vegetation. The following report describes the results of the hydrologic and vegetative monitoring during 1997 at the Pea Island Mitigation Site.

## **2.0 HYDROLOGY**

### **2.1 Success Criteria**

In accordance with federal guidelines for wetland mitigation, the success criteria for hydrology states that the area must be inundated or saturated (within 12" of the surface) by surface or ground water for at least 12.5% of the growing season. However, discussions between NCDOT and natural resource agencies have determined that, due to the unique character of this site, the normal guidelines for hydrologic success may not apply. Groundwater levels may vary significantly on a daily basis due to a sandy substrate that is in close proximity to a tidally-influenced body of water. The growing season in Dare County begins March 13 and ends November 25. The dates marking the start and end of the growing season were based on Table 2 of the *Soil Survey of Dare County, North Carolina* (p. 69). The survey was conducted by the Soil Conservation Service. These dates correspond to a 50% probability that air temperatures will drop to 28° or lower after March 13 and before November 25. Thus the growing season is 256 days.

### **2.2 Hydrologic Description**

Four monitoring wells, one rain gauge, and one surface water gauge were installed on site (Figure 2). Data was collected on a daily basis. Rain data and depth to groundwater readings were recorded by automatic monitoring wells and gauges. Monitoring began on June 3, 1997, therefore the early growing season was not monitored.

Appendix 1 contains a plot of the water depth for each monitoring well and surface water gauge. Precipitation events are included on each graph as bars.

### 2.3 Results of Hydrologic Monitoring

The total number of days that the groundwater was within twelve inches of the surface was determined for each well. This number was converted into a percentage of the 256-day growing season. The results are presented in Table 1.

TABLE 1  
HYDROLOGIC MONITORING RESULTS

Monitoring Well	Percent of the Growing Season	Hydrologic Criteria Met?
PI-2	50.8	Yes
PI-3	39.5	Yes
PI-5	28.9	Yes
PI-6	28.1	Yes
<i>Average</i>	<i>34.8</i>	<i>Yes</i>

## 3.0 VEGETATION

### 3.1 Success Criteria

Success criteria states that there must be a survival rate of fifty percent of grass species for 3 years.

### 3.2 Vegetative Description

This site consists of restoration of the following marsh grass species:

*Panicum amarum*  
*Panicum amarulum*  
*Scirpus americanus*  
*Scirpus robustus*  
*Scirpus olneyi*  
*Bidens aristosa*

The site was planted in March 1996. The site was monitored one month after planting in June 1996 and after the first growing season in October 1996. Monitoring for the second growing season occurred September 1997.

### 3.3 Results of Vegetative Monitoring

The initial number of trees within in each vegetative plot was counted in March 1996. The number of trees surviving within each plot after the second growing season was counted in September 1997. The results of 1997 monitoring are presented in Table 3 and Table 4.

TABLE 2 -  
VEGETATIVE MONITORING RESULTS - AREA "A"

Plot Number	% Coverage
1	90.0 %
2	60.0 %
9	55.0 %
3	68.3 %

*totals/ (avg)*

TABLE 3 -  
VEGETATIVE MONITORING RESULTS - AREA "B"

Plot Number	% Coverage
3	60.0 %
4	95.0 %
5	25.0 %
6	85.0 %
7	70.0 %
8	98.0 %
10	50.0 %
7	69.0 %

*totals/ (avg)*

- Few areas have scarce vegetation at this time (plot 5); however vegetation appears to be regenerating from adjacent vegetated areas.
- Area "A" where panicum sp. was planted, was monitored by area coverage this growing season due to the large sizes of the grasses, as well as their spreading. Area "B" where Scirpus sp. was planted, was also monitored by area coverage, since scirpus spreads so rapidly.
- A majority of plots on the site are filling in very nicely at this time with scirpus, panicum, nutgrass, and other types of grasses.
- Site is very dry at time of monitoring.

- Site observation in the early spring of 1997 determined that winter waterfowl grazing removed a vast majority of above-ground vegetation. However, the vegetation appears to have recovered well despite the grazing. Therefore the site is serving well as a food source for waterfowl.

## **4.0 CONCLUSIONS**

### **4.1 Hydrology**

- The groundwater was within twelve inches of the surface for at least 12.5% of the growing season in all wells .
- Wells began to collect data on June 3, 1997 thus monitoring did not span the entire growing season.
- According to the well data in middle September through November 25, it can be determined that a malfunction could have occurred in the data collection of the rain gauge. The rain gauge will be replaced before the start of the next growing season.

### **4.2 Vegetation**

The average are coverage of panicum in area "A" is 45%. The average coverage of the scirpus in area "B" is 42%. Success within both areas is borderline at this time. The recovery from the heavy grazing from waterfowl last growing season can most likely be attributed to these borderline results. It is anticipated that given one (1) additional growing season that all areas will meet or exceed the success criteria.

The site is serving well as winter food source for waterfowl

## **5.0 RECOMMENDATIONS**

- Continue annual monitoring of site hydrology through the growing season (March 13 to November 25).
- Continue annual vegetative monitoring.